PALM BEACH COUNTY WATER UTILITIES DEPARTMENT

PLANT NO. 9 EASTERN HILLSBORO CANAL AQUIFER STORAGE AND RECOVERY WELL SYSTEM

PBCWUD PROJECT NO. WUD 98-66
MONTGOMERY WATSON PROJECT NO. 109809 3
KIMLEY HORN PROJECT NO. 44100017
VOLUME 2 - DRAWINGS

JULY 2000

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Sunrise, Florida

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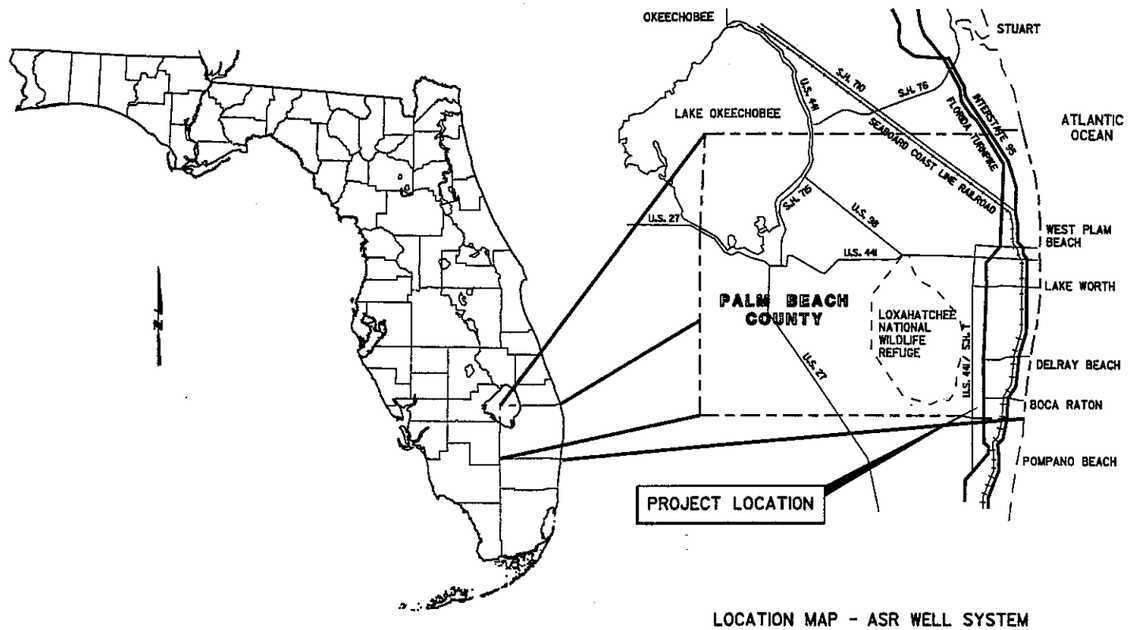
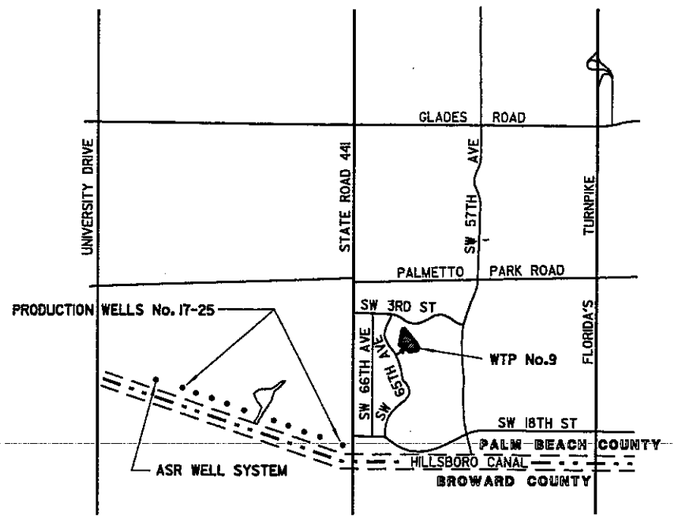


LOCATION MAP - ASR WELL SYSTEM

NOT TO SCALE



VICINITY MAP - ASR WELL SYSTEM

NOT TO SCALE

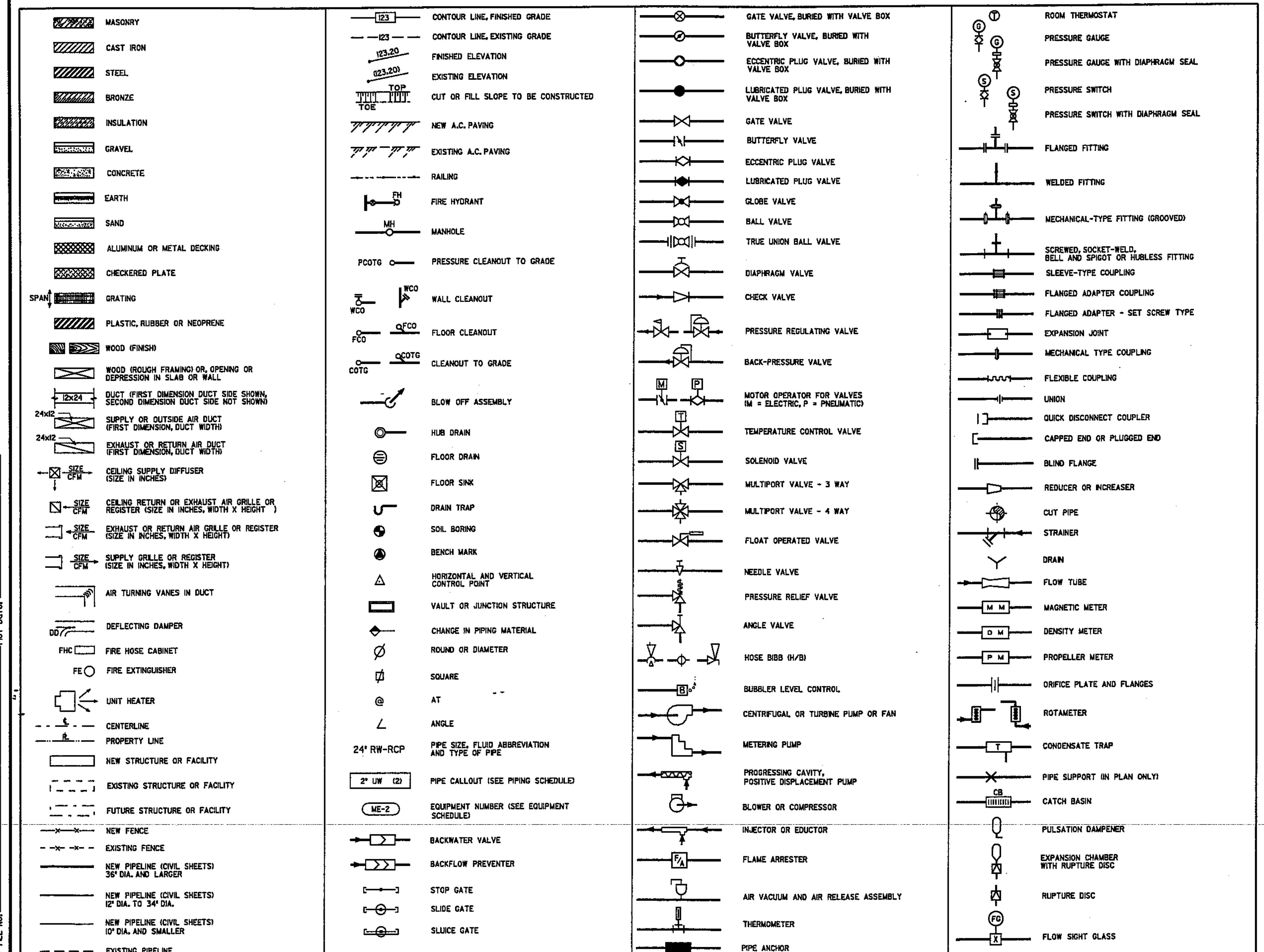
LIST OF DRAWINGS

GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL SURFACE AND SUBSURFACE UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING THE HORIZONTAL AND VERTICAL ALIGNMENTS OF PIPELINES.
2. SAMPLE POINTS FOR DISINFECTION TESTING SHALL BE LOCATED AS REQUIRED TO MEET THE TESTING REQUIREMENT. FIRE HYDRANTS SHALL BE USED AS SAMPLE POINTS WHERE AVAILABLE.
3. IN SITUATIONS WHERE THE DRAWINGS DO NOT CONTAIN DETAILS FOR A SPECIFIC APPLICATION, THE CONTRACTOR SHALL REFER TO THE 'PALM BEACH COUNTY WATER UTILITIES DEPARTMENT, MANUAL OF MINIMUM ENGINEERING AND CONSTRUCTION STANDARDS, WATER AND SEWER SYSTEMS,' LATEST EDITION.
4. ELEVATIONS SHOWN REFER TO N.G.V.D. (NATIONAL GEODETIC VERTICAL DATUM) OF 1929.
5. GRASS AND SHRUBBERY SHALL BE RESTORED TO THE CONDITION EXISTING PRIOR TO MAKING THE EXCAVATION. ALL SHRUBBERY, ORNAMENTAL TREES AND OTHER PLANTINGS SHALL BE FULLY PROTECTED. IF IT IS FOUND NECESSARY TO REMOVE ANY GRASS, SHRUBBERY, OR PLANTS TO ACCOMPLISH THE WORK, THEY SHALL BE SATISFACTORILY REPLACED BEFORE THE WORK WILL BE ACCEPTED OR PAID FOR.
6. WHERE FITTINGS ARE NECESSARY TO CHANGE THE VERTICAL ELEVATION OF THE PIPE, CONTRACTOR SHALL USE 45° BENDS , 90° BENDS FOR VERTICAL CHANGES IN ELEVATION SHALL NOT BE PERMITTED WITHOUT APPROVAL OF THE ENGINEER.
7. UNDERGROUND UTILITIES SHOWN ARE TAKEN FROM FIELD INSPECTIONS AND ATLAS MAPS AND ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR ONLY, THE CONTRACTOR SHALL CONTACT ALL UTILITY OWNERS AND CONFIRM LOCATIONS OF UTILITIES NO LESS THAN 48 HOURS BEFORE BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL ACCURATELY LOCATE AND UNCOVER ALL EXISTING UTILITIES BEFORE BEGINNING CONSTRUCTION WHERE CROSSING OF EXISTING UTILITIES OCCUR. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. THE CONTRACTOR SHALL LOCATE AND EXPOSE ALL UTILITIES WITHIN THE PROPOSED WORK AREAS TO CONNECT TO EXISTING PIPE AT INTERSECTIONS AND AT OTHER CRITICAL LOCATIONS. THIS IS TO VERIFY UTILITY LOCATIONS AND PIPE LAYING SCHEDULES PRIOR TO SUBMITTING SHOP DRAWINGS. THIS SHALL BE DONE WITHIN 30 DAYS AFTER NOTICE TO PROCEED. THE CONTRACTOR SHALL PROVIDE BACKFILL AND TEMPORARY RESTORATION IN KIND. THE INFORMATION OBTAINED (ELEV., DISTANCE, ETC.) SHALL BE MADE PART OF THE CONTRACTOR'S SUBMITTAL FOR PIPE.
9. PIPE SIZES (OUTSIDE AND INSIDE DIAMETERS) SHOULD BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. NOT ALL EXISTING PIPE WAS ACCESSIBLE FOR VERIFICATION AND ASSUMPTIONS WERE MADE (SEE NOTE 8).
10. NO CONNECTIONS FOR THE PURPOSE OF OBTAINING WATER SUPPLY DURING CONSTRUCTION SHALL BE MADE TO ANY FIRE HYDRANT OR BLOW-OFF STRUCTURE WITHOUT FIRST OBTAINING PERMISSION AND A CONSTRUCTION METER FROM THE OWNER. CONTRACTOR SHALL NOT BE CHARGED FOR REASONABLE QUANTITIES OF WATER USED.
11. THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING, MOVING AND RELOCATING OR REPLACING ALL SMALL (LESS THAN 4" DIAMETER) WATER LINES, IRRIGATION LINES OR CHEMICAL SOLUTION LINES WHICH ARE ENCOUNTERED DURING EXCAVATION. THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN FOR WATER SERVICE OR SOLUTION FEED LOCATING, MOVING AND RELOCATING OR REPLACING SAID LINES / UTILITIES FOR APPROVAL 7 (SEVEN) CALENDAR DAYS PRIOR TO THE ANTICIPATED DISRUPTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL.
12. THE CONTRACTOR SHALL TEST NEW SEGMENTS OF PIPE LINE INDEPENDENT OF EXISTING SEGMENTS PER PALM BEACH HEALTH DEPARTMENT OR OTHER JURISDICTIONAL AGENCY REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN FOR TESTING AND CONNECTION 30 DAYS PRIOR TO TEST.
13. IF UNSATISFACTORY MATERIAL FOR ADEQUATE BEARING IS ENCOUNTERED AT THE SUBGRADE, THE UNSATISFACTORY MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE FOUNDATION STABILIZATION MATERIAL AS SPECIFIED. THE CONTRACTOR SHALL BE HELD LIABLE FOR COSTS/FEES ASSOCIATED WITH THE DISPOSAL AND HAULING OF ALL UNSATISFACTORY MATERIAL TO AN ENGINEER APPROVED DISPOSAL SITE.
14. MAINTAIN SAME GRADES AS EXISTING FOR ALL RESTORATION WORK.
15. FLEXIBLE COUPLINGS SHALL BE DRESSER STYLE 53 OR 153, ROCKWELL STYLE 431, SLEEVE TYPE COUPLINGS OR EQUAL. PROVIDE A MINIMUM OF (4) 1/2" 316 SS TIE RODS BETWEEN FLANGES AS SHOWN.

PALM BEACH COUNTY
HILLSBORO ASR WELL
LOCATION MAPS, LIST OF DRAWINGS AND GENERAL NOTES

SHEET G-1


MASONRY
CAST IRON
STEEL
BRONZE
INSULATION
GRAVEL
CONCRETE
EARTH
SAND
ALUMINUM OR METAL DECKING
CHECKERED PLATE
SPAN
GRATING
PLASTIC, RUBBER OR NEOPRENE
WOOD (FINISH)
WOOD (ROUGH FRAMING) OR, OPENING OR DEPRESSION IN SLAB OR WALL
12x24
DUCT (FIRST DIMENSION DUCT SIDE SHOWN, SECOND DIMENSION DUCT SIDE NOT SHOWN)
24x12
SUPPLY OR OUTSIDE AIR DUCT (FIRST DIMENSION, DUCT WIDTH)
24x12
EXHAUST OR RETURN AIR DUCT (FIRST DIMENSION, DUCT WIDTH)
SIZE CFM
CEILING SUPPLY DIFFUSER (SIZE IN INCHES)
SIZE CFM
CEILING RETURN OR EXHAUST AIR GRILLE OR REGISTER (SIZE IN INCHES, WIDTH X HEIGHT)
SIZE CFM
EXHAUST OR RETURN AIR GRILLE OR REGISTER (SIZE IN INCHES, WIDTH X HEIGHT)
SIZE CFM
SUPPLY GRILLE OR REGISTER (SIZE IN INCHES, WIDTH X HEIGHT)
AIR TURNING VANES IN DUCT
DD
DEFLECTING DAMPER
FHC
FIRE HOSE CABINET
FE
FIRE EXTINGUISHER
UNIT HEATER
CENTERLINE
PROPERTY LINE
NEW STRUCTURE OR FACILITY
EXISTING STRUCTURE OR FACILITY
FUTURE STRUCTURE OR FACILITY
NEW FENCE
EXISTING FENCE
NEW PIPELINE (CIVIL SHEETS) 36" DIA. AND LARGER
NEW PIPELINE (CIVIL SHEETS) 12" DIA. TO 34" DIA.
NEW PIPELINE (CIVIL SHEETS) 10" DIA. AND SMALLER
EXISTING PIPELINE
123
CONTOUR LINE, FINISHED GRADE
123
CONTOUR LINE, EXISTING GRADE
123.20
FINISHED ELEVATION
(123.20)
EXISTING ELEVATION
TOP
TOE
CUT OR FILL SLOPE TO BE CONSTRUCTED
NEW A.C. PAVING
EXISTING A.C. PAVING
RAILING
FH
FIRE HYDRANT
MH
MANHOLE
PCOTG
PRESSURE CLEANOUT TO GRADE
WCO
WCO
WALL CLEANOUT
FCO
FCO
FLOOR CLEANOUT
COTG
COTG
CLEANOUT TO GRADE
BLOW OFF ASSEMBLY
HUB DRAIN
FLOOR DRAIN
FLOOR SINK
DRAIN TRAP
SOIL BORING
BENCH MARK
HORIZONTAL AND VERTICAL CONTROL POINT
VAULT OR JUNCTION STRUCTURE
CHANGE IN PIPING MATERIAL
ROUND OR DIAMETER
SQUARE
@
AT
ANGLE
24" RW-RCP
PIPE SIZE, FLUID ABBREVIATION AND TYPE OF PIPE
2" UW (2)
PIPE CALLOUT (SEE PIPING SCHEDULE)
ME-2
EQUIPMENT NUMBER (SEE EQUIPMENT SCHEDULE)
BACKWATER VALVE
BACKFLOW PREVENTER
STOP GATE
SLIDE GATE
SLUICE GATE
GATE VALVE, BURIED WITH VALVE BOX
BUTTERFLY VALVE, BURIED WITH VALVE BOX
ECCENTRIC PLUG VALVE, BURIED WITH VALVE BOX
LUBRICATED PLUG VALVE, BURIED WITH VALVE BOX
GATE VALVE
BUTTERFLY VALVE
ECCENTRIC PLUG VALVE
LUBRICATED PLUG VALVE
GLOBE VALVE
BALL VALVE
TRUE UNION BALL VALVE
DIAPHRAGM VALVE
CHECK VALVE
PRESSURE REGULATING VALVE
BACK-PRESSURE VALVE
M
P
MOTOR OPERATOR FOR VALVES (M = ELECTRIC, P = PNEUMATIC)
T
TEMPERATURE CONTROL VALVE
S
SOLENOID VALVE
MULTIPORT VALVE - 3 WAY
MULTIPORT VALVE - 4 WAY
FLOAT OPERATED VALVE
NEEDLE VALVE
PRESSURE RELIEF VALVE
ANGLE VALVE
HOSE BIBB (H/B)
B
BUBBLER LEVEL CONTROL
CENTRIFUGAL OR TURBINE PUMP OR FAN
METERING PUMP
PROGRESSING CAVITY, POSITIVE DISPLACEMENT PUMP
BLOWER OR COMPRESSOR
INJECTOR OR EDUCTOR
F/A
FLAME ARRESTER
AIR VACUUM AND AIR RELEASE ASSEMBLY
THERMOMETER
PIPE ANCHOR
T
ROOM THERMOSTAT
G
G
PRESSURE GAUGE
PRESSURE GAUGE WITH DIAPHRAGM SEAL
S
S
PRESSURE SWITCH
PRESSURE SWITCH WITH DIAPHRAGM SEAL
FLANGED FITTING
WELDED FITTING
MECHANICAL-TYPE FITTING (GROOVED)
SCREWED, SOCKET-WELD, BELL AND SPIGOT OR HUBLESS FITTING
SLEEVE-TYPE COUPLING
FLANGED ADAPTER COUPLING
FLANGED ADAPTER - SET SCREW TYPE
EXPANSION JOINT
MECHANICAL TYPE COUPLING
FLEXIBLE COUPLING
UNION
QUICK DISCONNECT COUPLER
CAPPED END OR PLUGGED END
BLIND FLANGE
REDUCER OR INCREASER
CUT PIPE
STRAINER
DRAIN
FLOW TUBE
M M
MAGNETIC METER
D M
DENSITY METER
P M
PROPELLER METER
ORIFICE PLATE AND FLANGES
ROTAMETER
T
CONDENSATE TRAP
PIPE SUPPORT (IN PLAN ONLY)
CB
CATCH BASIN
PULSATION DAMPENER
EXPANSION CHAMBER WITH RUPTURE DISC
RUPTURE DISC
FG
X
FLOW SIGHT GLASS

SECTION AND DETAIL IDENTIFICATION

SECTION IDENTIFICATION

(1) SECTION CUT ON DRAWING G-1:

SECTION NUMBER — 2 / G-2 — DRAWING ON WHICH SECTION APPEARS *

(2) ON DRAWING G-2 THIS SECTION IS IDENTIFIED AS:

SECTION — 2 / G-1 — SECTION NUMBER — DRAWING FROM WHICH SECTION WAS TAKEN *

DETAIL IDENTIFICATION

(1) DETAIL CALL-OUT ON DRAWING G-2 AS:

DETAIL LETTER — A / G-1 — DRAWING ON WHICH DETAIL IS SHOWN *

(2) ON DRAWING G-1 THIS DETAIL IDENTIFIED AS:

DETAIL — A / G-2 — DETAIL LETTER — DRAWING ON WHICH DETAIL IS CALLED OUT *

STANDARD DETAIL IDENTIFICATION

(1) DETAIL CALL-OUT ON PLAN OR SECTION:

STANDARD DETAIL NUMBER — M-101 / G-4 — DRAWING FROM WHICH DETAIL IS SHOWN *

(2) ON DRAWING G-4 THIS DETAIL IDENTIFIED AS:

DETAIL — M-101 — STANDARD DETAIL NUMBER

*NOTE: IF PLAN AND SECTION (OR DETAIL CALL-OUT AND DETAIL) ARE SHOWN ON SAME DRAWING, DRAWING NUMBER IS REPLACED BY A LINE.

NOTES:

(1) ELECTRICAL SYMBOLS SHOWN ON ELECTRICAL SHEETS.

(2) FOR WELDING SYMBOLS USE AMERICAN WELDING SOCIETY STANDARD SYMBOLS. SEE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.

REV. 091587

REV	DATE	BY	DESCRIPTION

SCALE:

WARNING
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED B. Hachenburg
DRAWN J. Zaragoza
CHECKED G. Hart

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Palm Beach County Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
STANDARD SYMBOLS

SHEET G-2

JOB No. 3007.0082 FILE No. g:\proj\pbc\hillsboro.co\asr_well\dgn\g02.dgn Plot Date: 10-JUL-2000 2604

A	AIR
AB	ANCHOR BOLT
ABBR	ABBREVIATION
ABS	ABSOLUTE TEMPERATURE
AC	ACTIVATED CARBON, ASPHALTIC CONCRETE, OR ALTERNATING CURRENT
A/C	AIR CONDITIONING
ACOUS	ACOUSTIC OR ACOUSTICAL
ACP	ASPHALTIC CONCRETE PAVEMENT OR ASBESTOS CEMENT PIPE
ADJ	ADJUSTABLE
AER	AERATION
AL	ALUMINUM OR ALUM
ALUM	ALUMINUM
AMB	AMBIENT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE (FORMERLY A.S.A.)
API	AMERICAN PETROLEUM INSTITUTE
APPD	APPROVED
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASA	AMERICAN STANDARDS ASSOCIATION (NOW ANSI)
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIAL
ASSY	ASSEMBLY
AT	ACOUSTICAL TILE
ATM	ATMOSPHERE
AVAR	AIR VACUUM AND AIR RELEASE VALVE
AWWA	AMERICAN WATER WORKS ASSOCIATION
BC	BEGIN CURVE, BOLT CIRCLE OR BETWEEN CENTERS
BCR	BEGIN CURB RETURN
BD	BOARD
BF	BLIND FLANGE
BFP	BACK FLOW PREVENTER
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BLD FLG	BLIND FLANGE
BLK	BLACK OR BLOCK
BLKG	BLOCKING
BM	BEAM OR BENCH MARK
BO	BLOW-OFF ASSEMBLY
BOD	BIOCHEMICAL OXYGEN DEMAND
BOT	BOTTOM
BPV	BACK PRESSURE VALVE
BRK	BRICK
B & S	BELL AND SPIGOT
BSMT	BASEMENT
BT	BOLT
BTU	BRITISH THERMAL UNIT
BV	BUTTERFLY VALVE
BVC	BEGIN VERTICAL CURVE
BWV	BACK WATER VALVE
C	CENTIGRADE
CAB	CABINET
CAP	CAPACITY
CB	CATCH BASIN OR CHALK BOARD
CC	CENTER TO CENTER
CD	CEILING DIFFUSER
CLR	CLEAR
CEM	CEMENT
CER	CERAMIC
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEM	CHEMICAL
CHG	CHANGE
CHK V	CHECK VALVE
CHKD PL	CHECKERED PLATE
CI	CAST IRON
CJ	CONSTRUCTION JOINT
CL	CHLORINE GAS, CHLORINATOR, CHAIN LINK, CLEARANCE OR CENTERLINE
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR
CM	CENTIMETER
CML & C	CEMENT MORTAR LINED AND COATED
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE OR CONCENTRIC
COND	CONDENSER OR CONDENSATE
CONN	CONNECTION
CONSTR	CONSTRUCTION OR CONSTRUCT
CONT	CONTINUED OR CONTINUOUS
CONTR	CONTRACTOR
COMP	COMPRESSOR
COTG	CLEAN-OUT TO GRADE
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CAUSTIC SODA OR CAST STEEL
CT	CERAMIC TILE
CTSK	COUNTERSUNK
CTR	CENTER
CU	COPPER OR CUBIC
CYL	CYLINDER
d	PENNY
DBL	DOUBLE
DC	DIRECT CURRENT
DET	DETAIL
DF	DRINKING FOUNTAIN OR DOUGLAS FIR
DG	DOOR GRILLE
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DISCH	DISCHARGE
DISP	DISPENSER
DN	DOWN OR DECANT
DO	DISSOLVED OXYGEN
DR	DOOR OR DRAIN
DS	DRENCH SHOWER AND EYE WASH
DWG	DRAWING
DIFF	DIFFUSER OR DIFFERENTIAL
E	EAST
EA	EACH
EB	EXPANSION BOLT OR ANCHOR
EC	END CURVE
ECC	ECCENTRIC
ECR	END CURB RETURN
EDB	ELECTRICAL DUCT BANK
EF	EACH FACE OR EXHAUST FAN
EFF	EFFLUENT
EG	EXHAUST GRILLE OR EXISTING GRADE
EL	ELEVATION
ELEC	ELECTRICAL OR ELECTRONIC
ENG	ENGINE
EPT	ETHYLENE PROPYLENE
ENCL	ENCLOSURE
ENT	ENTRANCE
EQ	EQUAL
EQUIP	EQUIPMENT
EVAP	EVAPORATOR
EVC	END VERTICAL CURVE
EW	EACH WAY OR EYE WASH
EXH	EXHAUST
EX-HY	EXTRA HEAVY
EXIST	EXISTING
EXP JT	EXPANSION JOINT
EXT	EXTERIOR OR EXTENSION
EXTR	EXTRUDED
F	FAHRENHEIT OR FINISH
FABR	FABRICATION, FABRICATE OR FABRICATED
FAI	FRESH AIR INTAKE
FB	FLAT BAR, FLOOR BEAM OR FIELD BOOK
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDR	FEEDER
FE	FIRE EXTINGUISHER OR FINAL EFFLUENT
FEM	FEMALE (PIPE THREAD)
FF	FLAT FACE OR FAR FACE
F TO F	FACE TO FACE
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISHED
FIX	FIXTURE
FL	FLOWLINE OR FLOOR
FLEX-	FLEXIBLE
FLOCC	FLOCCULATOR OR FLOCCULATION
FLG	FLANGE OR FLOORING
FLGD	FLANGED
FLR	FLOOR
FM	FACTORY MUTUAL (LAB. APPROVED)
FMH	FLEXIBLE METAL HOSE
FND	FOUNDATION
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOW	FACE OF WALL
FPC	FLEXIBLE PIPE COUPLING
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FAR SIDE, FLOOR SINK, FINISHED SURFACE, FORGED STEEL FROTH SPRAY OR FACTOR OF SAFETY
FT	FEET OR FOOT
FT. LB	FOOT-POUND
FTG	FOOTING
FUT	FUTURE
GA	GAGE OR GAUGE
GAL	GALLON
GALV	GALVANIZED
GEN	GENERAL OR GENERATOR
GFA	GROOVED FLANGE ADAPTER
GI	GALVANIZED IRON
GL	GLASS
GL/BM	GLUE LAMINATED BEAM
GLV	GLOBE VALVE
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRD	GRADE OR GROUND
GR BRK	GRADE BREAK OR GRADE CHANGE
GRTG	GRATING
GV	GATE VALVE
GYP	GYPSUM
H/B	HOSE BIBB
HDR	HEADER
HDW	HARDWARE
HEX	HEXAGONAL
Hg	MERCURY
HGR	HANGER
HGT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HORSEPOWER OR HIGH PRESSURE
H/P	HIGH POINT
HR	HEATING RETURN OR HOUR
HTG	HEATING
HTR	HEATER
H & V	HEATING AND VENTILATING
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWL	HIGH/WATER LEVEL
HWD	HARDWOOD
HWO	HANDWHEEL OPERATED
HV	HORIZONTAL AND VERTICAL CONTROL POINT
HYD	HYDRAULIC OR HYDRANT
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH
INFL	INFLUENT
IN. LB	INCH-POUND
INSL	INSULATION OR INSULATED
INSTR	INSTRUMENT
INT	INTERIOR
INV	INVERT ELEVATION
IP	IRON PIPE
IPS	IRON PIPE SIZE
IRRG	IRRIGATION
JAN	JANITOR
JT	JOINT
K	KELVIN, KILO OR KARAT
KG	KILOGRAM
KM	KILOMETER
KV	KILOVOLT
KW	KILOWATT
KWH	KILOWATT HOUR
L/P	LOW POINT
L	LITER OR LENGTH
LAB	LABORATORY
LAM	LAMINATED
LAV	LAVATORY
LB	POUND
LDG	LANDING
LEV	LEVEL
LG	LENGTH OR LONG
LT	LEFT OR LIGHT
LWL	LOW WATER LEVEL
LWR	LOWER
M	METER OR MALE (PIPE THREAD)
MAG	MAGNETIC
MAN	MANUAL
MACH	MACHINE
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MFR	MANUFACTURER
MFR'D	MANUFACTURED
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MI	MALLEABLE IRON
MICRON	1/1,000,000 METER
MIL	MILITARY, 1/1,000 INCH
MIN	MINIMUM OR MINUTE
MIR	MIRROR
MISC	MISCELLANEOUS
MK	MARK
MO	MOTOR OPERATED OR MANSONRY OPENING
MOD	MODEL
MS	MOP SINK
MTC	MECHANICAL-TYPE COUPLING
MTD	MOUNTED
MTG	MOUNTING
MTL	MATERIAL OR METAL
MTR	MOTOR
N	NORTH
NBS	NATIONAL BUREAU OF STANDARDS
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NF	NEAR FACE
NG	NATURAL GRADE OR NATURAL GAS
NIC	NOT IN CONTRACT
NO	NUMBER OR NORMALLY OPEN
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE (FORMERLY I.P.S.)
NPT	NATIONAL PIPE THREAD
NRS	NON-RISING STEM
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	OVER-CROSSING OR ON CENTER
OD	OUTSIDE DIAMETER OR OVERALL DIMENSION
OF	OVERFLOW OR OUTSIDE FACE
OFF	OFFICE
OH	OVER HEAD
OPER	OPERATOR OR OPERATING
OPNG	OPENING
OS & Y	OUTSIDE SCREW AND YOKE
OWG	OIL, WATER, GAS
OZ	OUNCE
P/S	POLE AND SHELF
P	POLE, PAGE OR PIPE
PART	PARTITION
PAVMT	PAVEMENT
PB	POLYBUTYLENE
PC	PRIMARY CLARIFIER OR PORTLAND CEMENT
PCC	PORTLAND CEMENT CONCRETE
PCOTG	PRESSURE CLEANOUT TO GRADE
PE	PLANT EFFLUENT, POLYELECTROLYTE POLYMER OR POLYETHYLENE
PG	PRESSURE GAGE
pH	HYDROGEN ION CONCENTRATION
PI	PLANT INFLUENT OR POINT OF INTERSECTION
PL	PLATE, PROPERTY LINE OR PLACE
PLAS	PLASTER OR PLASTIC
PLYWD	PLYWOOD
PNEU	PNEUMATIC
PNL	PANEL
PM	PRESSED METAL
PP	POWER POLE OR POLYPROPYLENE
PLT	PLANT
PPD	POUNDS PER DAY
PPH	POUNDS PER HOUR
PPM	PARTS PER MILLION
PR	PAIR
PRCT	PRECAST
PREFAB	PREFABRICATED
PRESS	PRESSURE
PRV	PRESSURE REGULATING, RELIEF OR REDUCING VALVE
PS	PRESSURE SWITCH
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	PAINT
PTDF	PRESSURE TREATED DOUGLAS FIR
PTFE	POLYTETRAFLUOROETHYLENE (TEFLON®)
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVDF	POLYVINYLIDENE FLUORIDE (KYNAR®)
QT	QUARRY TILE
QTY	QUANTITY
R	RADIUS, RISER, RETURN OR RATE OF SLOPE
RAG	RETURN AIR GRILLE
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN, ROUND, OR ROAD
RDWD	REDWOOD
RECIRC	RECIRCULATED
RED	REDUCER OR REDUCING
REF	REFERENCE OR REFER
REG	REGULATING
REIN	REINFORCE OR REINFORCED
RE-STL	REINFORCING STEEL
REQD	REQUIRED
RESIL	RESILIENT
REV	REVISION
RFG	ROOFING
RF	ROOF OR RAISED FACE
RM	ROOM
RO	ROUGH OPENING
RPM	REVOLUTIONS PER MINUTE OR REINFORCED PLASTIC MORTAR
RR	RAILROAD
RS	RISING STEM
RT	RIGHT
RTP	REINFORCED THERMOSETTING PLASTIC
R/W	RIGHT OF WAY
RW	REDWOOD
RWL	RAINWATER LEADER
S	SOUTH, SCUM, SINK, SECOND OR SLOPE
SA	SAMPLE
SBR	STYRENE BUTADENE (RUBBER)
SC	SPARE CHEMICAL OR SECONDARY CLARIFIER
SCD	SCREWED
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SDR	STORM DRAINS
SEC	SECONDARY
SECT	SECTION
SER	SERIES
SETT	SETTLING
SH	SHOWER
SHT	SHEET OR SHELF
SHTG	SHEATHING
SIM	SIMILAR
SL	SLUDGE OR SLOPE
SOLN	SOLUTION
SLDG	SLIDING
SP	STATIC PRESSURE
SPECS	SPECIFICATIONS
SPECF	SPECIFIED
SQ	SQUARE
SS	SANITARY SEWER, STAINLESS STEEL OR SERVICE SINK
SSU	SECONDS SAYBOLT UNIVERSAL
STA	STATION
STC	SLEEVE-TYPE COUPLING
STD	STANDARD
STL	STEEL
STM	STEAM
STN	STAINLESS
STN STL	STAINLESS STEEL
STRUCT	STRUCTURAL OR STRUCTURE
SUCT	SUCTION
SV	SOLENOID VALVE
SWR	SIDEWALL REGISTER
SYM	SYMMETRICAL OR SYMBOL
SYS	SYSTEM
T	THERMOSTAT, TREAD OF STAIR, TANGENT OR TOP
TB	TACK BOARD
T & B	TOP AND BOTTOM
TBE	THREAD BOTH ENDS
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TEMP	TEMPERATURE OR TEMPORARY
T & G	TONGUE AND GROOVE
THK	THICK OR THICKNESS
THR	THRESHOLD
THR'D	THREADED
TK	TANK
TOE	THREAD ONE END
TOL	TOILET
TP	TELEPHONE POLE OR TELEGRAPH POLE
TRANS	TRANSITION OR TRANSMITTER
TSB	TOP SET BASE
TV	THERMOSTATIC VALVE OR TELEVISION
TW	TOP OF WALL OR THERMOMETER WELL
TYP	TYPICAL
UB	UNION BONNET
UC	UNDER-CROSSING
UG	UNDERGROUND
UGC	UNDERGROUND CONDUIT
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UR	URINAL
V	VACUUM, VALVE, VERTICAL, VENT, VOLT OR VOLUME
VAR	VARIES OR VARIABLE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VOL	VOLUME
VTC	VENT TO CEILING
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	WEST OR WASTE
W/	WITH
WC	WATER COLUMN OR WATER CLOSET
WCO	WALL CLEANOUT
WD	WOOD
WH	WATER HEATER
WI	WROUGHT IRON
W/O	WITHOUT
WOG	WATER, OIL OR GAS WORKING PRESSURE
WP	WATER PROOFING
WS	WATER SURFACE
WSTP	WATER STOP
WT	WEIGHT
WWM	WELDED WIRE MESH
WWP	WATER WORKING PRESSURE
XS	EXTRA STRONG
XXS	DOUBLE EXTRA STRONG
YD	YARD
YR	YEAR
Z	ZERO OR ZONE
ZN	ZINC

NOTES:

ADDITIONAL PIPING ABBREVIATIONS SHOWN ON PIPE SCHEDULE SHEET

ELECTRICAL ABBREVIATIONS SHOWN ON ELECTRICAL SHEETS

ADDITIONAL HEATING, VENTILATING AND AIR CONDITIONING ABBREVIATIONS SHOWN ON MECHANICAL SHEETS

ADDITIONAL ABBREVIATIONS CONFORM TO ANSI STANDARD ABBREVIATIONS Z32.2.3

REV. 091587

JOB No. 3007.0082 FILE No. g:\pro\pbc\hillsboro.co\asr_well\dgn\g03.dgn Plot Date: 10-JUL-2000 2004

REV	DATE	BY	DESCRIPTION

SCALE:

WARNING
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED J. McMahon
DRAWN J. ZaragoZa
CHECKED G. Hart

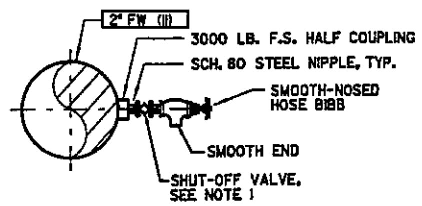
Kimley-Horn and Associates, Inc.
4431 Embarcadero Dr.
West Palm Beach, Florida 33407
Certificate of Authorization Number 696

MONTGOMERY WATSON
490 SAWGRASS CORPORATE PARKWAY
SUITE 300 SUNRISE, FLORIDA 33325
Certificate of Authorization Number 6773

Palm Beach County Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
STANDARD ABBREVIATIONS

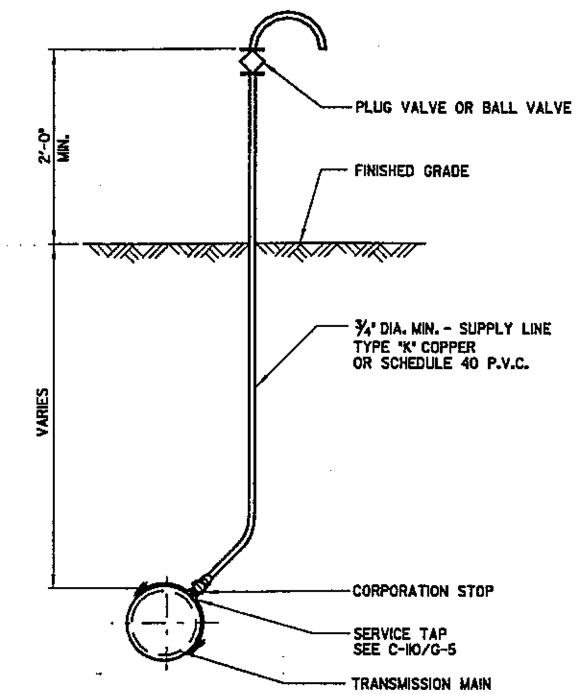
SHEET G-3



NOTES:
1. ALL HOSE BIBBS TO BE CONTROLLED BY INDIVIDUAL SHUT-OFF VALVES (BALL OR PLUG VALVES), EXCEPT WHERE INDIVIDUALLY CONTROLLED BRANCH MAIN SERVES HOSE BIBBS ONLY.
2. FOR SIZE AND LOCATION SEE DRAWINGS.
3. PROVIDE WARNING SIGN, WHEN USED FOR NON-POTABLE WATER
4. SEE SPECIFICATIONS SECTIONS 15430.

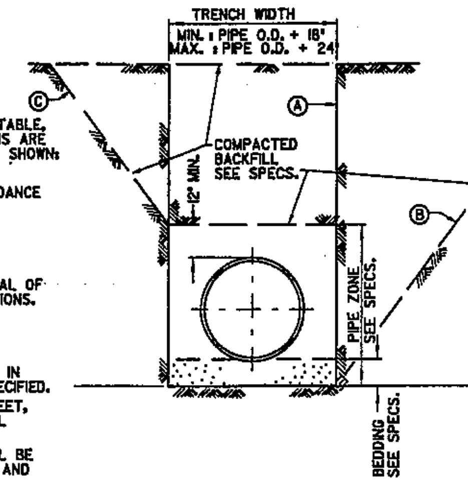
HOSE BIBB | A / M-1

NOTE: SUPPLY LINE TO BE REMOVED TO CORPORATION STOP ONLY AFTER BACTERIOLOGICAL SAMPLES HAVE BEEN APPROVED BY THE BROWARD COUNTY PUBLIC HEALTH UNIT.

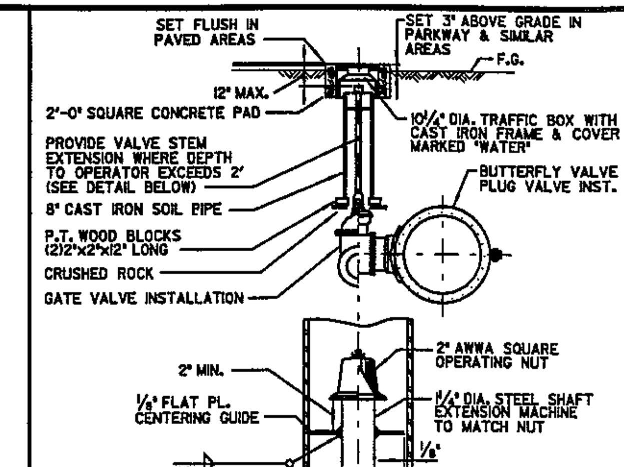


SAMPLING POINT DETAIL | C / -

1. ALTERNATIVE TRENCH SECTIONS (A,B, AND C) ARE FOR USE ONLY WHERE STABLE, COMPACT SOIL CONDITIONS EXIST. WHERE BOULDERS OR LARGE OBSTRUCTIONS ARE ENCOUNTERED, THE TRENCH SECTIONS MAY BE WIDER & DEEPER THAN THAT SHOWN.
A. VERTICAL TRENCH WALLS - SECTION
1. THE NEED FOR PROTECTIVE SYSTEMS SHALL BE DETERMINED IN ACCORDANCE WITH THE STATE STANDARDS AND REGULATIONS.
2. PROTECTIVE SYSTEMS SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH APPLICABLE STATE STANDARDS AND REGULATIONS.
B. SLOPING TRENCH WALLS - SECTION
1. SLOPING TRENCH WALL SECTION SHALL NOT BE USED WITHOUT APPROVAL OF ENGINEER, UNLESS SPECIFICALLY DESIGNATED ON PLANS OR SPECIFICATIONS.
2. UNSUPPORTED SLOPING TRENCH WALLS SHALL NOT BE STEEPER THAN ALLOWED BY APPLICABLE SAFETY STANDARDS AND REGULATIONS.
C. COMBINATION OF VERTICAL AND SLOPING TRENCH WALLS - SECTION
1. TRENCH DEPTHS NOT EXCEEDING 5 FEET SHALL HAVE VERTICAL WALLS IN PIPE ZONE UNLESS OTHERWISE APPROVED BY ENGINEER, OR WHERE SPECIFIED.
2. FOR TRENCHES WITH COMBINED WALLS AND ANY DEPTH EXCEEDING 5 FEET, DESIGN CALCULATIONS BY A REGISTERED CIVIL ENGINEER AND APPROVAL BY GOVERNING AGENCY OF SUPPORTED METHODS ARE REQUIRED.
2. WHERE WET, UNSTABLE OR RUNNING SOIL IS ENCOUNTERED, A SYSTEM SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH APPLICABLE SAFETY STANDARDS AND REGULATIONS TO PROTECT EMPLOYEES AND PREVENT CAVE INS.
NOTE: TRENCH SECTIONS SHOWN DO NOT DESIGNATE PAY LINES.

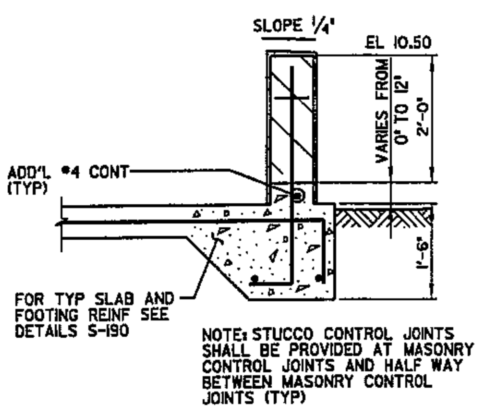


TYPICAL TRENCH SECTION | C-204
NOT TO SCALE | REV. 9/16/93



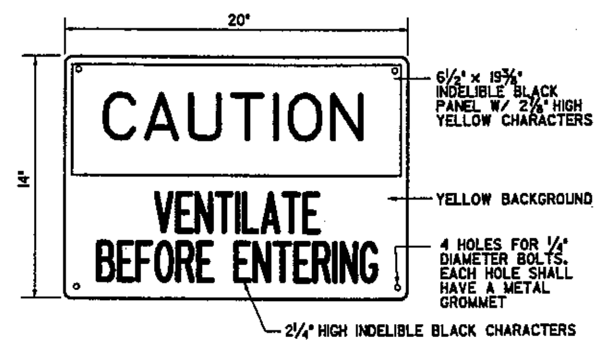
NOTES:
PROVIDE PROTECTIVE COATING TO EXTERIOR SURFACE OF VALVE BODY IN ACCORDANCE WITH SPECS.
FOR LUBRICATED PLUG VALVE, EXTEND LUBRICATION LINE TO GRADE PER MANUFACTURERS INSTRUCTIONS.

BURIED VALVE INSTALLATION | C-215



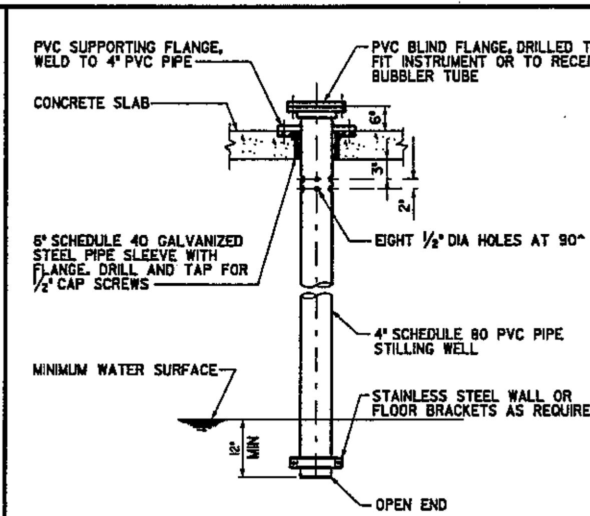
NOTE: STUCCO CONTROL JOINTS SHALL BE PROVIDED AT MASONRY CONTROL JOINTS AND HALF WAY BETWEEN MASONRY CONTROL JOINTS (TYP)

DRILLING PAD DETAIL | B / C-1

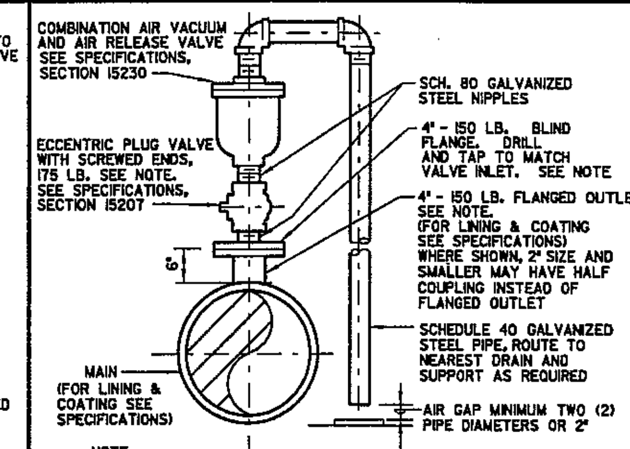


NOTES:
1. WARNING SIGN TO BE ABLE TO BEND TO A 9" RADIUS.
2. MATERIAL TO BE 0.060" THICK BUTYRATE OR EQUAL.
3. SIGN TO BE ATTACHED IN CONSPICUOUS LOCATION AT ENTRY OF STRUCTURE.

VENTILATION WARNING SIGN | M-509
REV 010199

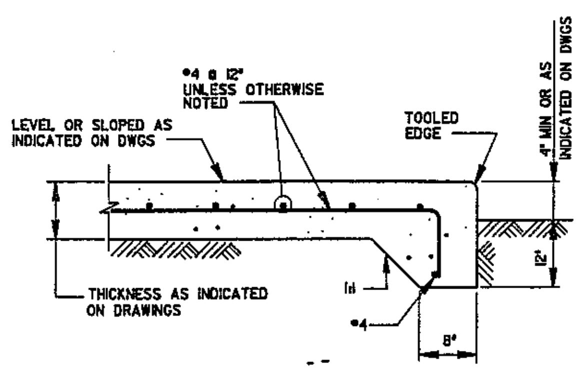


STILLING WELL THROUGH CONCRETE | M-601
REV 010199

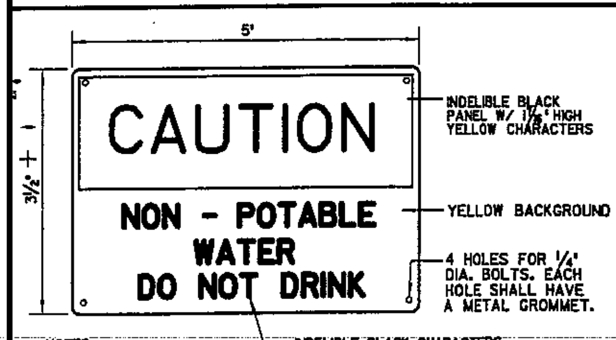


NOTE:
FOR MAIN PRESSURE OF MORE THAN 150 LBS., FLANGED OUTLET AND ECCENTRIC PLUG VALVE SHOULD SUIT HIGHER PRESSURE.

AIR-VACUUM AND AIR-RELEASE VALVE ASSEMBLY 3" AND SMALLER | M-804
REV. 091587

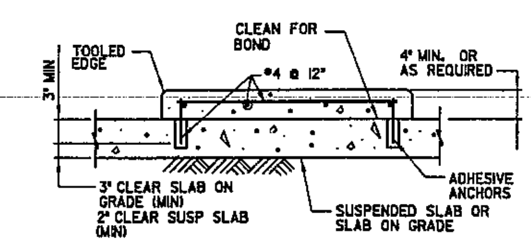


SLAB ON GRADE | S-190
REV 051893



NOTES:
1. MATERIAL TO BE SEMI-RIGID BUTYRATE OR APPROVED EQUAL, AS MFR'D. BY SETON NAME PLATE CORP., NEW HAVEN, CONN., 06505; W.H. BRADY CO., MILWAUKEE, WIS. 53201 OR EQUAL.
2. COLORS & LETTER SIZES TO BE PER OSHA STD'S. FOR CAUTION SIGNS.
3. PROVIDE THIS SIGN AT ALL HOSE BIBB LOCATIONS WHERE WATER IS NON-POTABLE.

WARNING SIGN FOR NON-POTABLE WATER | M-912
REV. 091587

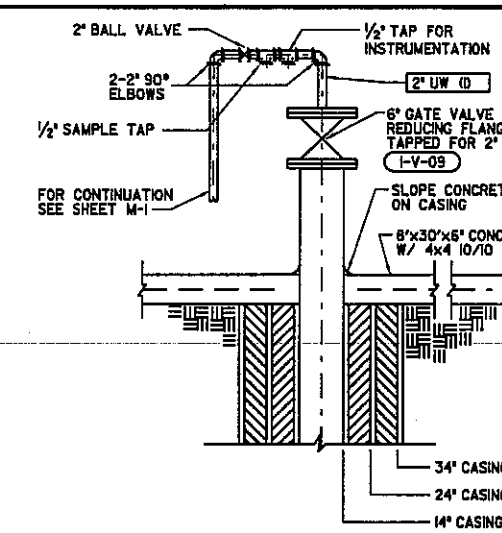


EQUIPMENT PAD | S-191
REV 031591

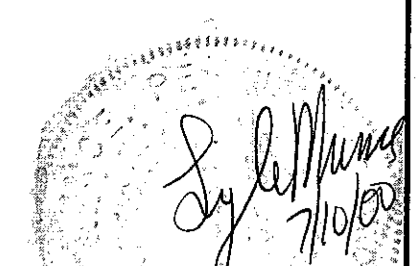
UNLESS OTHERWISE SHOWN ON THE DRAWINGS CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:

FOR CONCRETE PLACED AGAINST EARTH — 3"
FOR FORMED SURFACES IN CONTACT WITH EARTH:
WALLS, COLUMNS AND BEAMS — 2"
SLABS #5 AND SMALLER — 1 1/2"
SLABS #6 AND LARGER — 2"
FOR SURFACES IN CONTACT WITH WATER — 2"
FOR SURFACES EXPOSED TO WEATHER
#5 AND SMALLER — 1 1/2"
#6 AND LARGER — 2"
FOR UNDERSIDE OF SLAB OVER WATER IN ENCLOSED CONDUITS, BEAMS AND COLUMNS NOT IN CONTACT WITH EARTH OR WATER AND NOT EXPOSED TO WEATHER — 1 1/2"
FOR ALL INTERIOR SURFACES (EXCEPT BEAMS AND COLUMNS) NOT IN CONTACT WITH EARTH OR WATER — 1".
UNLESS OTHERWISE NOTED, WALLS AND SLABS SHOWN WITH A SINGLE LAYER OF REINFORCEMENT SHALL HAVE THAT REINFORCEMENT CENTERED.

CONCRETE PROTECTION FOR REINFORCEMENT | S-199
REV 051893
(CAST-IN-PLACE CONCRETE)

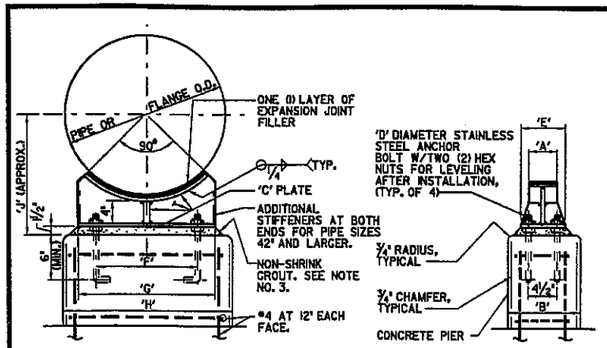


FLORIDAN MONITOR WELL & SUMP PUMP SECTION | E / G-6



SCALE:	WARNING: 0 1/2 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	DESIGNED J. McMahon	Kimley-Horn and Associates, Inc. 4431 Embarcadero Dr. West Palm Beach, Florida 33407	MONTGOMERY WATSON 490 SAWGRASS CORPORATE PARKWAY SUITE 300 SUNRISE, FLORIDA 33325	Palm Beach County Water Utilities Department	PALM BEACH COUNTY / HILLSBORO ASR WELL / STANDARD DETAILS - I	SHEET G-4
		DRAWN J. Zaragoza					
		CHECKED G. Hart					

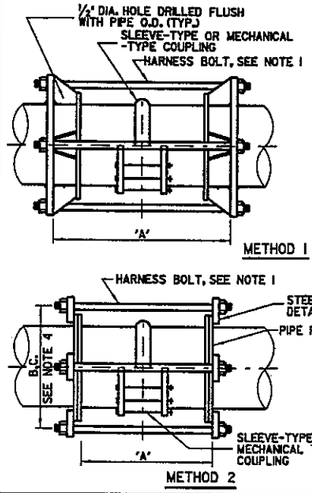
JOB No. 3007.0082 FILE No. g:\proj\pbc\hillsboro.co\asr_well\gen\g04.dgn Plot Date: 10-JUL-2000 20:05

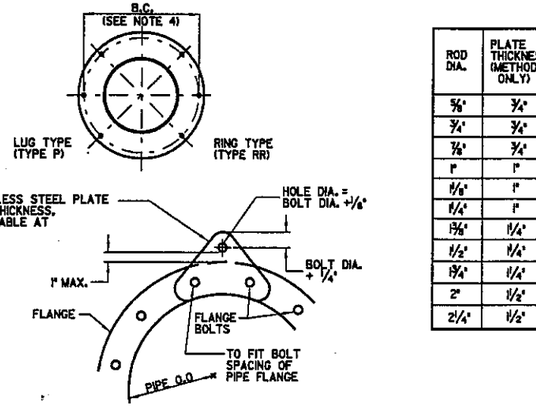


NOMINAL PIPE SIZE	'A'	'B'	'C'	'D'	'E'	SUPPORTING PIPE 'F'	'G'	'H'	'J'	SUPPORTING FLANGE 'F'	'G'	'H'	'J'
6	4	12	3/8	5/8	6	4 1/2	6	12	10	6 1/2	9	16	13
8	4	12	3/8	5/8	6	5	8	13	11	7 1/2	9	16	14
10	4	12	3/8	5/8	6	6	9	15	12	9	13	18	15
12	4	12	3/8	5/8	6	7	11	17	13	10	15	20	16
14	4	12	3/8	5/8	6	8	12	17	14	11	16	21	17
16	4	12	3/8	5/8	6	9	13	19	15	12	18	24	18
18	4	12	3/8	5/8	6	10	14	20	16	13	19	24	19
20	5	12	3/8	5/8	6	10	15	21	17	15	21	26	21
22	5	12	3/8	5/8	6	12	18	24	18	16	23	28	22
24	5	12	3/8	5/8	6	13	19	24	19	16	24	30	23
26	5	12	3/8	3/4	6	14	21	27	20	18	26	32	24
30	5	12	3/8	3/4	6	16	23	28	22	20	29	34	26
34	5	15	3/8	3/4	6	18	26	32	24	22	33	39	29
36	6	15	3/8	3/4	6	19	27	32	25	24	34	40	30
42	6	18	1/2	1	8	21	31	36	28	27	39	45	33
48	6	18	1/2	1	8	24	36	42	31	30	44	50	37
54	6	18	1/2	1	8	28	40	46	34	34	48	56	40
60	6	18	1/2	1 1/8	8	32	45	52	37	36	64	60	44
66	6	18	1/2	1 1/8	8	33	49	56	40	40	59	66	47
72	6	18	1/2	1 1/8	8	36	53	60	43	44	63	70	50
84	8	24	1/2	1 1/4	10	42	60	72	50	52	72	78	56

NOTES:
1. WHEN SUPPORTING PIPE AND FLANGE ALTERNATELY ON THE SAME LINE, CONCRETE PIERS FOR PIPE SUPPORTS SHALL ALL HAVE THE SAME DIMENSION 'H' FOR FLANGE SUPPORT.
2. PIPE SUPPORTS TO BE LOCATED IN PLAN AT POINTS MARKED THUS: (X)
3. WHERE DIFFERENTIAL SETTLEMENT IS LIKELY TO OCCUR, OMIT GROUT AS DIRECTED BY THE ENGINEER.
4. ALL PLATES TO BE TYPE 304 S.S.
5. ALL ANCHOR BOLTS SHALL BE ELECTRICAL ISOLATED BETWEEN SUPPORTING STEEL AND REINFORCING BY THE USE OF INSULATING SLEEVE AND WASHER KIT.

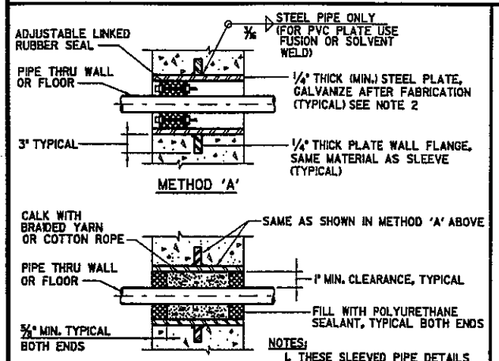
STAINLESS STEEL PIPE SUPPORT
REV. 080696 — M-109



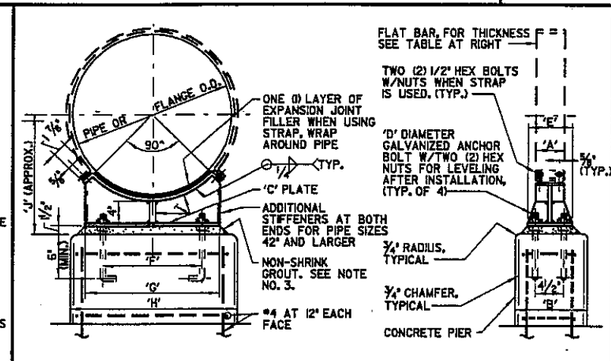


ROD DIA.	PLATE THICKNESS (METHOD 2 ONLY)
5/8"	3/4"
3/4"	3/4"
7/8"	3/4"
1"	1"
1 1/8"	1"
1 1/4"	1"
1 3/8"	1 1/4"
1 1/2"	1 1/4"
1 3/4"	1 1/4"
2"	1 1/2"
2 1/4"	1 1/2"

NOTES:
1. NUMBER AND SIZE OF HARNESS BOLTS SHALL DEPEND ON PIPE DIAMETER AND TEST PRESSURE AND SHALL BE ACCORDING TO TABLE 13-6 IN AWWA MANUAL M-11.
2. WHERE TWO HARNESS BOLTS ARE REQUIRED, THEY SHALL BE ON THE HORIZONTAL CENTERLINE.
3. WHERE FOUR OR MORE BOLTS ARE REQUIRED, THEY SHALL BE EQUALLY SPACED AROUND THE PIPE WITH TWO ON THE HORIZONTAL CENTERLINE.
4. BOLT CIRCLE (B.C.) SHALL BE SIZED TO ENSURE 1/2" MINIMUM CLEARANCE AROUND COUPLING AND PIPE FLANGE.
5. METHOD I HARNESS SHALL BE FABRICATED ACCORDING TO AWWA M-11 AND SHALL BE LUG TYPE (TYPE P) OR RING TYPE (TYPE RR) AS SPECIFIED IN AWWA M-11.
6. DIMENSION 'A' SHALL SUIT SPECIFIC COUPLING PROVIDED AND SHALL ALLOW FOR COMPLETE REMOVAL AT THE COUPLING FROM THE PIPE AND WITH A MINIMUM OF 3 INCHES ON EACH SIDE OF THE COUPLING OR BOLT.
7. BOLT AND LUG MATERIALS SHALL BE TYPE 316 SS.
8. BOLT THREADS SHALL PROTRUDE A MINIMUM OF 1/2 INCH FROM THE NUTS.



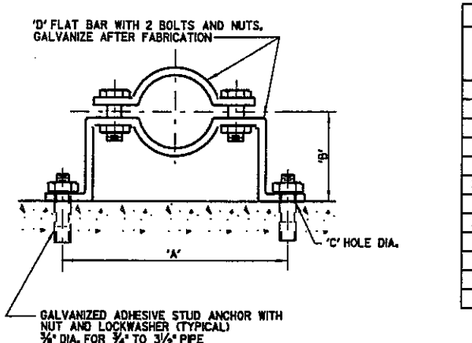
SLEEVED PIPE OPENING
M-111



NOMINAL PIPE SIZE	'A'	'B'	'C'	'D'	'E'	FLAT BAR	SUPPORTING PIPE 'F'	'G'	'H'	'J'	SUPPORTING FLANGE 'F'	'G'	'H'	'J'
6	4	12	3/8	5/8	6	1/4	4 1/2	8	14	10	6 1/2	11	16	13
8	4	12	3/8	5/8	6	1/4	5	9 1/2	14	11	7 1/2	13	18	14
10	4	12	3/8	5/8	6	1/4	6	11	16	12	9	15	20	15
12	4	12	3/8	5/8	6	1/4	7	13	18	13	10	17	22	16
14	4	12	3/8	5/8	6	1/4	8	13	18	14	11	18	23	17
16	4	12	3/8	5/8	6	1/4	9	15	21	15	12	20	26	18
18	4	12	3/8	5/8	6	1/4	10	16	22	16	13	21	26	19
20	5	12	3/8	5/8	6	3/8	10	18	24	17	15	23	28	21
22	5	12	3/8	5/8	6	3/8	12	19	24	18	16	25	30	22
24	5	12	3/8	5/8	6	3/8	13	21	26	19	16	26	32	23
26	5	12	3/8	3/4	6	3/8	14	22	28	20	18	28	34	24
30	5	12	3/8	3/4	6	3/8	16	25	30	22	20	31	36	26
34	5	15	3/8	3/4	6	3/8	18	28	33	24	22	35	41	29
36	6	15	3/8	3/4	6	3/8	19	29	34	25	24	36	42	30
42	6	18	1/2	1	8	3/8	21	33	39	28	27	41	47	33
48	6	18	1/2	1	8	3/8	24	38	44	31	30	46	52	37
54	6	18	1/2	1	8	3/8	28	42	48	34	34	50	56	40
60	6	18	1/2	1 1/8	8	3/8	32	46	52	37	36	56	62	44
66	6	18	1/2	1 1/8	8	3/8	33	51	56	40	40	61	68	47
72	6	18	1/2	1 1/8	8	3/8	36	55	62	43	44	65	72	50

NOTES:
1. WHEN SUPPORTING PIPE AND FLANGE ALTERNATELY ON THE SAME LINE, CONCRETE PIERS FOR PIPE SUPPORTS SHALL ALL HAVE THE SAME DIMENSION 'H' FOR FLANGE SUPPORT.
2. PIPE SUPPORTS TO BE LOCATED IN PLAN AT POINTS MARKED THUS: (X)
3. WHERE DIFFERENTIAL SETTLEMENT IS LIKELY TO OCCUR, OMIT GROUT AS DIRECTED BY THE ENGINEER.
4. GALVANIZE AFTER FABRICATION.

PIPE SUPPORT WITH OR WITHOUT STRAP
REV. 091587 — M-129



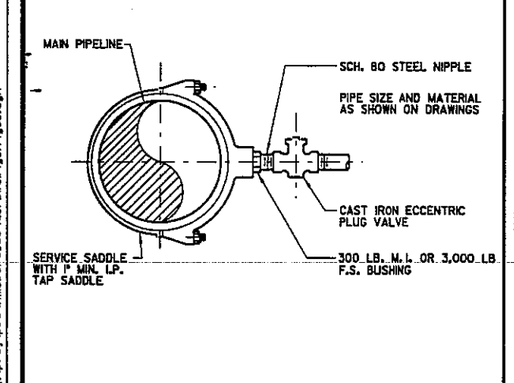
PIPE DIA.	'A'	'B' SEE NOTE 3 BELOW	'C' HOLE DIA	'D' FLAT BAR SIZE	LOAD RATING LBS.*
3/4	5-15/16	2-1/2	7/16	3/16 x 1-1/4	300
1	6-1/4	2-5/8	7/16	3/16 x 1-1/4	300
1-1/4	6-11/16	2-3/4	7/16	3/16 x 1-1/4	300
1-1/2	6-15/16	3	7/16	3/16 x 1-1/4	300
2	8-5/16	3-3/16	7/16	1/4 x 1-1/4	500
2-1/2	8-7/8	3-7/16	7/16	1/4 x 1-1/4	500
3	9-1/8	3-3/4	7/16	1/4 x 1-1/4	500
3-1/2	10-1/16	4	7/16	1/4 x 1-1/4	500
4	10-9/16	4-1/4	9/16	1/4 x 1-1/2	600
5	11-3/4	4-3/4	9/16	1/4 x 1-1/2	600
6	14-3/8	5-5/16	9/16	3/8 x 1-1/2	850
8	16-5/8	6-5/16	9/16	3/8 x 1-1/2	850

*SAFETY FACTOR OF 5

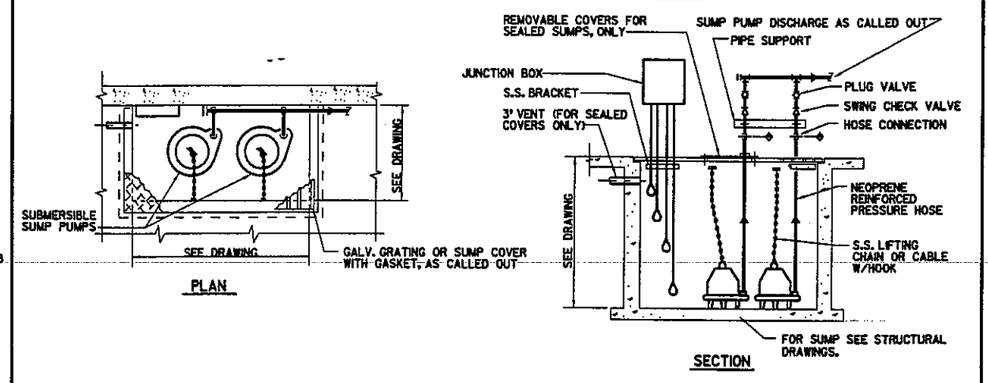
NOTES:
1. WHERE SUBMERGED, PIPE CLAMP, ANCHOR, SHIELD, NUTS AND LOCKWASHER TO BE TYPE 316 STAINLESS STEEL.
2. WHEN USED WITH PVC OR FIBERGLASS PIPE, PROVIDE STEEL SHIELD AROUND PIPE AT CLAMP, WITH LOOSE FIT. WRAP COPPER TUBES WITH 2" STRIP OF RUBBER FABRIC.
3. FOR FLANGED PIPING, INCREASE 'B' DIMENSION AS REQUIRED.

PIPE CLAMP FOR INDIVIDUAL PIPES
REV. 091587 — M-131

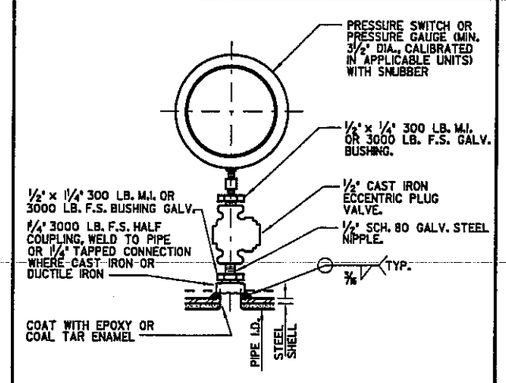
NOTE: FOR PIPES SMALLER THAN 3/4" SEE STANDARD M-142.



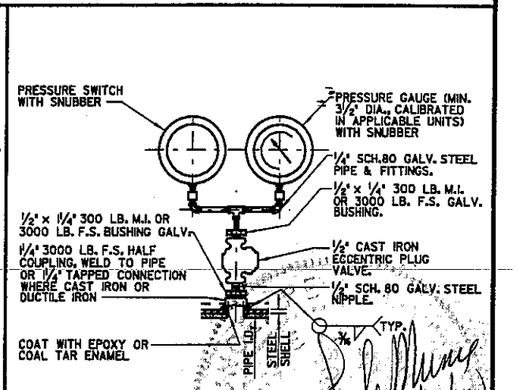
SERVICE SADDLE PIPE CONNECTION
REV. 051588 — M-144



DRAINAGE SUMP WITH DUPLEX PUMPS
M-316



PRESSURE GAUGE OR PRESSURE SWITCH
M-606



PRESSURE GAUGE AND PRESSURE SWITCH
REV. 091587 — M-610

NOTE: FOR STANDARD APPLICATIONS ON WATER, AIR AND GAS LINES.

REV	DATE	BY	DESCRIPTION

SCALE:

WARNING: 0 1/2 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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DRAWN J. ZaragoZa
CHECKED G. Hart

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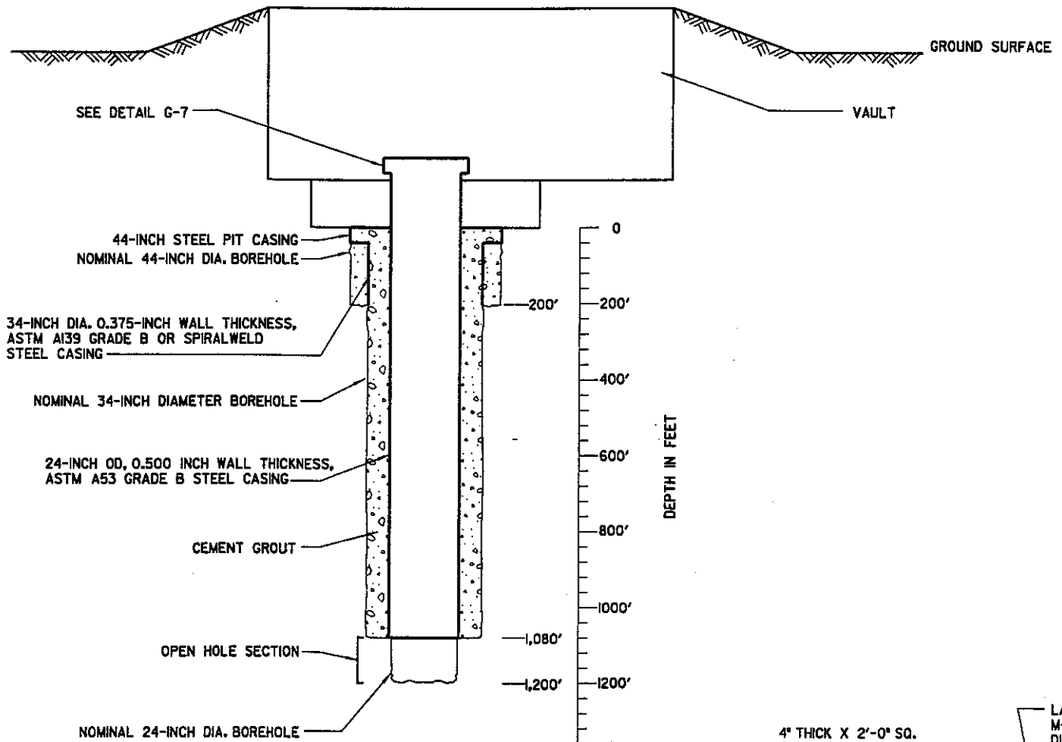
Palm Beach County
Water Utilities Department

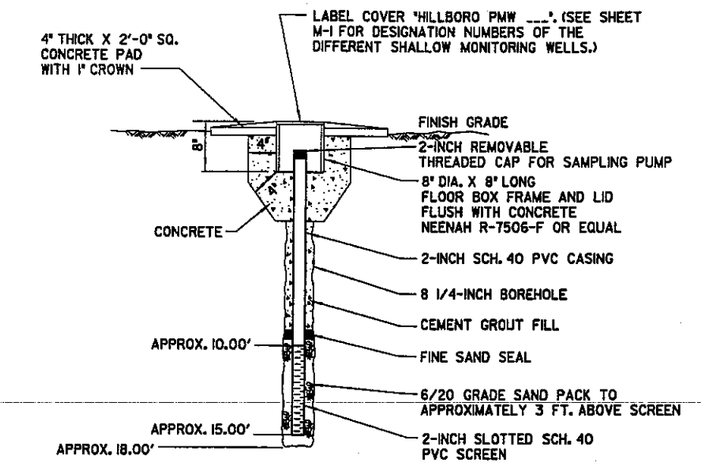
PALM BEACH COUNTY
HILLSBORO ASR WELL
STANDARD DETAILS - II

SHEET G-5

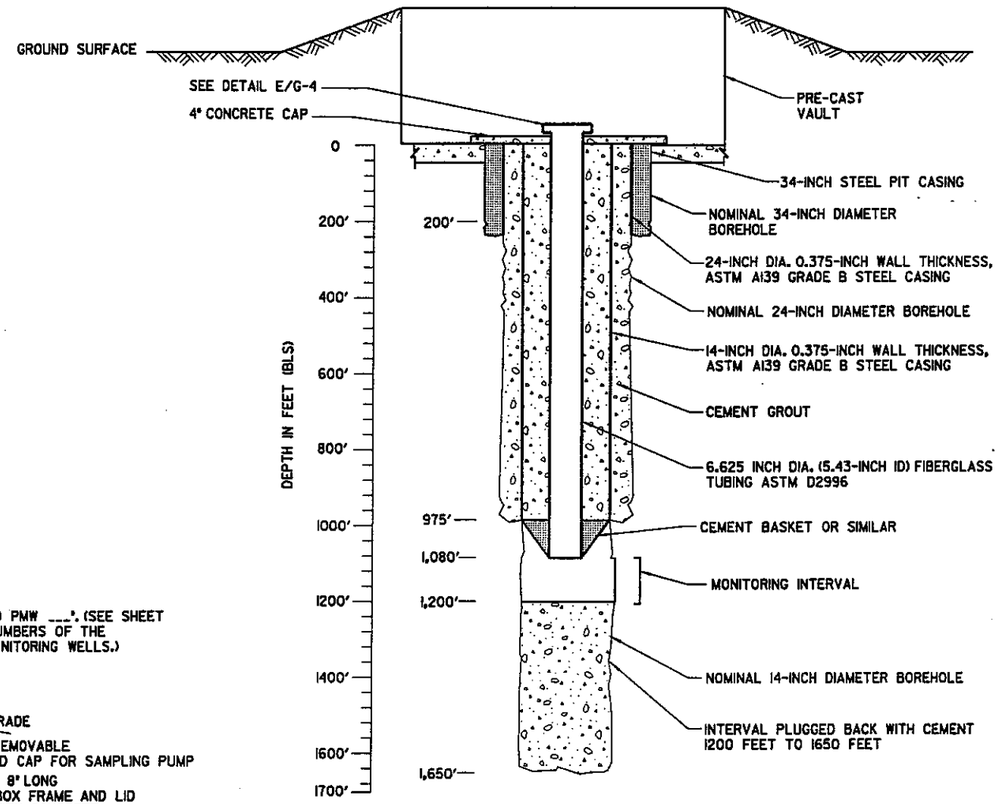
JOB No. 3007.0082 FILE No. g:\proj\pbc\hillsboro_co\asr_well\gen\g05.dgn Plot Date: 10-JUL-2000 20:05



FLORIDAN AQUIFER ASR WELL — A / VAR



SHALLOW MONITOR WELL — C / VAR



FLORIDAN AQUIFER MONITOR WELL (FAMW) — B / VAR

JOB No. 3007.0082 FILE No. g:\proj\pbc\hillsboro_co\asr_well\mec\m04.dgn Plot Date: 10-JUL-2000 20:08

REV	DATE	BY	DESCRIPTION

SCALE: N.T.S.

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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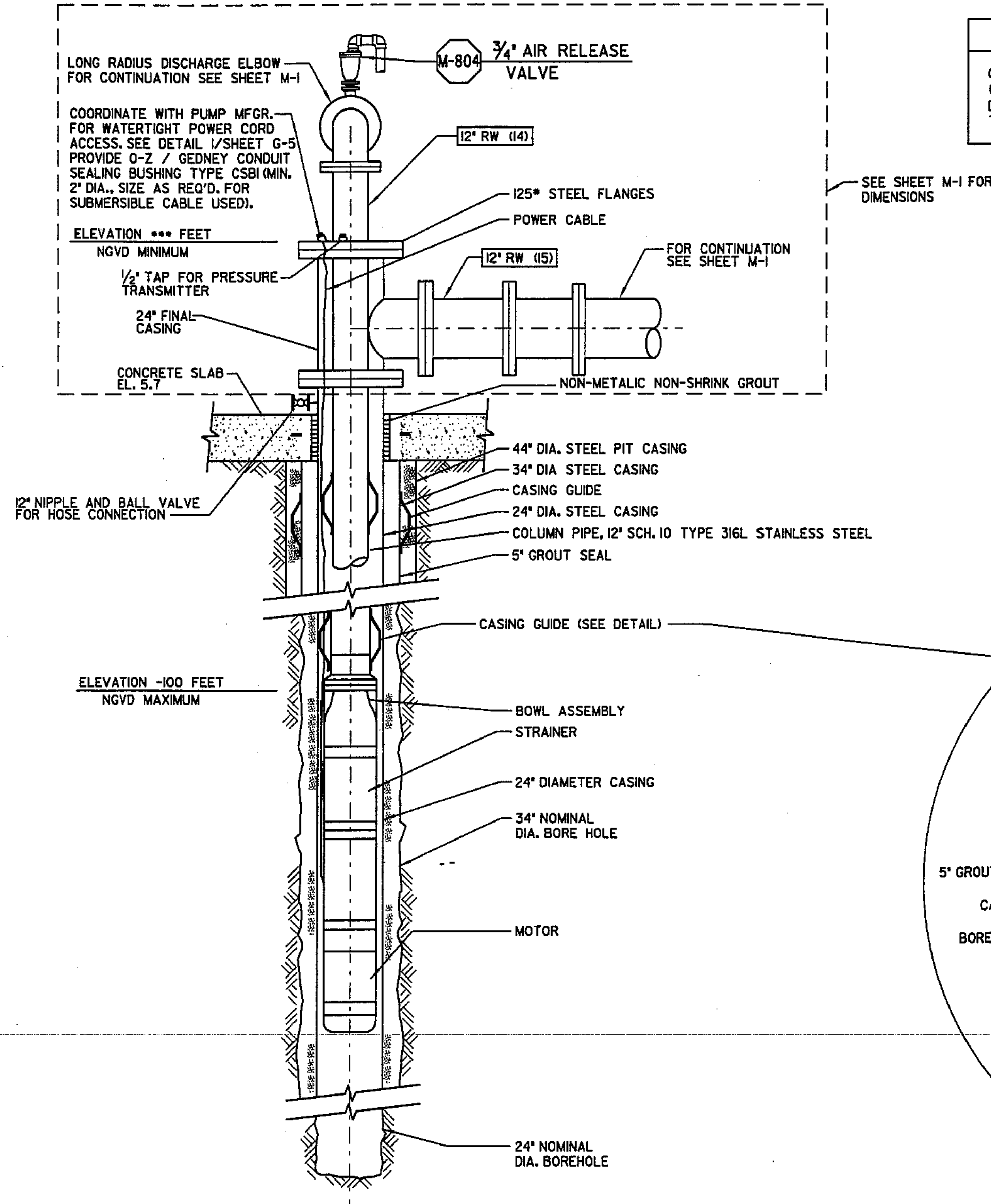
Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
WELL CASING AND CONSTRUCTION DETAILS

SHEET G-6

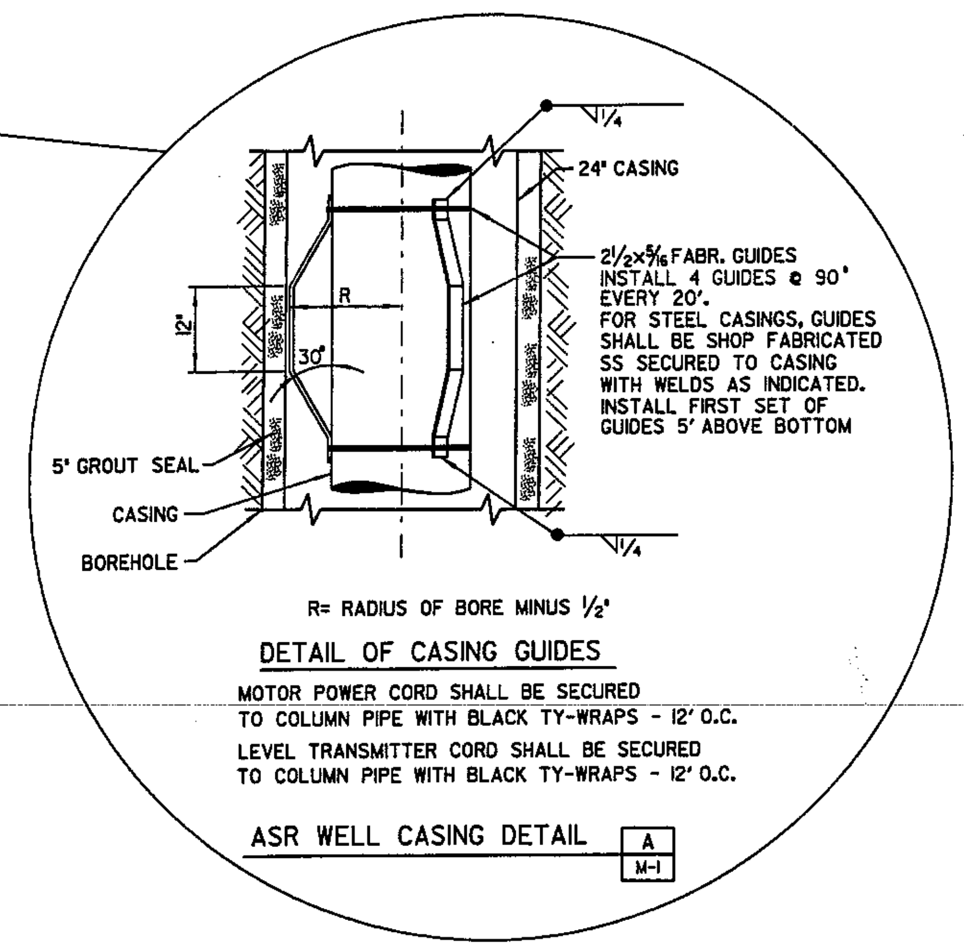


CAUTION

CONTRACTOR SHALL EXERCISE EXTREME CARE WHEN INSTALLING PUMP TO AVOID DAMAGE TO MOTOR POWER CORD AND LEVEL TRANSMITTER CORD.

VALVE SCHEDULE

VALVE	LOCATION	TYPE	MAX (PSI)	SIZE (INCHES)	OPERATOR	REMARKS
I-V-01	ASR WELL RECHARGE/RECOVERY LINE	HIGH PERFORMANCE BUTTERFLY	•	16"	MOTOR	OPEN/CLOSE
I-V-02	ASR WELL RECHARGE/RECOVERY LINE	AWWA BUTTERFLY	•	16"	MANUAL	ISOLATION, BURIED
I-V-03	ASR WELL RECHARGE LINE	HIGH PERFORMANCE BUTTERFLY	•	10"	MOTOR	FLOW CONTROL
I-V-04	ASR WELL RECHARGE LINE	SWING CHECK	•	12"	---	----
I-V-05	ASR WELL RECOVERY LINE	SWING CHECK	•	12"	---	----
I-V-06	ASR WELL RECOVERY LINE	HIGH PERFORMANCE BUTTERFLY	•	10"	MOTOR	PRESSURE CONTROL
I-V-07	ASR WELL CANAL DISCHARGE LINE	AWWA BUTTERFLY	•	10"	MANUAL	ISOLATION, BURIED
I-V-08	ASR WELL RECOVERY LINE	SWING CHECK	•	16"	---	----
I-V-09	FAMW DISCHARGE	GATE VALVE	•	6"	MANUAL	----



R= RADIUS OF BORE MINUS 1/2"

DETAIL OF CASING GUIDES

MOTOR POWER CORD SHALL BE SECURED TO COLUMN PIPE WITH BLACK TY-WRAPS - 12' O.C.

LEVEL TRANSMITTER CORD SHALL BE SECURED TO COLUMN PIPE WITH BLACK TY-WRAPS - 12' O.C.

ASR WELL CASING DETAIL A / M-1

JOB No. 3007.0082 FILE No. g:\proj\pbc\hillsboro.co\asr_well\gen\g07.dgn Plot Date: 10-JUL-2000 2:51

SCALE:

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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CHECKED G. Hart

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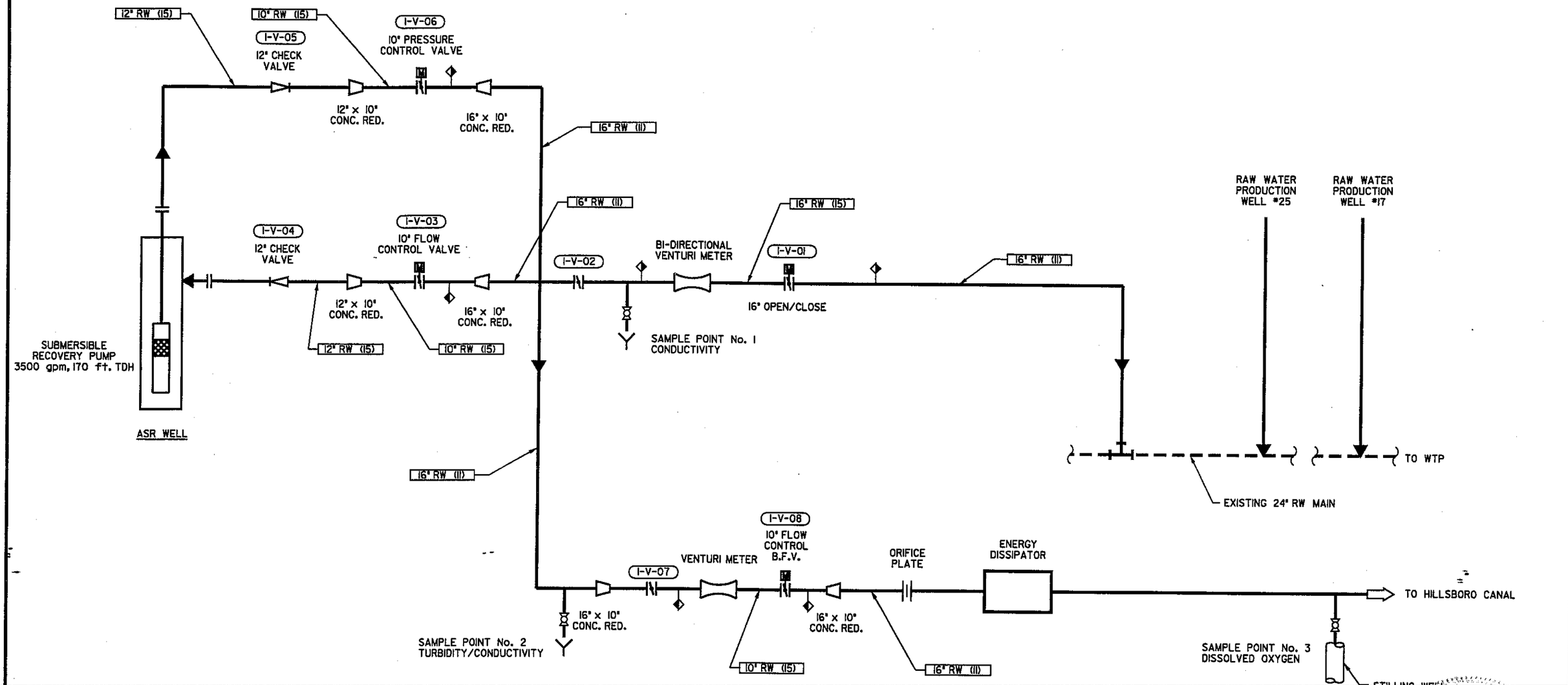
Palm Beach County Water Utilities Department

PALM BEACH COUNTY

HILLSBORO ASR WELL

ASR WELLHEAD AND CASING DETAIL

SHEET G-7



Lyle Munz 7/10/00

JOB No. 3007.0082 FILE No. g:\proj\pbc\hillsboro_co\asr_well\gen\g08.dgn Plot Date: 10-JUL-2000 20:05

REV	DATE	BY	DESCRIPTION

SCALE:

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CHECKED G. Hart

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Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL

PROCESS FLOW DIAGRAM - ASR WELL

SHEET G-8

EXISTING CATCH BASIN

ROUTE 18" PIPING TO CATCH BASIN

AREA AVAILABLE FOR CONTAINMENT STRUCTURE

LOT 18 | LOT 17 | LOT 16 | LOT 15

R/W LINE

EXISTING 72" RCP STORM T.O.P. EL. 8.0

18" PVC TEMPORARY FORMATION WATER PIPING ABOVE GROUND

PROPOSED EASEMENT

ASR WELL LOCATION

ASR WELL VAULT

VENTURI METER AND CONTROL VALVE VAULT

PULL BOX (BY OTHERS)

EXISTING DEEP MONITOR WELL 9W-0069

CUT INTO EXISTING RWM WITH 24" MJ SLEEVE AND 24" x 16" REDUCING TEE

NEW MONITOR WELL

PROPOSED EASEMENT

PROPOSED WELL #25 (BY OTHERS)

PROPOSED WELL #25 STA. 269+48 (61' LT)

EXIST. 6' WD. FENCE

EXIST. 4' C.L.F.

ELECTRICAL AND CONDUITS (BY OTHERS)

PROPOSED UTILITY EASEMENT 20'-0"

TO WTP

PINE | PINE TREES | PALM | FICUS | SABAL PALMS | OAK

STA. 267+31. 32' LT.
24"x20" TEE
20" PLUG
(BY OTHERS)

24" R.W.M. BY OTHERS

TO CANAL

PROPOSED 24" R.W.M. (BY OTHERS)

EXIST. GUARDRAIL

268 | 269 | 270

BASE LINE S 72° 00' 11" E

C G-6 SHALLOW MONITOR WELL (TYPICAL OF 3)

TOP OF BANK

HEADWALL

OUTFALL STRUCTURE

70'-0" | 60'-0" | 130'-0"

HILLSBORO CANAL

S.F.W.M.D. BASELINE

R/W LINE

Plot Date: 10-JUL-2000

FILE No. g:\proj\pbc\hillsboro_co\asr_wall\civil\c01.dgn

JOB No. 3007.0082

REV	DATE	BY	DESCRIPTION

SCALE: 1"=10'

WARNING 0 ½ 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

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DRAWN J. Zaragoza
CHECKED G. Hart

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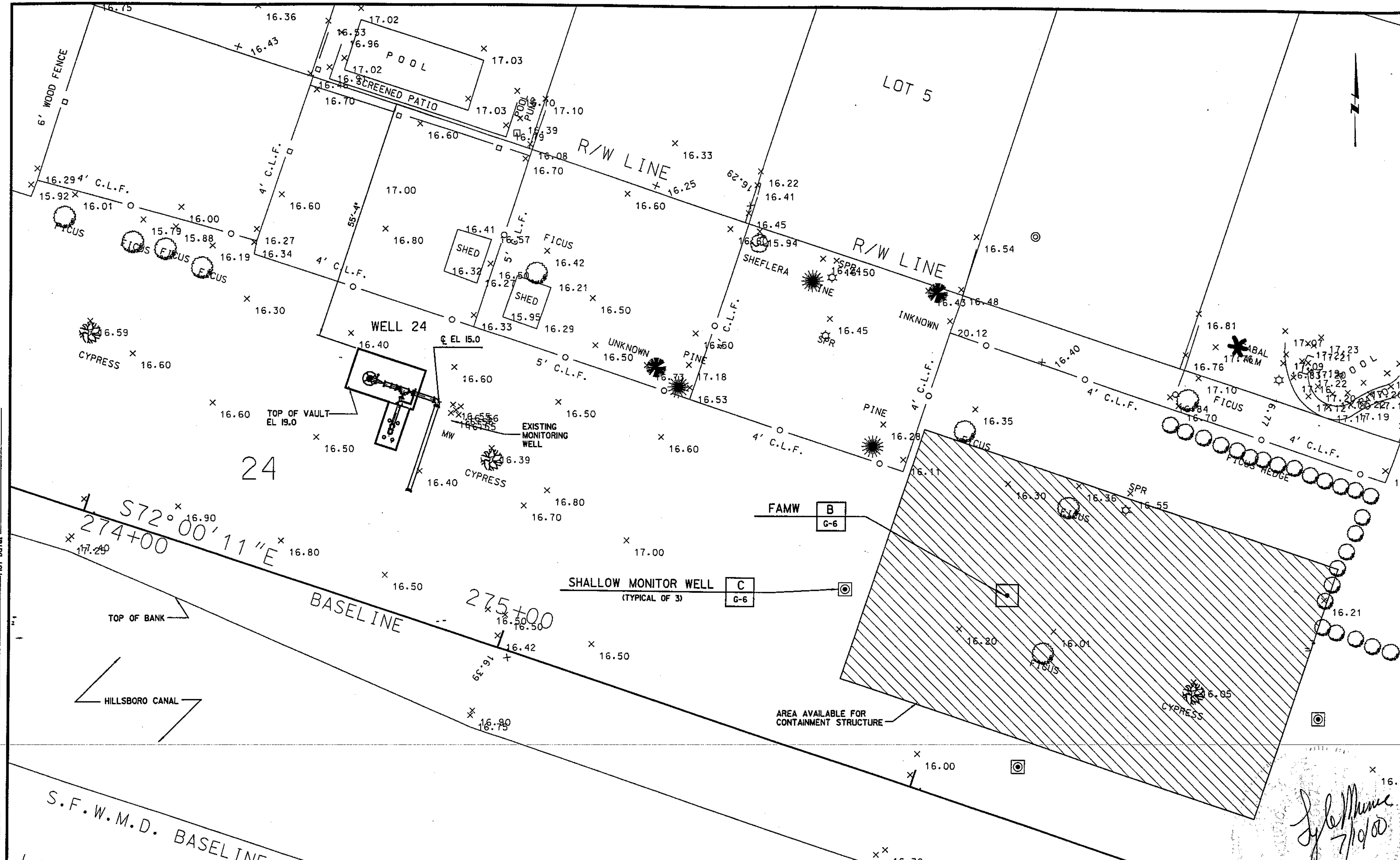
Palm Beach County Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL

YARD PIPING PLAN AND TEMPORARY DRILLING PAD

SHEET C-1

Gayle Munro 7/10/00



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REV	DATE	BY	DESCRIPTION

SCALE: 1" = 10'

WARNING: 0 ½ 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

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CHECKED G. Hart

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Palm Beach County Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
FAMW SITE PLAN

SHEET C-2

FLUID ABBREVIATION	FUNCTION THIS LIST INCLUDES SOME LINES NOT USED IN THIS PROJECT	PIPING MATERIALS (SEE SCHEDULE AT RIGHT)				FIELD TEST REQUIREMENTS (SEE NOTE 3 AND NOTE 4)		
		EXPOSED PIPING (SEE NOTE 14)		BURIED PIPING (SEE NOTE 13)		MINIMUM TEST PRESSURE PSI	TEST MEDIUM	LEAKAGE ALLOWANCE (SEE NOTE 2)
		2" DIA AND SMALLER	2½" DIA AND LARGER	2" DIA AND SMALLER	2½" DIA AND LARGER			
A	AERATION	1,16,18	5,11,16,18	1,16,18	5,11,16,18	25	AIR	(A) (D)
AC	ACTIVATED CARBON	16	16	16	16	125	WATER	(A)
AS	ACTIVATED SILICA	6,16	6,16	6,16	6,16	125	WATER	(A)
AW	FILTER AIR WASH	16	16	16	16	25	AIR	(A)
BW	FILTER BACKWASH	---	8	---	8	75	WATER	(A)
CAW	CHANNEL AGITATION WATER	16	16	16	16	25	WATER	(A)
CD	CHEMICAL DRAIN AND VENT	13,17,23	13,17,23	13,17,23	13,17,23	NOTE 7	---	---
CL	CHLORINE (GAS OR LIQUID STATE)	10	---	10	---	300	DRY AIR	(A) (D)
CLS	CHLORINE SOLUTION	16	16	16	16	125	WATER	(A)
CLV	CHLORINE GAS UNDER VACUUM	16	16	16	16	15 IN Hg	VACUUM	(A) (E)
CS	CAUSTIC SODA	6	6	6	6	125	WATER	(A)
CV	CHLORINATOR VENT & DETECTION LINE	16	16	16	16	NOTE 8	---	---
CWR	CHILLED WATER RETURN	l•,24•	l•	l•,24•	l•	125	WATER	(A)
CWS	CHILLED WATER SUPPLY	l•,24•	l•	l•,24•	l•	125	WATER	(A)
DW	DEMINERALIZED WATER	16,18	16,18	16,18	16,18	125	WATER	(A)
EE	ENGINE EXHAUST	14•	14•	14	14	NOTE 8	---	---
EWR	ENGINE COOLING WATER RETURN	l•	l•	l	l	125	WATER	(A)
EWS	ENGINE COOLING WATER SUPPLY	l•	l•	l	l	125	WATER	(A)
FC	FERRIC CHLORIDE	16	16	16	16	125	WATER	(A)
FI	FILTER INFLUENT	---	8	---	8	NOTE 6	WATER	(A)
FOR	FUEL OIL RETURN	9	9	9	9	125	AIR	(A) (D)
FOS	FUEL OIL SUPPLY	9	9	9	9	125	AIR	(A) (D)
FSP	FIRE PROTECTION SPRINKLER SYSTEM	NOTE 10	NOTE 10	NOTE 10	NOTE 10	NOTE 9	WATER	---
FW	FILTERED WATER	2,24	8	2,24	8,28	25	WATER	2,24(A) 28(B)
HF	HYDROFLUOSILICIC ACID	16	16	16	16	125	WATER	(A)
HR	HEATING WATER RETURN	l•	l•	l•	l•	125	WATER	(A)
HS	HEATING WATER SUPPLY	l•	l•	l•	l•	125	WATER	(A)
HWR	DOMESTIC HOT WATER RETURN	24•	2•	24•	2•	125	WATER	(A)
HWS	DOMESTIC HOT WATER SUPPLY	24•	2•	24•	2•	125	WATER	(A)
IA	INSTRUMENT AIR	24	2	24	2	125	AIR	(A) (D)
LA	LIQUID ALUM	16	16	16	16	125	WATER	(A)
LO	LUBE OIL	9	9	9	9	125	AIR	(A) (D)
LPG	LIQUEFIED PETROLEUM GAS	3	3	3	3	NOTE 7	AIR	---
LS	LIME SLURRY	NOTE 15	NOTE 15	NOTE 15	NOTE 15	NOTE 8	---	---
LSP	LANDSCAPING SPRINKLER SYSTEM	2,16	2,16	2,16	2,16	NOTE 7	---	---
NG	NATURAL GAS	9	9	9	9	NOTE 7	AIR	---
PA	PLANT AIR	7	7	7	7	300	AIR	(A) (D)
PD	PLANT DRAIN	2	8,12	2	8,12,22,28	NOTE 6	WATER	2,8(A) 12,28(B) 22(C)
PEA	POLYMER - ANIONIC	16	16	16	16	125	WATER	(A)
PEC	POLYMER-CATIONIC	16	16	16	16	125	WATER	(A)
PEN	POLYMER-NONIONIC	16	16	16	16	125	WATER	(A)
PO	PLANT OVERFLOW	2	8	2	8,28	NOTE 6	WATER	2,8(A) 28(B)
PP	POTASSIUM PERMANGANATE	6,14,16	6,14,16	6,14,16	6,14,16	125	WATER	(A)
PW	POTABLE WATER	2,24	2	2,24	2,11,19	125	WATER	2,11,24(A) 19(B)
RW	RAW WATER	2	15	2	11	125	WATER	2,8(A) 28(B)
RWL	RAINWATER LEADER	4,12	4,12	12	12	NOTE 7	---	---
SA	SAMPLE LINE (SEE LIST AT RIGHT)	16,18,24	---	16,18,24	---	125	WATER	(A)
SC	SPARE CHEMICAL	16	16	16	16	125	WATER	(A)
SD	SANITARY DRAIN AND VENT	4,12	12	12	12,21	NOTE 7	---	---
SDR	STORM DRAIN	---	8	---	22,28	NOTE 6	WATER	8(A) 28(B) 22(C)
SI	SODIUM SILICATE	6,16	6,16	6,16	6,16	125	WATER	(A)
SL	SLUDGE	16,18	15,18	16,18	12,16,18	50	WATER	16,18(A) 12(B)
SPD	SUMP PUMP DISCHARGE	2	26	2	26	50	WATER	(A)
SS	SANITARY SEWER	---	12	---	12,21	NOTE 7	---	---
SU	STRUCTURE UNDERDRAIN	---	---	---	20	NO TEST REQUIRED		
SUC	STRUCTURE UNDERDRAIN COLLECTOR	---	12	---	12,21	NOTE 6	WATER	(C)
SW	FILTER SURFACE WASHWATER	14,16,18	8,14,15,16,18	2,16,18	2,8,15,16,18	125	WATER	(A)
UW	UTILITY WATER (NON-POTABLE WATER)	2,24	2,11	2,24	2,11,19	125	WATER	2,11,24(A) 19(B)
V	VACUUM	24	2	24	2	15 IN Hg	VACUUM	(A) (F)
WLO	WASTE LUBE OIL	9	9	9	9	50	AIR	(A) (D)
WW	FILTER WASTE WASHWATER	---	8	---	8	NOTE 6	WATER	(A)

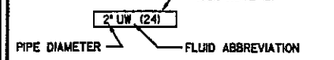
(• SEE NOTE 5)

GROUP NO	PIPE (SEE NOTE 13)	FITTINGS	VALVES, 6" AND SMALLER (SEE NOTE 1, 11 & 16)
1	STEEL, ASTM A53, SCHEDULE 40, BLACK WELDED.	2-1/2" AND SMALLER, MALLEABLE IRON, ANSI B16.3, THREADED, BANDED, BLACK, 150 PSI OR STEEL, ANSI B16.9, BUTT-WELDED. 3" AND LARGER, CAST IRON, ANSI B16.1, 125 PSI FLANGED OR MECHANICAL COUPLINGS.	BRONZE, THREADED, GATE, CRANE NO. 428 UB OR STOCKHAM B-105.GLOBE, CRANE NO. 14-1/2P OR STOCKHAM B-29, CHECK, CRANE NO.37 OR STOCKHAM B-319. STEEL, LUBRICATED PLUG, ROCKWELL FIG. 142 OR 143 OR POWELL FIG 2200 OR 2204, ECCENTRIC PLUG, DEZURIK SERIES 18 KEYSTONE 1512. BALL, JENKINS NO.900T OR JAMESBURY FIG.351
2	STEEL, ASTM A53, SCHEDULE 40, BLACK WELDED, GALVANIZED	2-1/2" AND SMALLER, MALLEABLE IRON, ANSI B16.3, THREADED, BANDED, GALVANIZED 150 PSI. 3" AND LARGER, CAST IRON, ANSI B16.1, 125 PSI FLANGED OR MECHANICAL COUPLINGS.	2-1/2" AND SMALLER, ECCENTRIC PLUG, SYNTHETIC RUBBER FACED, DEZURIK 18S OR HOMESTEAD 1512. BALL, JENKINS NO. 900T OR JAMESBURY FIG. 351 3" AND LARGER, ECCENTRIC PLUG, SYNTHETIC RUBBER FACED, DEZURIK 18F OR KEYSTONE 1522 OR 1532 EWG. GATE, AWWA 500. BUTTERFLY, AWWA, FLANGED.
3	STEEL, ASTM A106 OR A53, SCHEDULE 80, SEAMLESS, BLACK.	FORGED STEEL, ANSI B16.11, SOCKET WELDED OR THREADED, BLACK, 2000 PSI, OR STEEL, ANSI B16.9, BUTT-WELDED, SCHEDULE 80.	CAST IRON, LUBRICATED PLUG, ROCKWELL FIG. 214 OR 305 OR POWELL FIG. 2210 OR 2214.
4	SAME AS GROUP NO. 1	CAST IRON, ANSI B16.12, THREADED, DRAINAGE PATTERN.	--------
5	WELDED STEEL, AWWA C200, UNLINED.	WELDED STEEL, FABRICATED, AWWA C200, UNLINED.	AS INDICATED ON DRAWINGS
6	STEEL, ASTM A106, OR A53, SCHEDULE 40, SEAMLESS, BLACK.	STEEL, ANSI B16.9, BUTT-WELDED. CAST IRON, ANSI B16.1, 125 PSI, FLANGED, FORGED STEEL, SOCKET WELDED, ANSI B16.11, 2000 PSI OR STEEL, ANSI B16.5, 150 PSI FLANGED.	CAST IRON, FLANGED, LUBRICATED PLUG, ROCKWELL FIG 143 OR POWELL FIG 2210.
7	SAME AS GROUP NO. 2.	MALLEABLE IRON, ANSI B16.3, THREADED, BANDED, GALVANIZED, 300 PSI.	BRONZE THREADED, GLOBE, CRANE NO. 212P OR 229C OR STOCKHAM B-62 OR B-32. BALL, JENKINS NO. 900T OR JAMESBURY FIG. 351CHECK, CRANE NO. 27 OR STOCKHAM B-322.
8	WELDED STEEL, AWWA C200.	WELDED STEEL, AWWA C200, FABRICATED.	AS INDICATED ON DRAWINGS.
9	SAME AS GROUP NO. 1.	2-1/2" AND SMALLER, MALLEABLE IRON, ANSI B16.3, THREADED, BANDED, BLACK, 150 PSI. 3" AND LARGER, STEEL, ANSI B16.9, BUTT-WELDED	ECCENTRIC PLUG, DEZURIK SERIES 18 OR KEYSTONE 1512. CHECK, CRANE NO. 336E OR WALWORTH NO. 904 OR POWELL FIG 668Y. BALL, JENKINS NO. 900T OR JAMESBURY FIG. 351.
10	SAME AS GROUP NO. 3.	1-1/4" AND SMALLER, FORGED STEEL, ANSI B16.11, THREADED OR SOCKET WELDED, BLACK, 3000 PSI, WITH FLANGED AMMONIA UNIONS. 1-1/2" AND LARGER, STEEL, ANSI B16.9, BUTT-WELDED OR FLANGED, SCHEDULE 80	SEMI-PLUG AND YOKE TYPE OR BALL FOR CHLORINE SERVICE, FORGED CARBON STEEL
11	DUCTILE IRON, ANSI A21.51, (AWWA C151) OR CAST IRON ANSI A21.6, 150 PSI, BELL AND SPIGOT, MECHANICAL JOINTS, MECHANICAL COUPLINGS, OR 125 PSI FLANGED (TYPICAL SERVICE - WATER LINES)	DUCTILE IRON OR CAST IRON, ANSI A21.10, OR AWWA C110, BELL AND SPIGOT, MECHANICAL COUPLINGS, FLANGED OR MECHANICAL JOINTS, 250 PSI, (PRESSURE RATING) 12" AND SMALLER, 150 PSI, (PRESSURE RATING) 14" AND LARGER, WITH 125 PSI ANSI B16.1 FLANGES.	GATE, AWWA C500, 'O' RING SEALS, MECHANICAL JOINTS ENDS, MUELLER A-2380-20, OR EDDY-IOWA (CLOW) F-5155. BUTTERFLY, AWWA, ECCENTRIC PLUG, DEZURIK SERIES 118 OR KEYSTONE 1512. OR BALL, PRATT OR W-K-M.
12	CAST IRON SOIL, ANSI/ASTM A-74, SERVICE WEIGHT, BELL AND SPIGOT OR HUBLESS. AT THE OPTION OF THE CONTRACTOR. DUCTILE IRON (GROUP NO. 11 MAY BE SUBSTITUTED	CAST IRON SOIL, ANSI/ASTM A-74, SERVICE WEIGHT, BELL AND SPIGOT OR HUBLESS, AT THE OPTION OF THE CONTRACTOR, DUCTILE IRON (GROUP NO 11 MAY BE SUBSTITUTED.	AS INDICATED ON DRAWINGS.
13	CORROSION RESISTANT (HIGH SILICON CONTENT) CAST IRON, SERVICE WEIGHT, BELL AND SPIGOT OR HUBLESS.	CORROSION RESISTANT (HIGH SILICON CONTENT) CAST IRON, SERVICE WEIGHT, BELL AND SPIGOT OR HUBLESS.	--------
14	STAINLESS STEEL, TYPE 316, ASTM A312, SCHEDULE 40S.	STAINLESS STEEL, TYPE 316 ANSI B16.3, SCREWED, 150 PSI, ANSI B16.9, BUTT-WELDED, SCHEDULE 40S, OR 150 PSI FLANGED.	STAINLESS STEEL. BALL, FLANGED, LADISH NO. 4202, OR JAMESBURY TYPE A/DISOF. CHECK, LADISH, NO.5272 OR STOCKHAM FIG. 15 SF 316 OR AS SHOWN ON DRAWINGS.
15	STAINLESS STEEL, TYPE 316, ASTM A312, SCHEDULE 10S.	STAINLESS STEEL, TYPE 316 ANSI B16.9 BUTT-WELDED SCHEDULE 150 PSI FLANGED.	STAINLESS STEEL, AS INDICATED ON DRAWINGS.
16	POLYVINYL CHLORIDE, SCHEDULE 80, NORMAL IMPACT. ASTM D1785	POLYVINYL CHLORIDE, SCHEDULE 80, NORMAL IMPACT, SOCKET SOLVENT WELD JOINTS, ASTM D2467.	POLYVINYL CHLORIDE, BALL, DIAPHRAGM, BUTTERFLY, BALL OR LIFT CHECK. CHEMTROL, HILLS-MCCANNA OR GSR-R.G. SLOAN CO.
17	POLYPROPYLENE, ASTM D2146, SCHEDULE 40, WITH HEAT FUSED JOINTS.	POLYPROPYLENE, SCHEDULE 40, DRAINAGE TYPE WITH HEAT FUSED SOCKET JOINTS.	--------
18	FIBERGLASS REINFORCED PLASTIC, ASTM D2996, FILAMENT-WOUND, SOCKET AND SPIGOT ENDS, ADHESIVE BONDED.	FIBERGLASS REINFORCED PLASTIC, FILAMENT-WOUND, SOCKET ENDS, ADHESIVE BONDED, OR FIBERGLASS FLANGED.	PLASTIC LINED, FLANGED, FLANGES TO MATCH 150 PSI ANSI B16.5 DIMENSIONS, OR AS INDICATED ON DRAWINGS.
19	POLYVINYL CHLORIDE PRESSURE PIPE ASTM D2241 WITH BELL AND SPIGOT JOINTS.	CAST IRON, 150 PSI, FOR POLYVINYL CHLORIDE PIPE, AWWA C110 CEMENT MORTAR LINED, AWWA C104.	SAME AS GROUP NO. 11.
20	VITRIFIED CLAY, PERFORATED, ASTM C 700, EXTRA STRENGTH, FLEXIBLE COMPRESSION JOINTS FOR BELL AND SPIGOT PIPE OR PLAIN END WITH MECHANICAL COMPRESSION JOINTS	VITRIFIED CLAY, ASTM C700, FLEXIBLE JOINTS FOR BELL AND SPIGOT PIPE OR PLAIN END WITH MECHANICAL COMPRESSION JOINTS.	--------
21	VITRIFIED CLAY, ASTM C700, EXTRA STRENGTH, FLEXIBLE COMPRESSION JOINTS FOR BELL AND SPIGOT PIPE OR PLAIN END WITH MECHANICAL COMPRESSION JOINTS	VITRIFIED CLAY, ASTM C700, FLEXIBLE JOINTS FOR BELL AND SPIGOT PIPE OR PLAIN END WITH MECHANICAL COMPRESSION JOINTS.	--------
22	REINFORCED CONCRETE, ASTM C76, TONGUE AND GROOVED JOINTS. (TYPICAL SERVICE-CULVERTS)	SAME AS GROUP NO. 8	--------
23	TEMPERED GLASS, (ARMORED, WHERE BURIED). ANSI/ASTM C599	TEMPERED GLASS DRAINAGE TYPE WITH COMPRESSION COUPLINGS AND TEFLON JOINTS. ANSI/ASTM C599 (ARMORED WHERE BURIED)	--------
24	COPPER, ASTM B88, TYPE K, SOFT TEMPERED WHERE BURIED, HARD TEMPERED WHERE EXPOSED.	WROUGHT COPPER OR CAST BRONZE, ANSI B16.22, SOLDER JOINT, 150 PSI, OR COMPRESSION FITTINGS. (FOR OXYGEN PIPING USE SILVER SOLDER, FOR COMPRESSED AIR PIPING USE 95-5 TIN-ANTIMONY SOLDER)	BRONZE, SOLDER JOINT, GLOBE, CRANE NO. 1310 OR STOCKHAM B-14. CHECK, CRANE NO. 1342 OR 36, OR STOCKHAM B-309 OR B-345. GATE, CRANE NO. 1320 OR 426, OR STOCKHAM B-104 OR B-105.
25	STEEL, ASTM A106 OR A53, SCHEDULE 40, SEAMLESS, BLACK, SARAN OR POLYPROPYLENE-LINED	STEEL, ANSI B16.5, 150 PSI FLANGED, SARAN OR POLYPROPYLENE-LINED.	CAST STEEL PLUG, DIAPHRAGM OR CHECK, 150 PSI FLANGED, SARAN OR POLYPROPYLENE-LINED.
26	SAME AS GROUP NO. 11 (TYPICAL SERVICE - SLUDGE AND SEWAGE LINES)	SAME AS GROUP NO. 11.	ECCENTRIC PLUG, SYNTHETIC RUBBER FACED, DEZURIK 18F OR KEYSTONE 1522. SWING TYPE CHECK, CRANE NO. 383 OR POWELL FIG. 559. BALL, PRATT OR W-K-M.
27	POLYVINYL CHLORIDE GRAVITY SEWER PIPE, ASTM D3034, BELL AND SPIGOT.	POLYVINYL CHLORIDE, ANSI/ASTM D3034, BELL AND/OR SPIGOT.	--------
28	REINFORCED CONCRETE, AWWA C302, CLASS-SEE DRAWINGS. (TYPICAL SERVICE - PRESSURE PIPELINES)	SAME AS GROUP NO. 8.	AS INDICATED ON DRAWINGS.

LIST OF SAMPLE LINES

PIPE DESIGNATION	SAMPLE POINT

TYPICAL PIPE DESIGNATION:



NOTES:

GENERAL NOTE
ALTHOUGH SEVERAL PIPING MATERIALS ARE SHOWN THAT MAY BE USED FOR A GIVEN FUNCTION, ONLY THE CALLED PIPING MATERIAL SHOWN ON THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS SHALL BE USED. THE CONTRACTOR DOES NOT HAVE THE OPTION TO USE A DIFFERENT MATERIAL.

NOTE 1
PROPRIETARY NAMES HAVE BEEN QUOTED FOR IDENTIFICATION PURPOSES ONLY. SUBSTITUTIONS WILL BE PERMITTED SUBJECT TO PROVISIONS OF THE SPECIFICATIONS.

NOTE 2
LEAKAGE ALLOWANCE IS AS FOLLOWS:
(A) PIPES SO DESIGNATED SHALL SHOW ZERO LEAKAGE.
(B) PIPES SO DESIGNATED SHALL SHOW ZERO LEAKAGE FOR UNBURIED PIPE AND NOT MORE THAN 0.02 GALLON PER HOUR PER INCH DIAMETER PER 100 FEET OF BURIED PIPE.
(C) PIPES SO DESIGNATED SHALL NOT SHOW A LEAKAGE OF MORE THAN 0.45 GALLON PER HOUR PER INCH OF DIAMETER PER 100 FEET OF PIPE
(D) PIPES SO DESIGNATED SHALL NOT SHOW A LOSS OF PRESSURE OF MORE THAN 5 PERCENT
(E) PIPE SO DESIGNATED SHALL NOT SHOW A LOSS OF VACUUM OF MORE THAN 4 INCHES MERCURY COLUMN

NOTE 3
FOR FIELD TEST PROCEDURES AND ADDITIONAL TEST REQUIREMENTS, SEE PIPING SECTION OF SPECIFICATIONS.

NOTE 4
ANY DEVIATION FROM THE PIPING MATERIALS OR FIELD TEST REQUIREMENTS SHOWN WILL BE NOTED IN THE SPECIFICATION OR ON THE DRAWINGS.

NOTE 5
PIPING GROUP NUMBER SHOWN THUS • SHALL BE INSULATED. SEE PIPING SECTION OF SPECIFICATIONS FOR INSULATING MATERIALS.

NOTE 6
STATIC WATER TEST WITH SURFACE 5 FEET ABOVE HIGH POINT OF PIPE.

NOTE 7
INSPECTION AND TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE PLUMBING CODE.

NOTE 8
NO APPARENT LEAKS UNDER NORMAL OPERATING CONDITIONS.

NOTE 9
INSPECTION AND TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS.

NOTE 10
PIPING MATERIALS SHALL BE IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS.

NOTE 11
FOR VALVES 8 INCHES AND LARGER SEE VALVE SCHEDULE FOR SPECIAL VALVES SEE SPECIFICATIONS.

NOTE 12
CHANGE IN PIPING MATERIAL GROUP NUMBER IS INDICATED THUS: ——◆

NOTE 13
FOR PIPE LINING AND COATING, SEE SPECIFICATIONS.

NOTE 14
EXPOSED PIPING SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATIONS. COLORS TO BE SELECTED BY ENGINEER.

NOTE 15
PIPING MATERIAL SHALL BE NON-ABRASIVE FLEXIBLE RUBBER HOSE AND QUICK CONNECTION COUPLINGS WITH GROUP NO 1 AT EQUIPMENT.

NOTE 16
VALVES 2½" AND SMALLER MAY HAVE SCREWED ENDS.
VALVES 3" AND LARGER SHALL HAVE FLANGED ENDS UNLESS OTHERWISE INDICATED.

7/10/00

REV 042898

NO.	DATE	BY	DESCRIPTION

SCALE:

WARNING
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED J. McMahon
DRAWN J. ZaragoZa
CHECKED G. Hart

Kimley-Horn and Associates, Inc.
4431 Embarcadero Dr.
West Palm Beach, Florida 33407
Certificate of Authorization Number 696

MONTGOMERY WATSON
490 SAWGRASS CORPORATE PARKWAY
SUITE 300 SUNRISE, FLORIDA 33325
Certificate of Authorization Number 6771

Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL

PIPE SCHEDULE

SHEET
GM-1

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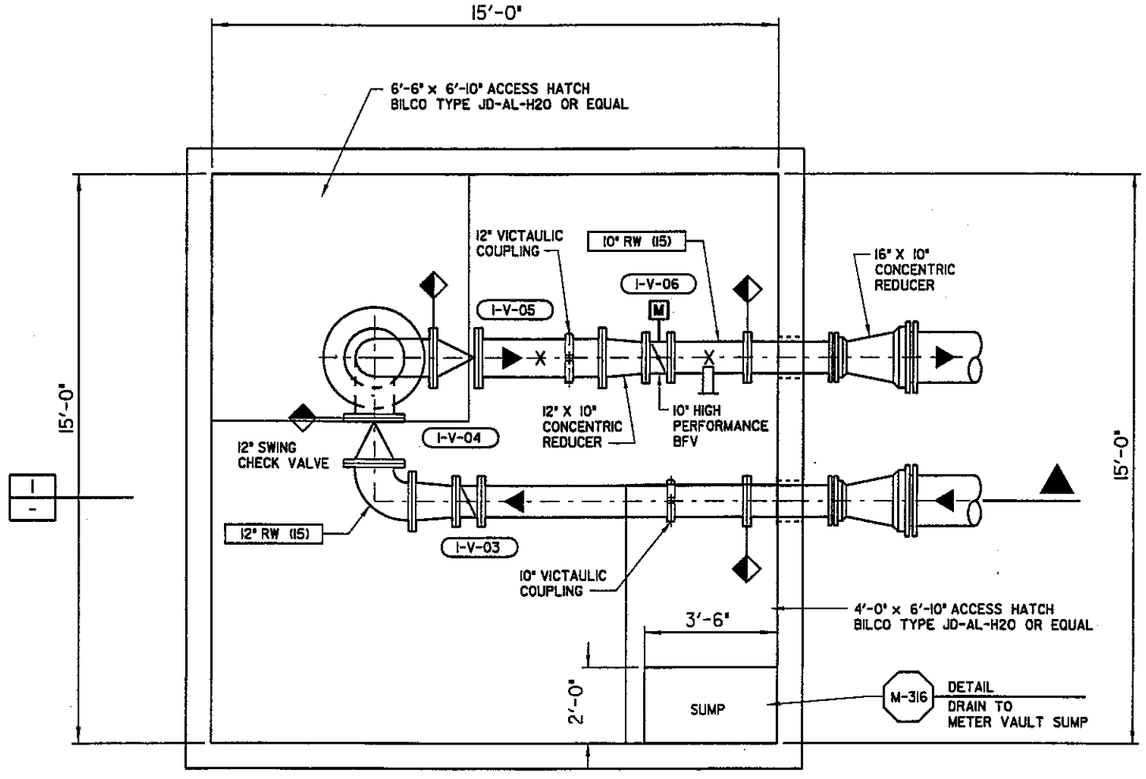

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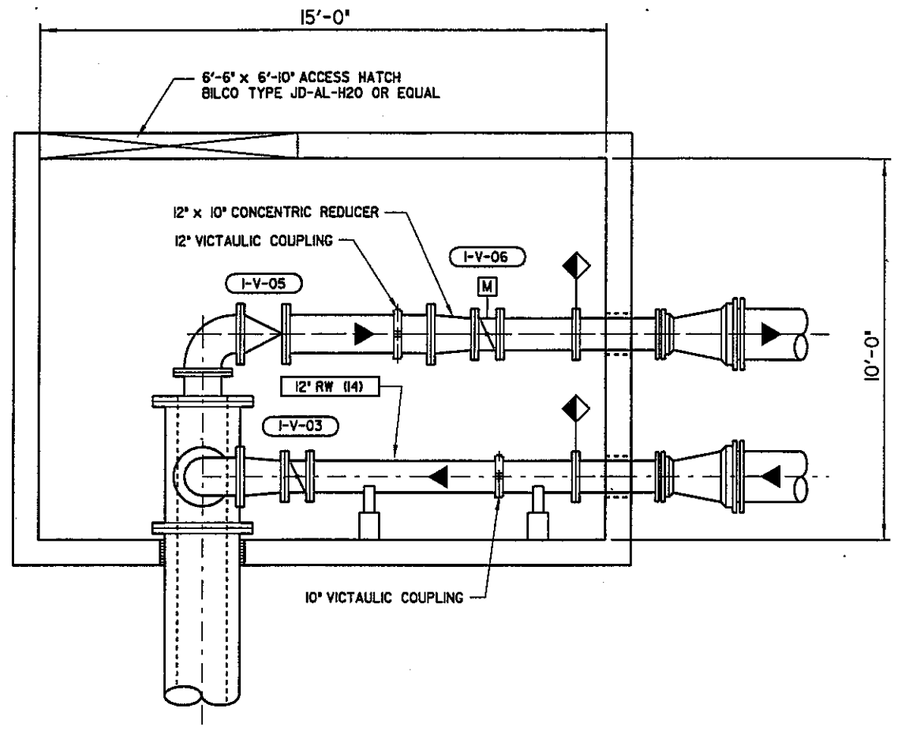

SECTION | 1
SCALE: ½" = 1'-0" | -

REV	DATE	BY	DESCRIPTION

SCALE:

WARNING
0 ½ 1
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DESIGNED J. McMahon
DRAWN J. ZarggaZa
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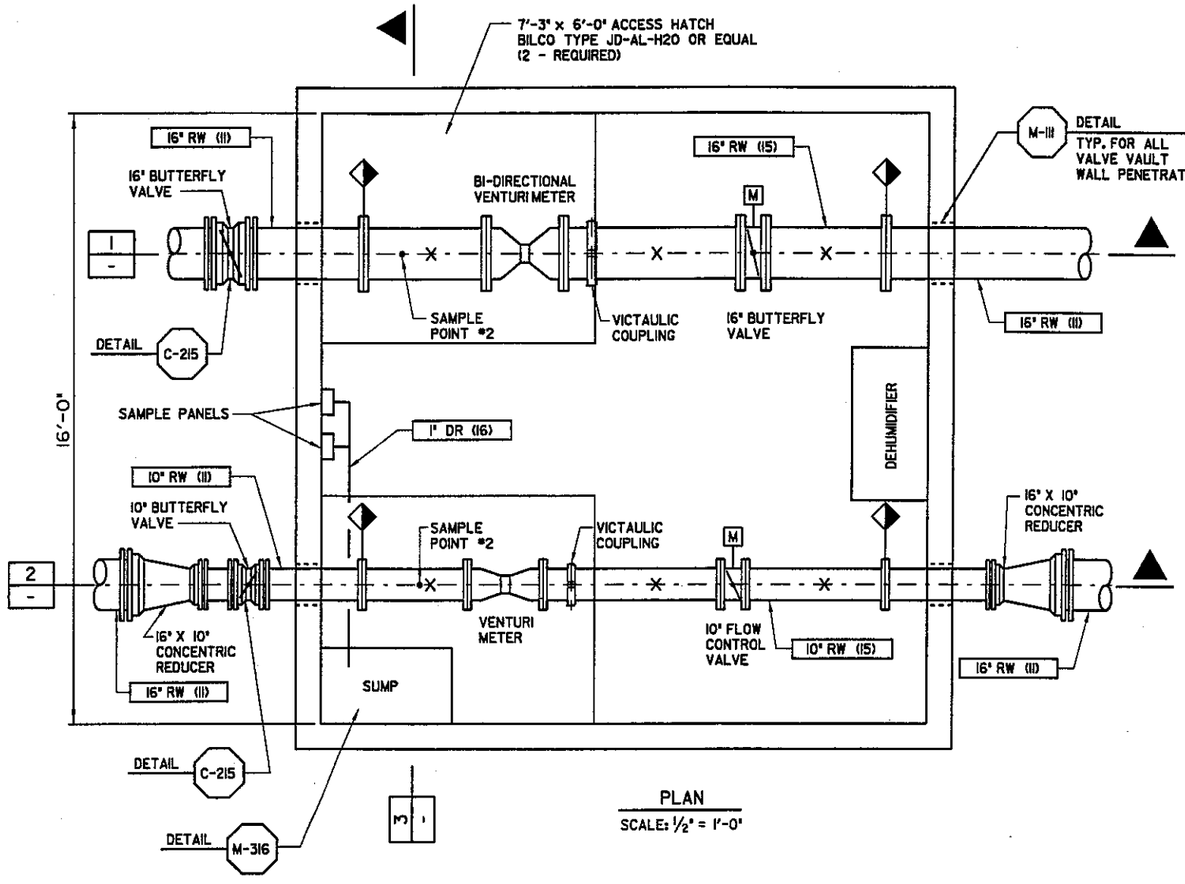
Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
ASR WELL PLAN AND SECTION

SHEET
M-1



PLAN
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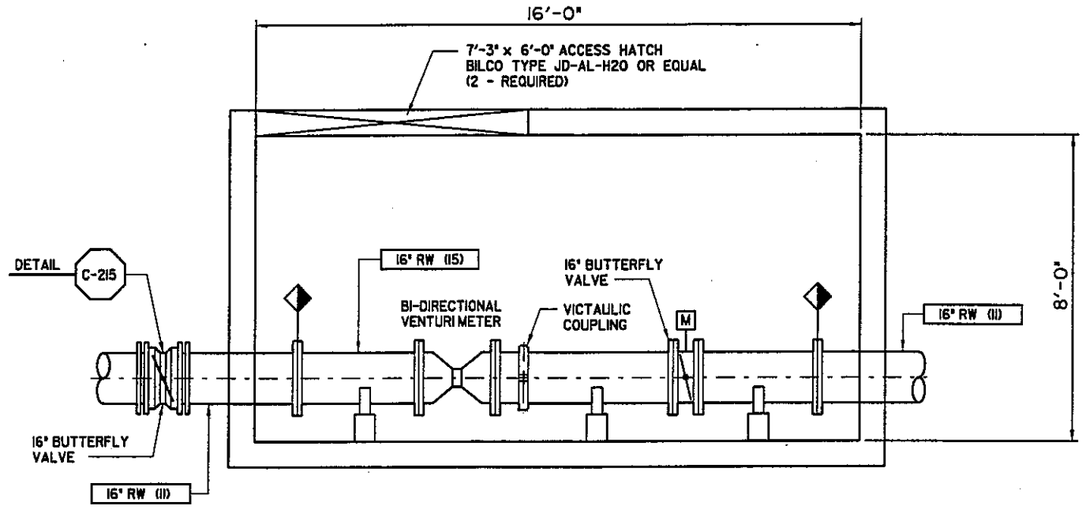

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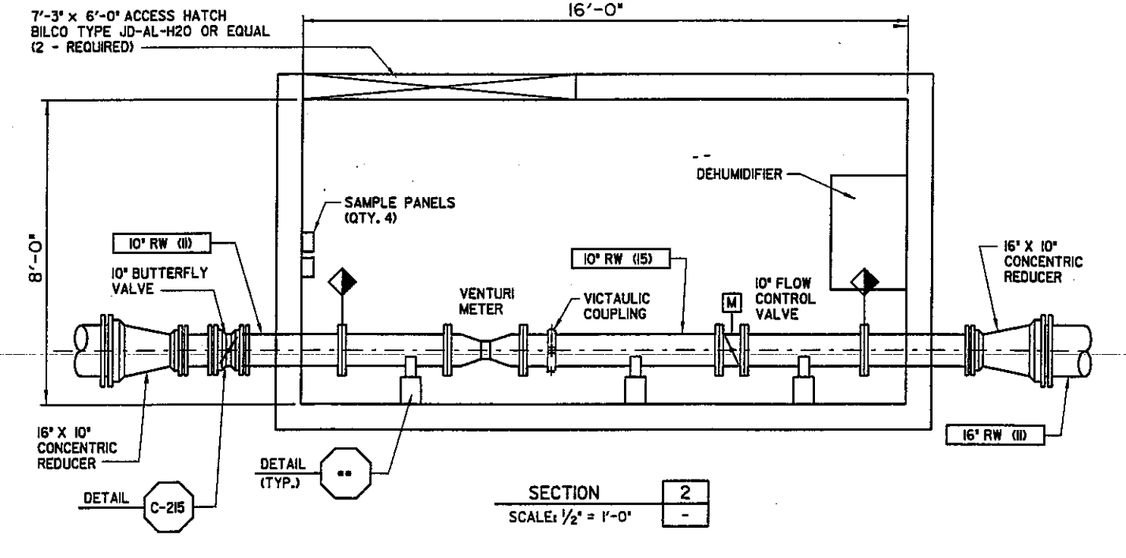

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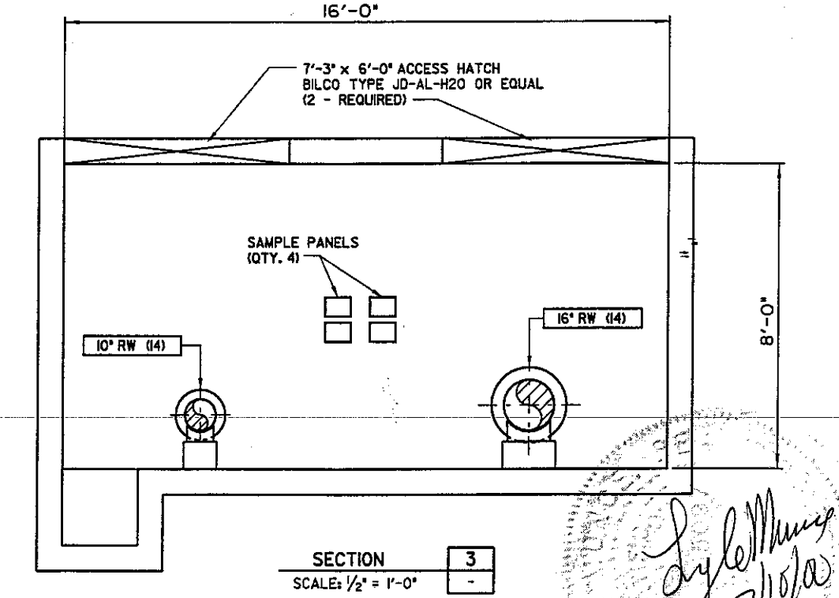

SECTION 3
SCALE: ½" = 1'-0"

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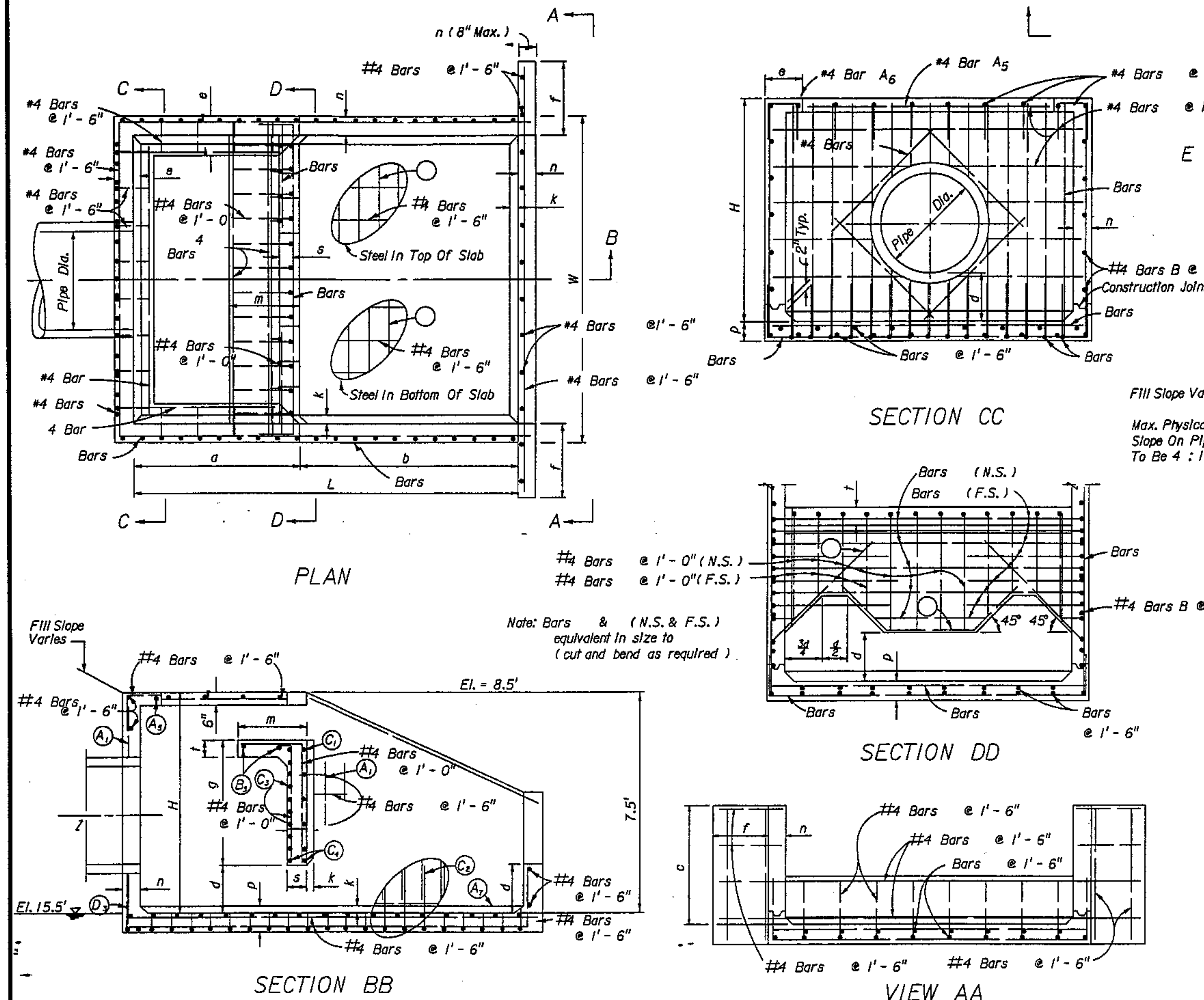
Palm Beach County
Water Utilities Department

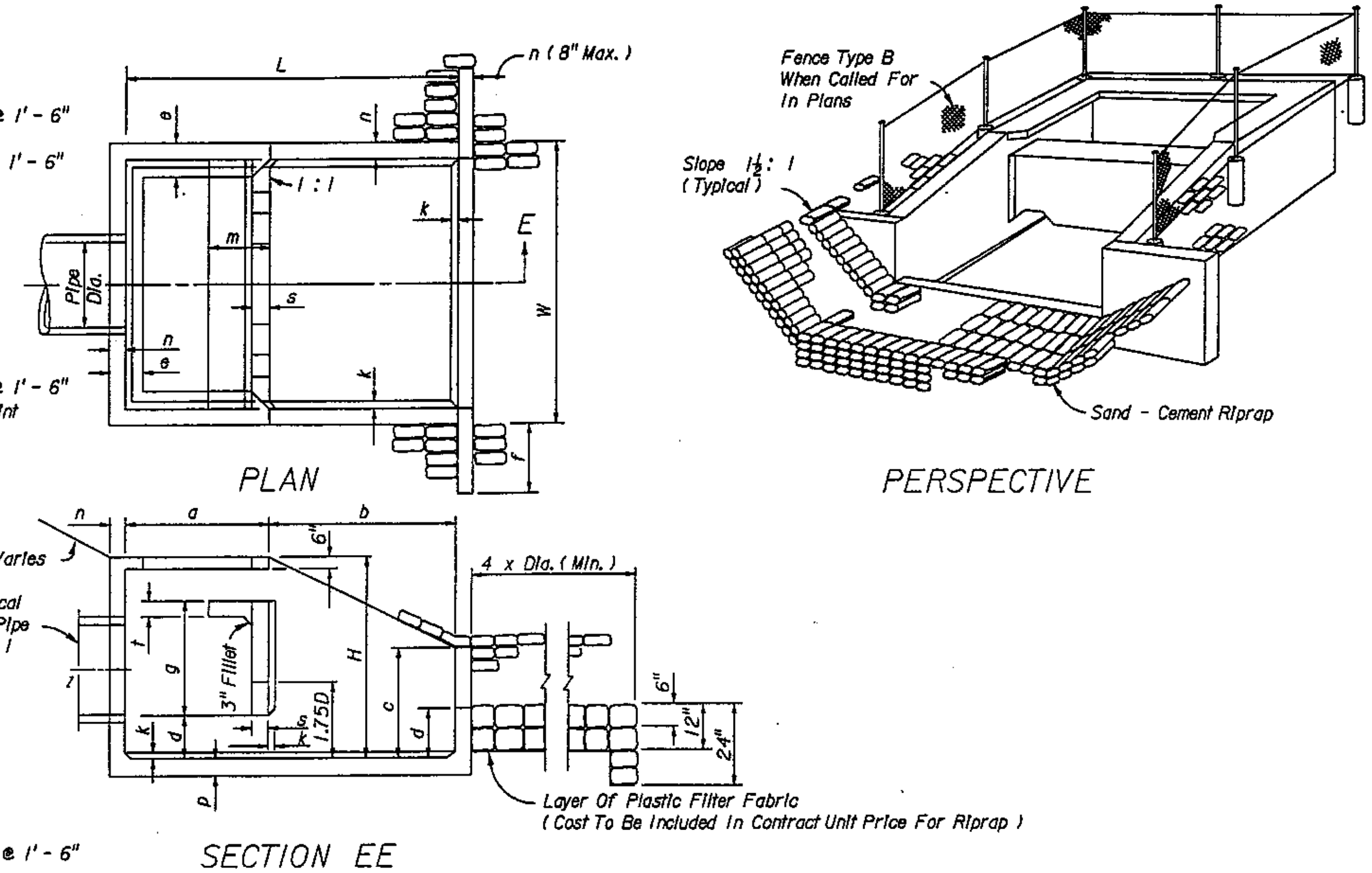
PALM BEACH COUNTY
HILLSBORO ASR WELL
VENTURI METER AND CONTROL VALVE VAULT

SHEET M-2

SCALE:
WARNING 0 ½ 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
DESIGNED J. McMahon
DRAWN J. Zaragoza
CHECKED G. Hart

JOB No. 3007.0082 FILE No. g:\proj\pbc\hillsboro_co\csr_well\mec\vm02.dgn Plot Date: 10-JUL-2000 21:44



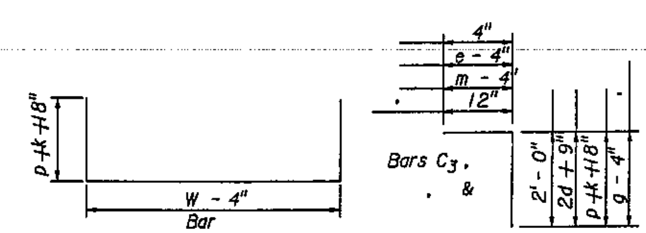


Pipe Size		Q (Max.)	Dimensions																Concrete Class I C.Y.	Reinf. Steel Lbs.	Sand Cement Riprap C.Y. Nom.
			Ft. - In.											Inches							
Dia. In.	Area S.F.	(csf)	W	H	L	a	b	c	d	e	f	g	m	n	p	s	t	k			
30	4.91	59	9-0	6-3	10-8	4-7	6-1	3-4	1-4	1-2	2-6	3-0	1-11	6	6-½	7	7	3	6.72	736	10.6
36	7.07	85	10-5	7-3	12-4	5-3	7-1	3-10	1-7	1-3	3-0	3-6	2-3	7	7-½	8	8	3	10.34	1,072	13.6
42	9.62	115	11-10	8-0	14-0	6-0	8-0	4-5	1-9	1-6	3-0	3-11	2-6	8	8-½	9	8	4	14.82	1,429	17.5
48	12.57	151	13-3	9-0	15-8	6-9	8-11	4-11	2-0	1-7	3-0	4-5	2-10	9	9-½	10	8	4	20.36	2,000	22.1
54	15.90	191	14-8	9-9	17-4	7-4	10-0	5-5	2-2	1-10	3-0	4-11	3-0	10	10-½	10	8	4	27.19	2,659	27.2
60	13.63	236	16-1	10-9	19-0	8-0	11-0	5-11	2-5	1-11	3-0	5-4	3-4	11	11-½	11	8	6	34.49	3,552	32.5
66	23.76	285	17-3	11-6	20-6	8-8	11-10	6-5	2-7	2-1	3-0	5-9	3-7	12	12-½	12	8	6	42.82	4,472	38.3
72	28.27	339	18-6	12-3	22-0	9-3	12-9	6-11	2-9	2-3	3-0	6-2	3-9	12	12-½	12	8	6	50.68	5,426	44.5

GENERAL NOTES

1. Chamfer all exposed edges ¾"
2. Concrete meeting the requirements of ASTM C - 478 (4000 psi) may be used in lieu of Class I Concrete in precast items manufactured in plants which are under the Standard Operating Procedures for the Inspection of precast drainage products.
3. Endwall to be paid for under the contract unit price for Class ~ Concrete (Endwalls) CY and Reinforcing Steel (Roadway) LB. Riprap to be paid for under the contract unit price for Riprap (Sand-Cement) (Roadway) CY. Cost of plastic filter fabric to be included in the contract unit price for riprap.
4. Fencing, when called for in the plans, to be paid for under the contract unit price for Fencing, Type B LF. Corner posts and end posts to be paid for under the contract unit price for Corner Post Assembly (Type B Fence) EA. and End Post Assembly (Type B Fence) EA. respectively. See Index No. 452 for details of Type B fencing.

BARS												
Pipe Size	Size (No.)	Spacing (Ft.- In.)	Size (No.)	Spacing (Ft.- In.)	Size (No.)	Spacing (Ft.- In.)	Size (No.)	Spacing (Ft.- In.)	Size (No.)	Spacing (Ft.- In.)	Size (No.)	Spacing (Ft.- In.)
30"	4	0 - 9½	4	1 - 6	5	0 - 11	4	0 - 9½	5	0 - 5½	4	0 - 9½
36"	5	1 - 0	4	1 - 6	5	0 - 10	5	1 - 0	5	0 - 5	5	1 - 0
42"	5	0 - 11	4	1 - 6	6	1 - 1	5	0 - 11	6	0 - 6½	5	0 - 11
48"	5	0 - 9½	4	1 - 0	6	1 - 0	5	0 - 9½	6	0 - 6	5	0 - 9½
54"	5	0 - 8½	4	0 - 10	7	1 - 1	5	0 - 8½	7	0 - 6½	5	0 - 8½
60"	6	0 - 10	5	1 - 1	7	1 - 0	6	0 - 10	7	0 - 6	6	0 - 10
66"	6	0 - 8½	5	0 - 11½	7	0 - 11	6	0 - 8½	7	0 - 5½	6	0 - 8½
72"	6	0 - 7½	5	0 - 10	7	0 - 10	6	0 - 7½	7	0 - 5	6	0 - 7½



Note : All bar dimensions are out to out.

BENDING DIAGRAM

REV	DATE	BY	DESCRIPTION

SCALE:

WARNING 0 ½ 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED B. Hachenburg
DRAWN J. Zaragoza
CHECKED G. Hart

Kimley-Horn and Associates, Inc. 4431 Embarcadero Dr. West Palm Beach, Florida 33407 Certificate of Authorization Number 696

MONTGOMERY WATSON 490 SAWGRASS CORPORATE PARKWAY SUITE 300 SUNRISE, FLORIDA 33325 Certificate of Authorization Number 6773

Palm Beach County Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
OUTFALL STRUCTURE PLAN AND SECTION

SHEET M-3

JOB No. 3007.0082 FILE No. g:\proj\pbc\hillsboro.co\asr_well\mech\m03.dgn Plot Date: 10-JUL-2000 2007

ELECTRICAL PLAN/LAYOUT

SYMBOL	DESCRIPTION
TTC	TELEPHONE TERMINAL CABINET
	TERMINAL JUNCTION BOX
	ELECTRICAL EQUIPMENT
X	CEILING MOUNTED DOWNLIGHT LUMINAIRE – SEE SCHEDULE FOR TYPE
X	FLOURESCENT LUMINAIRE, SURFACE OR LAY IN TYPE SEE SCHEDULE FOR TYPE
X	LUMINAIRE AND POLE – SEE SCHEDULE FOR TYPE
X	WALL MOUNTED LUMINAIRE – SEE SCHEDULE FOR TYPE
X	FLOOD LIGHTS – AIM IN THE DIRECTION SHOWN SEE SCHEDULE FOR TYPE
X	EXIT LIGHTS – SOLID SECTION IS DIRECTION OF FACE SEE SCHEDULE FOR TYPE
X	EMERGENCY LIGHT WITH BATTERY PACK SEE SCHEDULE FOR TYPE
	LIGHTING FIXTURE POWER AND SWITCHING LEGEND
X Y Z (TYP)	X=FIXTURE TYPE Y=PANEL–CIRCUIT BRKR Z=SWITCH IF NO Z INDICATED, CONNECT DIRECTLY TO CIRCUIT BREAKER.
[B2]	CONDUIT/CONDUCTOR – REFER TO CIRCUIT SCHEDULE
LPA–2	HOME RUN – PANEL AND CIRCUIT NUMBER SHOWN
	EXPOSED CONDUIT AND CONDUCTORS*
	UNDERGROUND CONDUIT AND CONDUCTORS*
	NOTE: * ALL UNMARKED CONDUIT RUNS CONSIST OF 2#12, 1#12G IN 3/4"C.
YCX	YARD CONDUIT. REFER TO YARD CONDUIT SCHEDULE
DB	DIRECT BURIED CONDUIT
	CONDUIT, STUBBED AND CAPPED AS SHOWN
G	GROUND WIRE, 4/0 UNLESS OTHERWISE NOTED
	6 FOOT GROUND WIRE PIGTAIL, 4/0 UNLESS OTHERWISE NOTED
	GROUND ROD – 5/8" x 20' COPPER CLAD UNLESS OTHERWISE NOTED
S	WALL SWITCH: 2- DOUBLE POLE, 3- THREE WAY, 4- FOUR WAY, WP-WEATHERPROOF, P- PILOT LIGHT, K- KEY OPERATED, D- DIMMER, CRE-CORROSION RESISTANT
	CONVENIENCE RECEPTACLE – 20A DUPLEX UNLESS SPECIFIED OTHERWISE WP-WEATHERPROOF, TL-TWIST LOCK, GFI-GROUND FAULT INTERRUPTER, C- CLOCK HANGER, CRE-CORROSION RESISTANT
	CONVENIENCE RECEPTACLE – 20A QUADROPLEX UNLESS SPECIFIED OTHERWISE
	CONVENIENCE RECEPTACLE – 20A DUPLEX UNLESS SPECIFIED OTHERWISE. LOCATED ABOVE COUNTER TOP GFI-GROUND FAULT INTERRUPTER
	CONVENIENCE RECEPTACLE – 20A DUPLEX UNLESS SPECIFIED OTHERWISE. MOUNTED FLUSH IN FLOOR.
30	RECEPTACLE, SPECIAL PURPOSE – AMPERAGE AS INDICATED.
	TELEPHONE/DATA RECEPTACLE (OUTLET BOX, 18" AFF) W – WALL MOUNTED, 54" AFF
	TELEPHONE/DATA RECEPTACLE MOUNTED FLUSH IN FLOOR
J	JUNCTION BOX NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. 4X = NEMA 4X SS
F	FIRE ALARM PULL STATION
F	FIRE ALARM HORN/STROBE LIGHT
F	FIRE ALARM STROBE LIGHT
W	ELEVATOR WARNING LIGHT

SYMBOL	DESCRIPTION
SD	FIRE ALARM SMOKE DETECTOR
HD	FIRE ALARM HEAT DETECTOR
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
BD R	BEAM DETECTOR, T=TRANSMITTER, R=RECEIVER
SD D	DUCT SMOKE DETECTOR
RTU	REMOTE TEST UNIT

ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
A	AMMETER, AMPERE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AS	AMMETER SWITCH, AMPERE SENSOR
ASU	AIR SUPPLY UNIT
ATS	AUTOMATIC TRANSFER SWITCH
BC	BYPASS CONTACTOR
BRKR	BREAKER
C	CONDUIT, CONTACTOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CMS	COMBINATION MOTOR STARTER
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
DC	DIRECT CURRENT
DIV	DIVISION
EF	EXHAUST FAN
EG	ELECTRICAL GROUND
ETM	ELAPSED TIME METER
EXST	EXISTING
FDR	FEEDER
F, FU	FUSE
FI	FLOW INDICATOR
FLR	FLOOR
FLUOR	FLUORESCENT
FM	FLOW METER
FS	FLOAT SWITCH, FLOW SWITCH
FT	FLOW TRANSMITTER
FUT	FUTURE
FVNR	FULL VOLTAGE NON–REVERSING STARTER
G	GREEN, GROUND
GALV	GALVANIZED
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GND	GROUND
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND/OFF/AUTO
HOR	HAND/OFF/REMOTE
HPS	HIGH PRESSURE SODIUM
HVAC	HEATING, VENTILATING & AIR CONDITIONING
IC	INTERRUPTING CAPACITY
I & C	INSTRUMENTATION AND CONTROL
INST	INSTANTANEOUS
IP	INSTRUMENT PANEL (PANELBOARD)
J, J–BOX	JUNCTION BOX
K	KEY INTERLOCK
KK	KIRK KEY INTERLOCK
LA	LIGHTNING ARRESTER
LC	LIGHTING CONTACTOR
LP	LIGHTING PANEL (PANELBOARD)
LR	LOCAL/REMOTE, LATCHING RELAY
LS	LIMIT SWITCH
LT FLEX	LIQUID TIGHT FLEX CONDUIT
LTG	LIGHTING
M	MAGNETIC CONTACTOR COIL OR MOTOR
MA	MILLIAMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MERC	MERCURY VAPOR
MH	MOTOR HEATER, MANHOLE
MLO	MAIN LUGS ONLY
MPZ	MINI POWER ZONE
MS	MOTOR STARTER
MSC	MANUFACTURER SUPPLIED CABLE
MT	MOUNT
MTD	MOTOR TEMPERATURE DETECTOR
N	NEUTRAL
NC	NORMALLY CLOSED
NEMA	NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION
NO	NORMALLY OPEN
NP	NAMEPLATE
NTS	NOT TO SCALE
OL	OVERLOAD RELAY
P	POLE
PB	PULL BOX
PC	PHOTOCELL
PH	PHASE
PM	PHASE MONITOR,POWER METER
PNL	PANEL
PP	POWER PANEL (480VAC)
PR	PAIR
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE CONDUIT
RCPT	RECEPTACLE
RMS	ROOT MEAN SQUARE
RS	RIGID STEEL CONDUIT
RGS	RIGID GALVANIZED STEEL CONDUIT
RTU	REMOTE TELEMETRY UNIT
SC	SURGE CAPACITOR
SF	SUPPLY FAN
SH	SPACE HEATER
S/N	SOLID NEUTRAL
SPD	SPEED
SSRVS	SOLID STATE REDUCED VOLTAGE STARTER
SST	STAINLESS STEEL
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
T	THERMOSTAT
TB	TERMINAL BOARD
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TS	THERMAL SWITCH
TSP	TWISTED SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UVR	UNDER VOLTAGE RELAY
V	VOLTMETER, VOLT
VFD	VARIABLE FREQUENCY DRIVE
VS	VOLTMETER SWITCH
W	WATT
WHD	WATTHOUR DEMAND METER
WP	WEATHERPROOF
XFMR	TRANSFORMER

ONE LINE DIAGRAMS, RISER DIAGRAMS AND SCHEMATICS

SYMBOL	DESCRIPTION
5	MOTOR, SQUIRREL CAGE INDUCTION UNLESS OTHERWISE NOTED – HORSEPOWER INDICATED
	OVERLOAD RELAY HEATER
1	MAGNETIC STARTER WITH NEMA SIZE INDICATED
M	MOTOR CIRCUIT PROTECTOR, MAGNETIC, 3 POLE UNLESS INDICATED OTHERWISE.
400	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
400 225	FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
100	SWITCH – CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
400 600	DRAWOUT CIRCUIT BREAKER, LOW VOLTAGE 600= FRAME RATING, 400=TRIP SETTING
400 600	DRAWOUT CIRCUIT BREAKER, MEDIUM VOLTAGE 600= FRAME RATING, 400=TRIP SETTING
600 400	DRAWOUT FUSED SWITCH, LOW OR MEDIUM VOLTAGE 600= FRAME RATING, 400=FUSE RATING
(3)	CURRENT TRANSFORMER, NUMBER OF WINDINGS INDICATED
480–120/208V 3ø 15 KVA, K–4 RATED	TRANSFORMER, VOLTAGES, PHASE AND RATING INDICATED AS APPLICABLE
	LIGHTNING ARRESTER
	CAPACITOR OR SURGE CAPACITOR
M	UTILITY METER
G	GENERATOR
X 0–600V	METER SCALE RANGE SHOWN IF REQUIRED A - AMPS PM - PHASE MONITOR V - VOLTS P - POWER METER
	FUSE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
	GROUND
CPT 120V	CONTROL TRANSFORMER
GFR	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
	REMOTE DEVICE
A	INDICATING LIGHT – LETTER INDICATES COLOR A - AMBER G - GREEN B - BLUE R - RED C - CLEAR W - WHITE
A	PUSH TO TEST AND CONNECT INDICATING LIGHT SCHEMATIC DIAGRAMS ONLY A - AMBER G - GREEN B - BLUE R - RED C - CLEAR W - WHITE

SYMBOL	DESCRIPTION
S_M	MANUAL MOTOR STARTER SWITCH, NEMA 4X UNLESS OTHERWISE NOTED. NUMBER OF POLES AS REQUIRED
PB 4X	PUSH–BUTTON STATION, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. 4X = NEMA 4X STAINLESS STEEL ENCLOSURE. SEE CONTROL DIAGRAMS FOR TYPE PUSH BUTTON REQUIRED
30 4X	NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE, NEMA 12 ENCLOSURE, 4X = NEMA 4X STAINLESS STEEL
F 40/60 4X	FUSED DISCONNECT SWITCH, SIZE INDICATED (60 = SWITCH RATING; 40 = FUSE RATING) 3 POLE UNLESS INDICATED OTHERWISE, NEMA 12 ENCLOSURE, 4X = NEMA 4X STAINLESS STEEL
LC 30 4X	LIGHTING CONTACTOR, CURRENT RATING INDICATED, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM FOR NUMBER OF POLES. 4X = NEMA 4X STAINLESS STEEL
2 4X	MAGNETIC STARTER, NEMA SIZE INDICATED, NEMA 12 ENCLOSURE, UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM. 4X = NEMA 4X STAINLESS STEEL
2 4X	COMBINATION (FUSE OR CIRCUIT BREAKER AS INDICATED). MAGNETIC STARTER, NEMA SIZE INDICATED, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL SCHEMATIC DIAGRAM. 4X = NEMA 4X STAINLESS STEEL
	ELECTRIC RESISTANCE HEATER
ETM	ELAPSED TIME METER
CRX	CONTACT – NORMALLY OPEN WITH COIL INDICATED
CRX	CONTACT – NORMALLY CLOSED WITH COIL INDICATED
CRX	CONTROL RELAY, X=SEQUENTIAL NUMBER
LRX (L)	LATCHING RELAY, X=SEQUENTIAL NUMBER L - LATCH, U - UNLATCH
TDX NOTC	TIME DELAY RELAY, X=SEQUENTIAL NUMBER NOTC=NORMALLY OPEN TIMED CLOSED NOTO=NORMALLY OPEN TIMED OPEN AFTER CLOSE NCTO=NORMALLY CLOSED TIMED OPEN NCTC=NORMALLY CLOSED TIMED CLOSED AFTER OPEN
	TEMPERATURE OPENS ON RISING TEMPERATURE, CLOSES ON FALLING TEMPERATURE
	CLOSES ON RISING TEMPERATURE, OPENS ON FALLING TEMPERATURE
H O A XOO OOX	SELECTOR SWITCH: MAINTAINED CONTACT WITH CONTACT POSITION INDICATED, CHART IDENTIFIES OPERATION

POSITION			
CKT.	HAND	OFF	AUTO
1	X	0	0
2	0	0	X

X - CLOSED CONTACT
0 - OPEN CONTACT

GENERAL

SYMBOL	DESCRIPTION
	CONNECTION POINT TO EQUIPMENT SPECIFIED, FURNISHED AND INSTALLED UNDER OTHER SECTIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS SECTION.
1"C,2#12,1#12G 1"C,I–25/C TYPE I	INDICATES RACEWAY AND CIRCUIT CONDUCTORS. FIRST NUMBER IS RACEWAY SIZE. THE FOLLOWING NUMBERS ARE THE CONDUCTOR QUANTITIES, SIZES, AND TYPES.
	DEMOLITION TO BE REMOVED OR DELETED
	LINE WEIGHT NEW EXISTING

NOTE:
THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT BE UTILIZED ON PROJECT.

PAUL MATURSE No. 41441 STATE OF FLORIDA PROFESSIONAL ENGINEER

KH12E01 PRELIMINARY JUNE 30, 2000

REV	DATE	BY	DESCRIPTION

SCALE: NONE

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED PSM
DRAWN PSM
CHECKED PFH

SUBMITTED
PAUL MATURSE 41441
PROJECT ENGINEER P. E. NO. DATE
MONTGOMERY WATSON P. E. NO. DATE

MONTGOMERY WATSON
490 Sawgrass Corporate Parkway
Suite 300 Sunrise, Florida 33325
Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
ELECTRICAL LEGEND

SHEET E–1
15 OF 23 SHEETS

GENERAL NOTES AND SPECIFICATIONS:

1. THE SCOPE OF WORK SHALL CONSIST PRIMARILY OF THE FOLLOWING:

   PROVIDE AND INSTALL LOCAL ASR WELL PANEL AS SHOWN ON THESE DESIGN DRAWINGS.

   INSTALL AND TERMINATE LOCAL RTU PANEL AND ANTENNA SUPPLIED BY AND AS DIRECTED BY THE INSTRUMENT/RTU CONTRACTOR.

   INSTALL ALL CONDUIT, CABLE, GROUNDING, APPURTENANCES, DISCONNECTS AND MISCELLANIOUS EQUIPMENT FOR AN OPERATING SYSTEM COMPLETE IN PLACE.

2. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO INSTALL THE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS. ITEMS NOT SHOWN BUT OBVIOUSLY NECESSARY FOR COMPLETION OF THE WORK SHALL BE INCLUDED.

3. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NATIONAL ELECTRICAL SAFETY CODE, LOCAL CODES, CITY CODES AND ALL PALM BEACH COUNTY CODES.

4. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, INSPECTIONS AND APPROVALS AND TO INCLUDE ALL FEES AS PART OF HIS BID IF NOT OTHERWISE NOTED.

5. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE ENGINEER AND OWNER.

6. THE CONTRACTOR SHALL, BEFORE SUBMITTING HIS BID, VISIT THE SITE OF THE PROJECT AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS. NO ALLOWANCE WILL BE MADE FOR EXISTING CONDITIONS OR FAILURE OF THE CONTRACTOR TO OBSERVE THEM.

7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL LOCAL UTILITIES, INCLUDING THE POWER AND TELEPHONE UTILITIES TO MEET ALL OF THEIR INSTALLATION REQUIREMENTS. ALL FEES, LABOR, EQUIPMENT OR MATERIALS NECESSARY TO MEET THESE REQUIREMENTS IS TO BE INCLUDED IN THE BID. THE CONTRACTOR SHALL OBTAIN, DELIVER AND INSTALL ALL CONDUITS, PULL-BOXES AND EQUIPMENT AS REQUIRED BY THE UTILITIES TO THEIR SPECIFICATIONS.
   POWER UTILITY REPRESENTATIVE: DEAN TRAMONTANO 561-640-5262

8. ALL EQUIPMENT AND MATERIAL SHALL BE UNUSED AND U.L. LISTED. ALL REFERENCES TO A PARTICULAR MANUFACTURER ARE GIVEN ON AN "APPROVED EQUAL" BASIS.

9. THE CONTRACTOR IS RESPONSIBLE TO TEST ALL SYSTEMS INSTALLED OR MODIFIED UNDER THIS PROJECT AND REPAIR OR REPLACE ALL DEFECTIVE WORK TO THE SATISFACTION OF THE ENGINEER AND OWNER.

10. ALL EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE.

11. ALL CONDUCTORS SHALL BE COPPER. NO ALUMINUM ALLOWED UNLESS SPECIFICALLY INDICATED ON DRAWINGS.

12. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL ELECTRICAL & CONTROL EQUIPMENT AND MATERIAL.

13. ALL CONTROL PANELS SHALL BE CONSTRUCTED BY A UL 508A APPROVED PANEL VENDOR AND SHALL BEAR A UL 508A LABEL ON THE PANEL.

14. THE DRAWINGS ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUIT RUNS. THESE ARE TO BE COORDINATED WITH THE OTHER TRADES SO THAT CONFLICTS ARE AVOIDED PRIOR TO INSTALLATIONS.

15. ALL LOCATIONS OF EQUIPMENT, PANELS ETC. ARE SHOWN FOR ILLUSTRATION PURPOSES. CONTRACTOR SHALL VERIFY AND COORDINATE EXACT LOCATION AND SIZE WITH ALL SUBCONTRACTORS AND EQUIPMENT SUPPLIERS PRIOR TO ANY INSTALLATION AND THEN INSTALL AS SUCH WITH CORRESPONDING CONDUIT STUB-UPS.

16. SEE OTHER DISCIPLINE DRAWINGS FOR COORDINATION OF ALL DRAWINGS. ANY CONFLICTS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION AND MOVEMENT OF CONDUITS OR OTHER ELECTRICAL EQUIPMENT SHALL BE ACCOMPLISHED WITHOUT ANY ADDITIONAL COST FOR THE OWNER.

17. LOCATIONS OF MANHOLES, HANDHOLES AND PULL BOXES ARE APPROXIMATE. CONTRACTOR SHALL COORDINATED EXACT LOCATION WITH EXSITING AND NEW PIPING OR CONDUIT AND ADJUST ACCORDINGLY.

18. NOT ALL CONDUITS SHOWN ON RISER AND ONE-LINE DIAGRAMS ARE SHOWN ON BUILDING LAYOUTS. CONTRACTOR SHALL SUPPLY ALL CONDUITS AND CABLES AS SHOWN ON RISER AND ONE-LINE DIAGRAMS.

19. ALL CIRCUITS SHALL BE IDENTIFIED IN JUNCTION BOXES, PULL BOXES, CONTROL PANELS, PANELBOARDS, LIGHTING POLES, CONTROLLERS AND SERVICE POINTS. IDENTIFICATION SHALL MATCH PANELBOARD SCHEDULES.

20. EXPOSED RUNS OF CONDUITS SHALL BE INSTALLED WITH RUNS PARALLEL OR PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS OR INTERSECTIONS OF VERTICAL PLANES AND CEILINGS, WITH RIGHT ANGLE TURNS CONSISTING OF SYMMETRICAL BENDS OR PULL BOXES AS INDICATED ON THE DRAWINGS. BENDS AND OFFSETS SHALL BE AVOIDED WHERE POSSIBLE.

21. INSTRUMENTATION IS LOW VOLTAGE SIGNALS SUCH AS 4-20MA, TELEPHONE COMMUNICATION, FIRE ALARM COMMUNICATION. POWER CONDUIT SHALL ONLY CROSS INSTRUMENTATION CONDUIT PERPENDICULARLY AT RIGHT ANGLES WITH 6" SEPARATION.

22. CONDUCTOR PULLING TENSIONS SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATION. CONTRACTOR SHALL INSTALL PULL BOXES TO MEET MANUFACTURER'S REQUIREMENTS.

23. MINIMUM DISTANCE ALLOWED BETWEEN POWER CONDUITS AND INSTRUMENTATION CONDUITS SHALL BE:

VOLTAGE	DISTANCE
4160V	3 FT
480V	2 FT
120V	1 FT

24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONDUIT AND WIRING INSTALLATION FOR ALL VENDOR PROVIDED EQUIPMENT (PACKAGE SYSTEMS). IF THE SHOP DRAWINGS DIFFER FROM THE DESIGNED FACILITIES, THE CONTRACTOR SHALL REDESIGN THE FACILITIES AND SUBMIT THE REVISED DESIGN FOR THE ENGINEER'S APPROVAL ALONG WITH THE SHOP DRAWINGS. THERE SHALL BE NO ADDITIONAL COST TO THE OWNER FOR THE REDESIGN NOR FOR ANY ADDITIONAL CONDUITS AND WIRING. DURING SUBMITTAL THE CONTRACTOR SHALL VERIFY ALL SUPPLIED BREAKER SIZES FOR ALL PACKAGED SYSTEMS SUCH AS HVAC, EXHAUST FANS, MIXERS, CHEMICAL PUMPS ETC. AND MODIFY ALL BREAKERS IN MCC'S AND PANELBOARDS ACCORDINGLY WITHOUT ANY ADDITIONAL COST TO THE OWNER.

25. ALL EXCAVATIONS FOR CONDUITS, HANDHOLES, MANHOLES AND PULLBOXES NEAR EXISTING PIPING, CONDUIT AND EQUIPMENT SHALL BE HAND EXCAVATED AND COORDINATED WITH PLANT ENGINEER.

26. MINIMUM DEPTH FROM TOP OF DUCTBANKS OR CONDUITS TO FINISHED GRADE SHALL BE 24" UNLESS OTHERWISE NOTED.

27. COLORED WARNING TAPE 6" WIDE SHALL BE INSTALLED 8" BELOW FINISHED GRADE DIRECTLY ABOVE ALL UNDERGROUND YARD CONDUITS ACCORDING TO THE FOLLOWING SCHEDULE:
   POWER: RED
   ALL OTHER CONDUITS: GREEN

28. CONTRACTOR SHALL RESTORE SIDEWALKS, ROADWAYS, SOD AND SPRINKLER SYSTEM PIPING TO MATCH EXISTING, AFTER THE COMPLETION OF THE CONDUIT AND PULLBOX INSTALLATION.

29. GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH NEC, ARTICLE 250. THE GROUNDING SYSTEM TEST SHALL NOT EXCEED A 48 HOUR SPAN DRY RESISTANCE OF 10 OHMS. ADDITIONAL GROUNDING TO MEET THIS REQUIREMENT SHALL BE INSTALLED AT NO EXTRA COST. GROUNDING AND BONDING CONNECTIONS SHALL NOT BE PAINTED. ALL GROUNDING CONNECTIONS SHALL BE EXOTHERMIC UNLESS SPECIFICALLY INDICATED OTHERWISE.

30. AN EQUIPMENT GROUND WIRE SIZED PER NEC SHALL BE PULLED IN ALL ELECTRICAL CONDUITS, POWER AND CONTROL, WHETHER OR NOT INDICATED ON THE PLANS.

31. ALL ENCLOSURES, TJB, WIREWAY, PULL BOXES ETC. SHALL CONTAIN A GROUNDING BUS. CONNECT ALL RACEWAY BONDS TO THIS BUS VIA GROUNDING BUSHING AND EXTEND BONDING JUMPER FROM THIS BUS TO THE ENCLOSURE.

32. PRIMARY BUILDING GROUNDING SHALL BE AN EMBEDDED GRID OF MINIMUM #4/0 AWG WIRE INSTALLED IN THE FOUNDATION AND AROUND THE BUILDING PERIMETER TO FORM A COMPLETE LOOP. SECONDARY GROUND CONNECTIONS TO ALL METAL EQUIPMENT, HAND RAILS, STRUCTURAL STEEL, CONCRETE PADS, REBAR ETC. SHALL HAVE A MINIMUM #4 STRANDED COPPER CONDUCTOR BONDED USING APPROVED LUGS OR EXOTHERMIC CONNECTIONS. ALL EQUIPMENT GROUNDING CONDUCTORS PENETRATING CONCRETE SLABS OR FINISHED GRADE SHALL HAVE A 72" CONDUCTOR PIGTAIL AT EACH LOCATION FOR CONNECTION TO EQUIPMENT.

33. GROUND SURROUNDING YARD FENCE AND ALL YARD LIGHTING FIXTURES WITH MINIMUM #4 STRANDED COPPER CONDUCTORS BELOW GRADE TO SITE GROUNDING GRID PER NFPA 54/70.

34. ALL CONCRETE ENCASED DUCTBANKS SHALL CARRY A MINIMUM #4/0 AWG BARE COPPER GROUND WIRE, OVER THE ENTIRE LENGTH, WHICH SHALL BE CONNECTED TO THE SITE GROUNDING GRID AND GROUND RODS LOCATED CONNECTING MANHOLES, HANDHOLES OR PULL BOXES.

35. CONTRACTOR SHALL CORE DRILL EXISTING CONCRETE WALLS, FLOORS, MANHOLES, HANDHOLES AND PULL BOXES FOR CONDUIT PENETRATIONS. SEAL PENETRTATIONS WITH NON-SHRINK GROUT OR APPROPRIATE FIRE RATED DEVICES WHERE APPLICABLE.

36. ALL CONDUITS PENETRATING RATED FIRE WALLS OR RATED FIRE FLOORS SHALL BE INSTALLED WITH U.L. APPROVED DEVICES TO MAINTAIN THE FIRE RATING OF THE WALL OR FLOOR PENETRATED.

37. PROVIDE CONDUIT DUCT SEAL AT ALL CONDUIT ENDS.

38. ALL SPARE CONDUITS SHALL BE SEALED WITH A CAP AT BOTH ENDS AND A PULL STRING INSTALLED WITH IDENTIFICATION ON BOTH ENDS.

39. ALL RECEPTACLES SHALL BE INSTALLED 18" AFF UNLESS OTHERWISE NOTED. LIGHT SWITCHES SHALL BE MOUNTED 48" AFF UNLESS OTHERWISE NOTED.

40. ALL RECEPTACLES WITHIN 6' OF A SINK SHALL BE GFI.

41. FLEXIBLE CONDUITS SHALL BE USED TO TERMINATE ALL MOTORS AND OTHER VIBRATING EQUIPMENT AND SHALL BE BETWEEN 18" AND 3' IN LENGTH.

42. ELECTRICAL PULL BOXES SHALL BE SUPPLIED WITH PVC JUNCTION BOXES AND A STEEL TRAFFIC-RATED COVER MARKED "ELECTRICAL" OR "SIGNAL".

43. TYPEWRITTEN PANEL SCHEDULES SHALL BE INSTALLED IN EACH PANELBOARD, AND TYPEWRITTEN TERMINAL BLOCK SCHEDULES IN EACH CONTROL CABINET.

44. ALL TVSS SHALL BE INTEGRAL TO THE NEW EQUIPMENT SHOWN AND SUPPLIED AS ONE UNIT AND ONE U.L. ENTITY.

45. AS PART OF THE ELECTRICAL SUBMITTAL, CONTRACTOR SHALL PROVIDE A LAYOUT OF THE ELECTRICAL ROOM SHOWING SIZES OF ALL EQUIPMENT AND THIER SPATIAL RELATIONSHIPS.

46. BRANCH CIRCUITS EXCEEDING 100 FT IN LENGTH SHALL BE WIRED WITH MINIMUM #10 AWG WIRES.

47. ALL MATRERIAL IN DESIGNATED CORROSIVE AREAS SHALL BE NEMA 4X STAINLESS STEEL OR NON-METALLIC.

48. ALL OUTDOOR LIGHTING FIXTURES SHALL BE OF COPPER FREE CONSTRUCTION.

49. CONTRACTOR SHALL BALANCE PANELBOARD LOADS AT THE END OF THE PROJECT.

NOTE:
THIS IS A STANDARD NOTE SHEET. SOME NOTES APPEARING ON THIS SHEET MAY NOT BE APPLICABLE TO THIS PROJECT.

KH12E02 PRELIMINARY JUNE 30, 2000

REV	DATE	BY	DESCRIPTION

SCALE: NONE

WARNING: 0 1/2 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED PSM
DRAWN PSM
CHECKED PFH

SUBMITTED
PAUL MATURSE — 41441 — P. E. NO. — DATE
PROJECT ENGINEER
MONTGOMERY WATSON — P. E. NO. — DATE

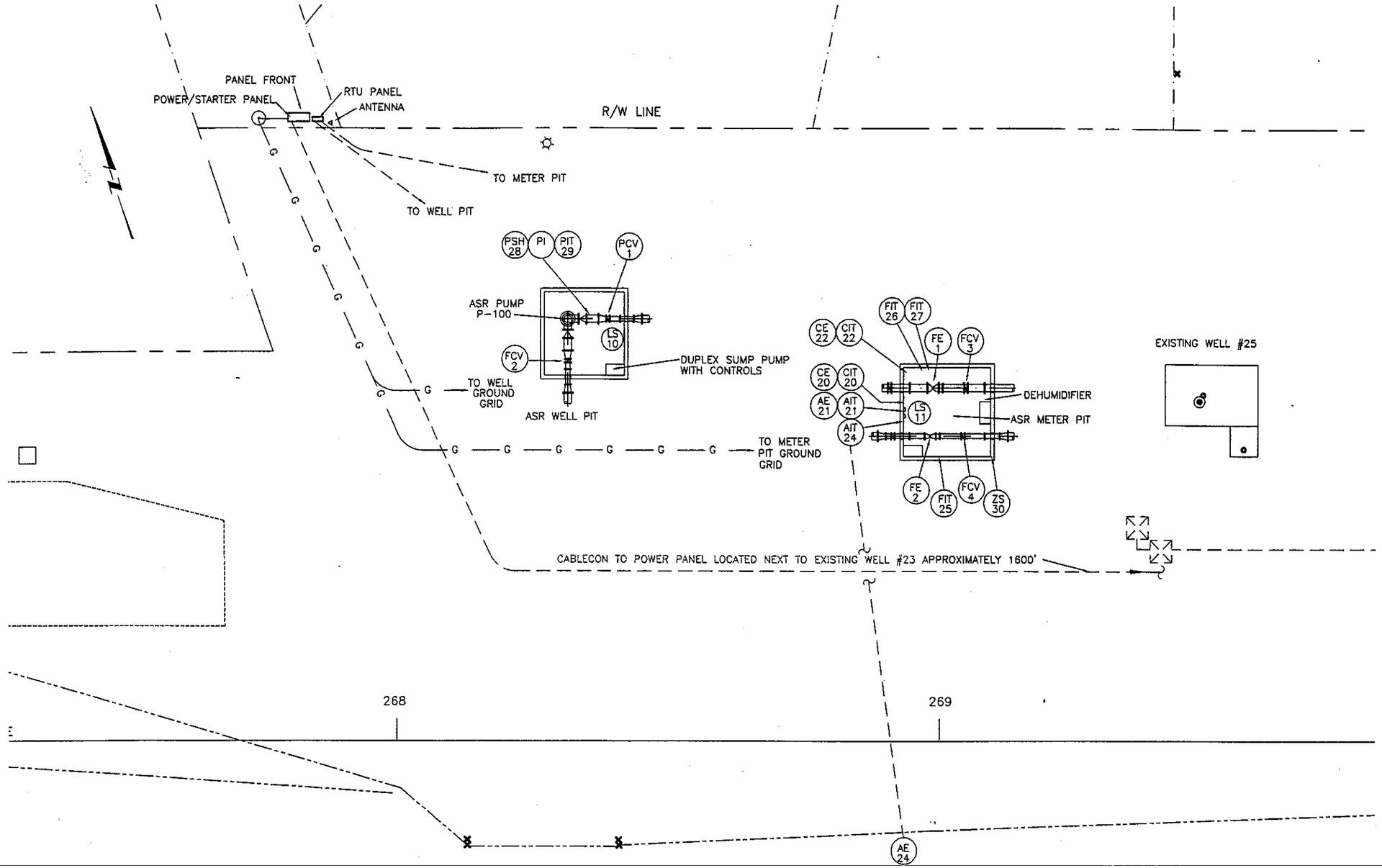
MONTGOMERY WATSON
490 Sawgrass Corporate Parkway
Suite 300 Sunrise, Florida 33325
Certificate of Authorization Number 8773

Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
ELECTRICAL GENERAL NOTES

SHEET E-2
16 OF 23 SHEETS

HILLERS ELECTRICAL ENGINEERING, INC.
23257 STATE ROAD 7, SUITE 100
BOCA RATON, FL 33428
(561) 451-9185
(561) 451-4835 FAX
LICENSE NO. EB 0006877



ASR WELL SITE ELECTRICAL PLAN

KH12E03 PRELIMINARY JUNE 30, 2000

REV	DATE	BY	DESCRIPTION

SCALE: 1"=10'-0"

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED PSM
DRAWN PSM
CHECKED PFH

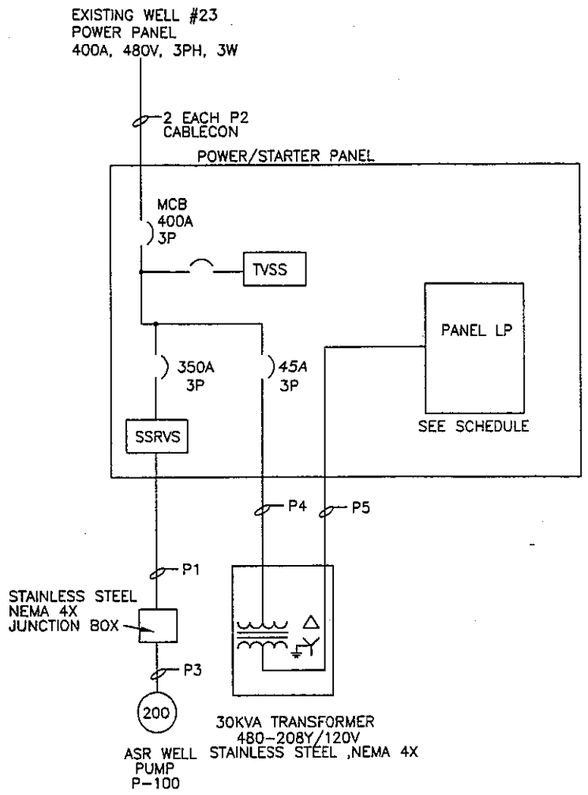
SUBMITTED
PAUL MATURSE — 41441 — PROJECT ENGINEER — P. E. NO. — DATE
MONTGOMERY WATSON — P. E. NO. — DATE

MONTGOMERY
490 Sawgrass Corporate Parkway
Suite 300 Sunrise, Florida 33325
Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
ELECTRICAL SITE PLAN

SHEET E-3
17 OF 23 SHEETS



SINGLE LINE DIAGRAM

SERVICE CALCULATION

DESCRIPTION	HP/KVA	CONNECTED	DEMAND
WELL PUMP	200 HP	192 A	192 A
TRANSFORMER	30 KVA	36 A	22 A
SUB TOTAL		228 A	214 A
25% OF LARGEST MOTOR			48 A
TOTAL			262 A

SECONDARY: 120/208V
CONNECTED LOAD IN KVA : 7.6
TOTAL AMPS : A=44 ;B=36 ;C=30

PHASE : 3PH
BUS SIZE : 100A
EQUIPPED SPACE : 24

LOCATION : INTERIOR NEMA 12
WIRE : 4W
MAIN: 100A

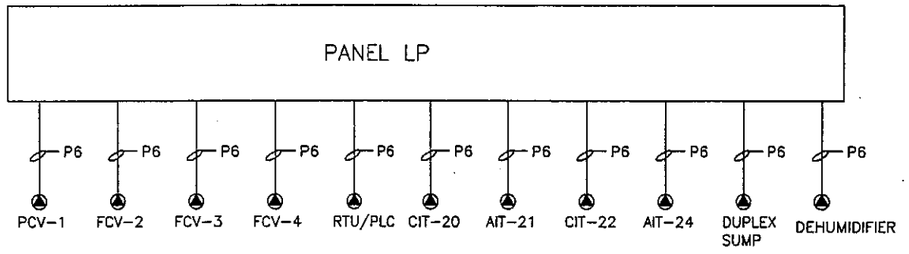
MOUNTING : SURFACE
TYPE : BRKR

LOAD IN AMPS A	B	C	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN AMPS A	B	C
10			PCV-1	20/1	1	2	20/1	RTU/PLC	10		
	10		FCV-2	20/1	3	4	20/1	CIT-20		4	
		10	FCV-3	20/1	5	6	20/1	AIT-21			4
10			FCV-4	20/1	7	8	20/1	CIT-22	4		
	8		WELL DUPLEX SUMP PUMP	20/2	9	10	20/1	AIT-24		4	
		8			11	12	20/1	RECEPTACLE GFI			8
10			METER PIT DEHUMIDIFIER	20/2	13	14	20/1	SPARE			
	10				15	16		SPACE			
			SPACE		17	18					
					19	20					
					21	22					
					23	24					

LP SCHEDULE

CABLECON NOTE:

1. PROVIDE AND INSTALL ONE CONTINUOUS CONDUIT RUN WITH CABLE IN CONDUIT AS SHOWN ON THESE DRAWINGS (MANUFACTURED BY INTEGRAL CORPORATION MODEL CABLECON). THE CONDUIT SHALL BE HDPE SCHEDULE 40. BEFORE BIDDING VERIFY EXACT LENGTH OF CONDUIT RUN ON SITE AND INCLUDE IN BID PRICE.
2. TRANSITION CABLECON TO SCHEDULE 80PVC CONDUIT FOR PANEL ENTRANCE. EXPOSED CABLECON WILL NOT BE ACCEPTABLE.
3. CONTRACTOR SHALL VERIFY MAXIMUM 3% VOLTAGE DROP CALCULATION BASED ON FINAL INSTALLATION PLAN AND ADJUST CONDUCTOR'S SIZE ACCORDINGLY.
4. USE NCI INDUSTRIES INSULATED IN-LINE SPLICER/REDUCER OR EQUAL TO ADAPT WIRE SIZE TO FIT BREAKER LUGS.
5. ALL UNDERGROUND RACEWAYS SHALL BE INSTALLED A MINIMUM OF 30 INCHES BELOW FINAL GRADE. INSTALL ELECTRICAL WARNING TAPE 24 INCHES ABOVE EACH UNDERGROUND CABLE OR CONDUIT.
6. ALL NEW AND EXISTING POWER CABLE USED IN THIS PROJECT SHALL BE MEGGERED FROM THE BRANCH CIRCUIT BREAKER TO THE FINAL CONNECTION. ALL NEW CABLE SHALL BE MEGGERED AT A MINIMUM OF 100 MEGOHM. TESTING SHALL BE WITNESSED BY THE OWNER OR OWNERS REPRESENTATIVE. RETAIN ALL TEST RECORDS AS PERMINENT RECORDS TO BE DELIVERED AT THE COMPLETION OF THE PROJECT.
7. INTEGRAL CORPORATION, DALLAS TEXAS, 800-847-7661

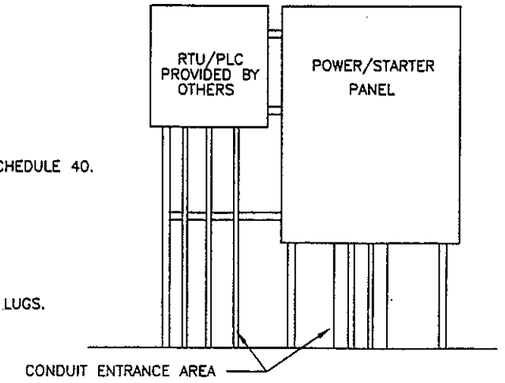


PANEL LP RISER

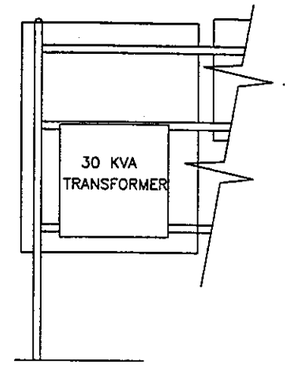
CONDUIT AND CABLE SCHEDULE		
NO	CONDUIT SIZE	CABLE
P1	3"	3-350 KCMIL, 1#3G
P2	CABLECON	3-500 KCMIL, 1#4/0G
P3	AS REQ.	SUPPLIED WITH PUMP
P4	1"	3#8, 1#10G
P5	1 1/2"	4#3, 1#8G
P6	3/4"	2#12, 1#12G
P7	3/4"	4#12, 1#12G
A1	3/4"	1#16 TSP
A2	3/4"	2#16 TSP
A3	3/4"	SUPPLIED WITH INSTRUMENT
C1	3/4"	2#14, 1#14G
C2	3/4"	4#14, 1#14G
C3	1"	6#14, 1#14G
C4	1"	8#14, 1#14G

NOTES

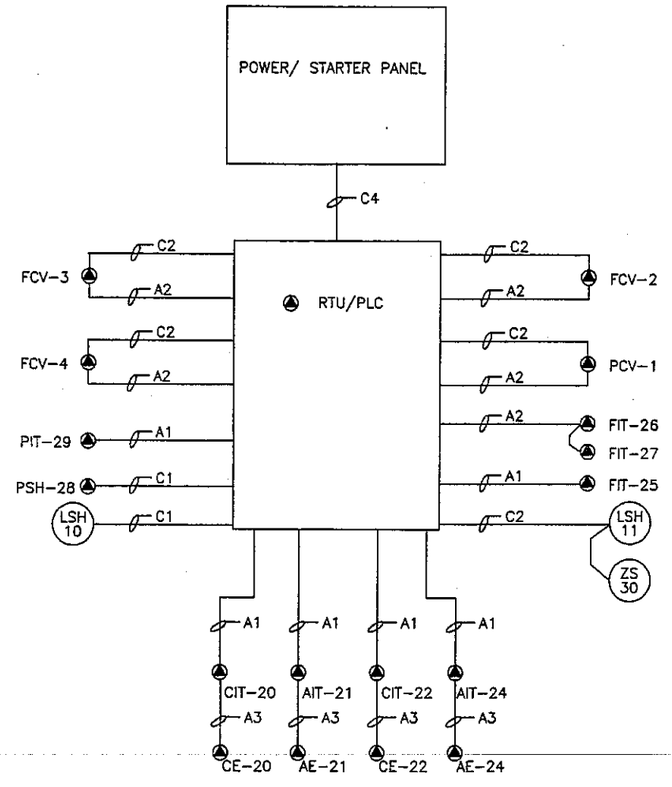
1. INSTALL PULL BOXES AS NECESSARY IN ALL CONDUIT RUNS GREATER THAN 250 FEET OR WITH MORE THAN 270° TOTAL CONDUIT BENDS.



PANEL LAYOUT
FRONT VIEW
NTS



PANEL LAYOUT
PARTIAL REAR VIEW
NTS



INSTRUMENTATION & CONTROL CONDUIT RISER DIAGRAM

HILLERS ELECTRICAL ENGINEERING, INC.
33257 STATE ROAD 7, SUITE 100
BOCA RATON, FL 33428
(561) 451-9188
(561) 451-4666 FAX
LICENSE NO: EB 0006877

REV	DATE	BY	DESCRIPTION

SCALE: AS NOTED

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED PSM
DRAWN PSM
CHECKED PFH

SUBMITTED
PAUL MATURSE — 41441 — P. E. NO. — DATE
PROJECT ENGINEER
MONTGOMERY WATSON — P. E. NO. — DATE

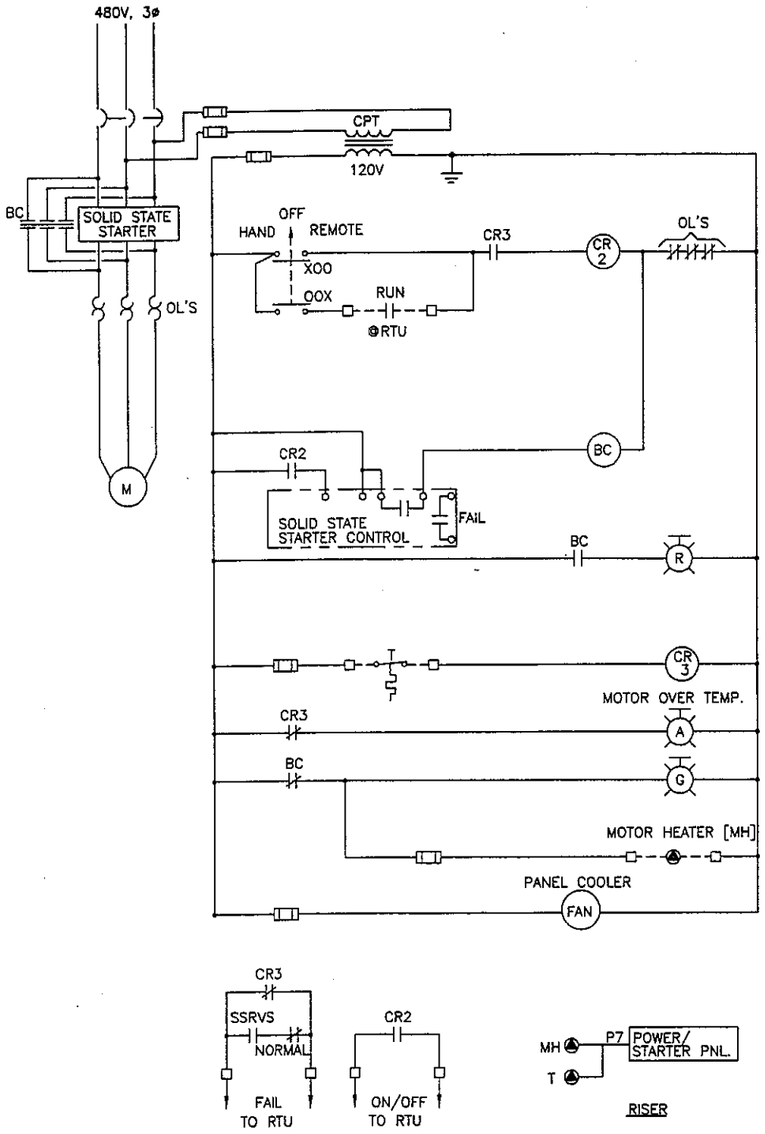
MONTGOMERY WATSON
490 Sawgrass Corporate Parkway
Suite 300 Sunrise, Florida 33325
Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

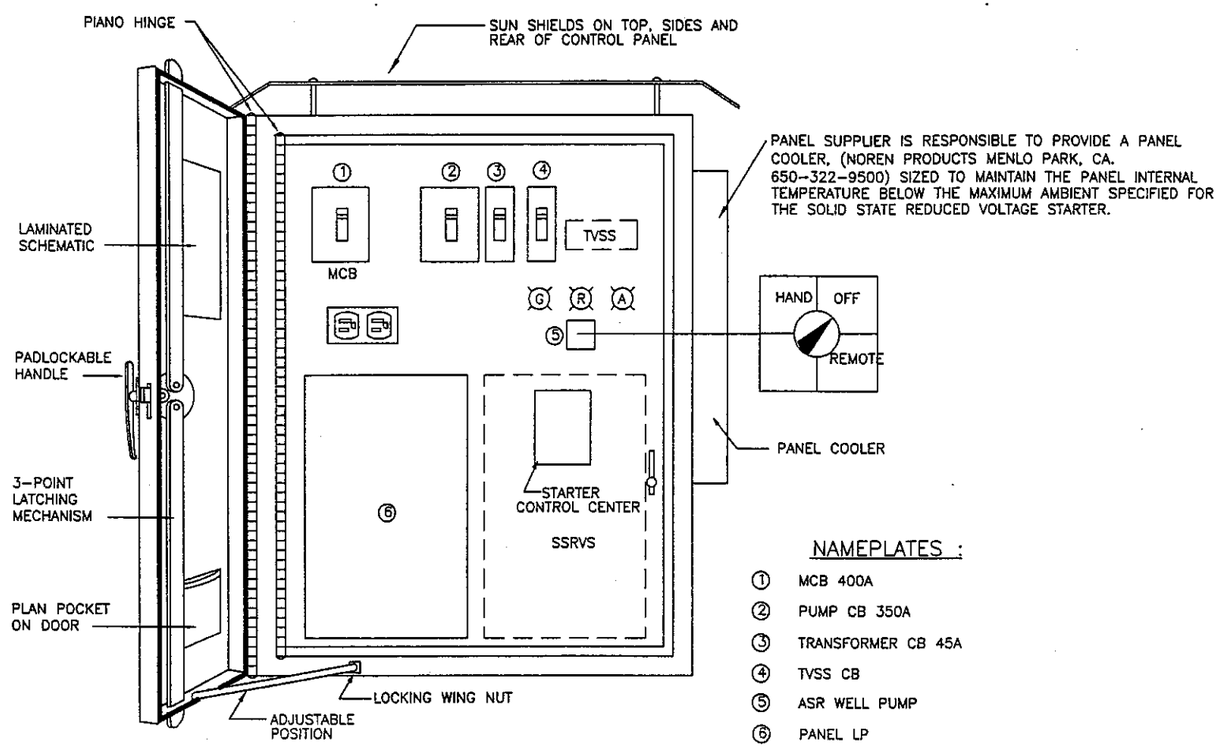
PALM BEACH COUNTY
HILLSBORO ASR WELL
SINGLE LINE DIAGRAM AND RISER DIAGRAMS

SHEET E-4
18 OF 23 SHEETS

KH12E04 PRELIMINARY JUNE 30, 2000



ASR WELL PUMP P-100



NAMEPLATES :

1. MCB 400A
2. PUMP CB 350A
3. TRANSFORMER CB 45A
4. TVSS CB
5. ASR WELL PUMP
6. PANEL LP

316 STAINLESS STEEL 14 GAUGE CONTROL CABINET, MODIFIED NEMA 12 CONSTRUCTION WITH DRIP SHIELD, 48"Hx36"Wx15"D MINIMUM, GASKETED WEATHER DOOR WITH ALUMINUM DEAD FRONT SAFETY DOOR WITH LOCK HASP, CONTINUOUS HINGE. INTERIOR FLOURESCENT LIGHT WITH SWITCH AND EXHAUST FAN AND LOUVER WITH INSECT SCREEN. THE CABINET SIZE SHALL BE ADJUSTED AT NO ADDITIONAL COST TO THE OWNER IN ORDER TO ACCOMMODATE THE DIFFERENT EQUIPMENT SIZES FURNISHED. PROVIDE 12"H X 12"W SPACE ON PANEL WITH DEADFRONT ACCESSIBILITY FOR FUTURE USE. PANEL TO BE BUILT BY A U.L. LISTED PANEL MANUFACTURER PER U.L. 508.

POWER/STARTER PANEL DEAD FRONT DETAIL

N.T.S.

KH12E05 PRELIMINARY JUNE 30, 2000

REV	DATE	BY	DESCRIPTION

SCALE: NONE

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED PSM
DRAWN PSM
CHECKED PFH

SUBMITTED
PAUL MATURSE 41441
PROJECT ENGINEER P. E. NO. DATE
MONTGOMERY WATSON P. E. NO. DATE

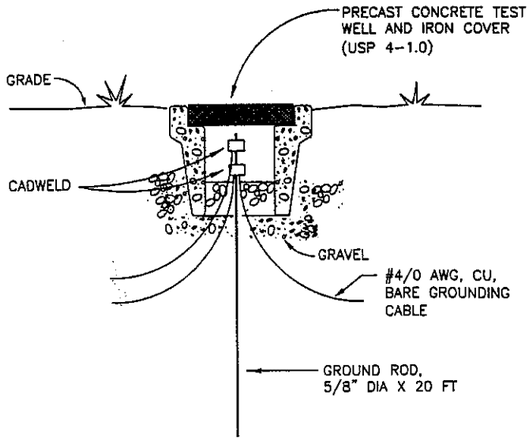
MONTGOMERY WATSON
490 Sawgrass Corporate Parkway
Suite 300 Sunrise, Florida 33325
Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
SCHEMATIC DIAGRAMS AND LAYOUT

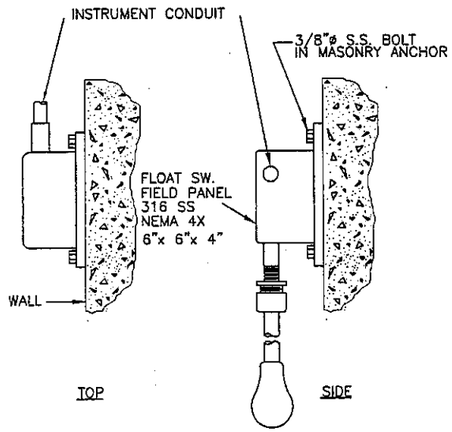
SHEET E-5
19 OF 23 SHEETS

HILLERS ELECTRICAL ENGINEERING, INC.
23257 STATE ROAD 7, SUITE 100
BOCA RATON, FL 33428
(561) 451-9165
(561) 451-4838 FAX
LICENSE NO: EB 0006877



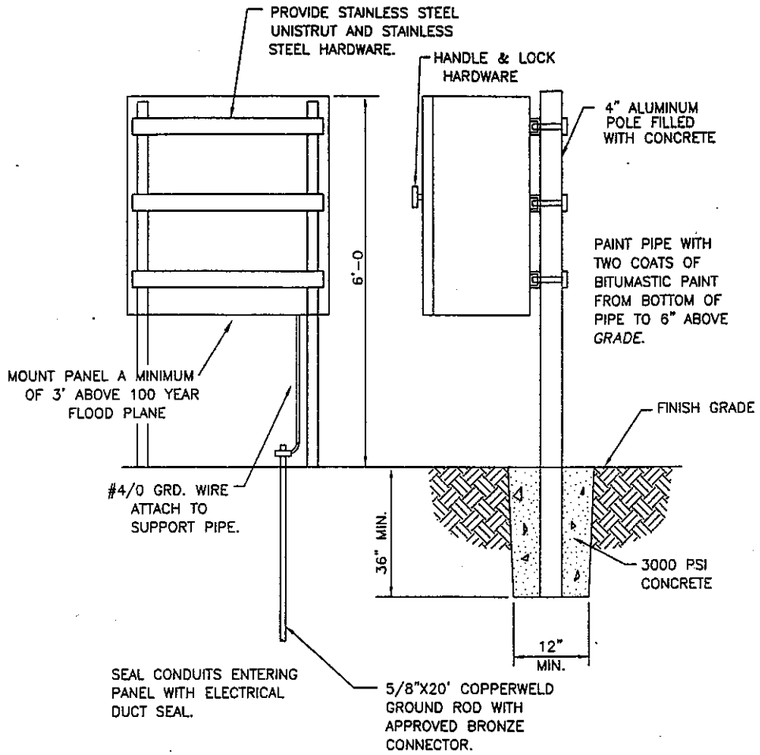
GROUND WELL

NOT TO SCALE



WALL MOUNTED FLOAT SWITCH DETAIL

NOT TO SCALE



TYPICAL PANEL MOUNTING DETAIL

N.T.S.

KH12E06 PRELIMINARY JUNE 30, 2000

REV	DATE	BY	DESCRIPTION

SCALE: NONE

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED PSM
DRAWN PSM
CHECKED PFH

SUBMITTED
PAUL MATURSE 41441
PROJECT ENGINEER P. E. NO. DATE

MONTGOMERY WATSON P. E. NO. DATE

MONTGOMERY WATSON
490 Sawgrass Corporate Parkway
Suite 300 Sunrise, Florida 33325
Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
ELECTRICAL DETAILS

SHEET E-6
20 OF 23 SHEET

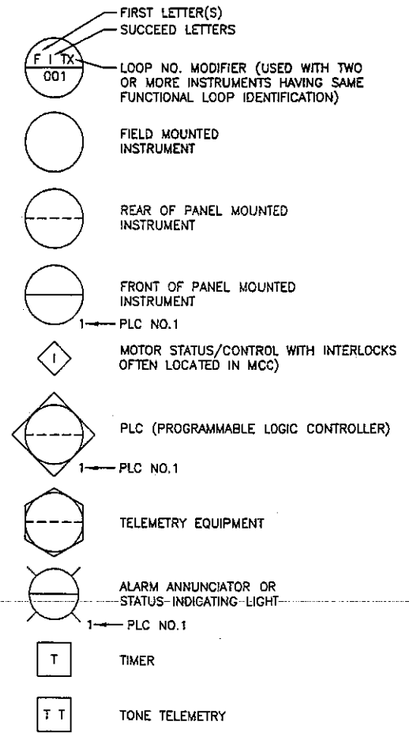
HILLERS ELECTRICAL ENGINEERING, INC.
23257 STATE ROAD 7, SUITE 100
BOCA RATON, FL 33428
(561) 451-9155
(561) 451-4588 FAX
LICENSE NO: EB 0006877

INSTRUMENT SOCIETY OF AMERICA TABLE

LETTER	FIRST LETTER: PROCESS OR INITIATING VARIABLE	FIRST LETTER: MODIFIER	SUCCEEDING LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING LETTERS: OUTPUT FUNCTION	SUCCEEDING LETTERS: MODIFIER
A	ANALYSIS (*)		ALARM		USERS CHOICE (*)
B	BURNER FLAME		USERS CHOICE (*)	USERS CHOICE (*)	
C	CONDUCTIVITY			CONTROL	CLOSE
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	STROKE		USERS CHOICE (*)	USERS CHOICE (*)	NORMAL
O	LOOP VEH. DETECTOR		OFFICE		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT		INTEGRATE		
R	RATIO		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (*)		MULTIFUNCTION (*)		
V	VISCOSITY			VALVE	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED (*)		UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)
Y	PHOTO CELL		LIGHT SOURCE	RELAY OR COMPUTE (*)	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(*) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL

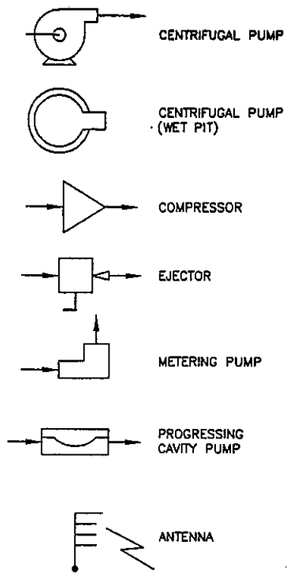
INSTRUMENT IDENTIFICATION



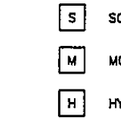
INSTRUMENT ABBREVIATION

ACC	ACCELATOR
BFP	BELT FILTER PRESS
CL2	CHLORINE
CLW	CLEARWELL
COM	COMMON
COND	CONDUCTIVITY
CP	CONTROL PANEL
DI, AI	DISCRETE INPUT, ANALOG INPUT
DO, AO	DISCRETE OUTPUT, ANALOG OUTPUT
D.O.	DISSOLVED OXYGEN
DR	DISTANCE RELAY
EFFL	EFFLUENT
EP	ELECTRICAL PANEL
ES	EMERGENCY STOP
ETM	ELAPSED TIME METER
FD	CHEMICAL FEEDER
FIL	FILTER
FXCP	FILTER X CONTROL PANEL
FXRP	FILTER X RELAY PANEL
GEN	GENERATOR
HLO	HIGH-LOW-OFF
HLOR	HIGH-LOW-OFF-REMOTE
HOA	HAND-OFF-AUTO
HOTC	HAND-OFF-TIMER-COMPUTER
H/L	HIGH/LOW
HSP	HIGH SERVICE PUMP
INFL	INFLUENT
JP	JOCKEY PUMP
LOS	LOCK-OUT-STOP
LPU	LINE PROTECTION UNIT
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
ME	MISCELLANEOUS EQUIPMENT
M.G.	MILLION GALLON
MOV	MOTOR OPERATED VALVE
OCA	OPEN-CLOSE-AUTO
OC	OPEN-CLOSE
OO	ON-OFF
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
OSCR	OPEN-STOP-CLOSE-REMOTE
PH	HYDROGEN ION CONCENTRATION
PRES	PRESSURE
RES	RESTORE
RF	RF (ADMITTANCE) LEVEL MONITOR
RIP	REMOTE I/O PANEL
R/L	REMOTE/LOCAL
RSP	REMOTE SETPOINT
SA	SURGE ARRESTER
RTU	REMOTE TELEMETRY UNIT
SEC	SECONDARY
SL	SLAKER
SF	SONIC FLOWMETER
SP	SETPOINT
SS	START/STOP
SSRVS	SOFT START REDUCED VOLTAGE STARTER
ST	STEP
STOR	STORAGE
SUS	SUSPENDED SOLIDS
TD	THERMAL DISPERSION
TP	TRANSFER PUMP
TURB	TURBIDITY
VFD	VARIABLE FREQUENCY DRIVE

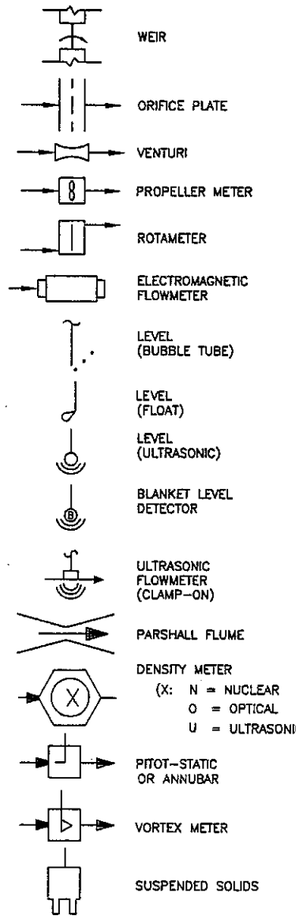
PUMPS & COMPRESSORS



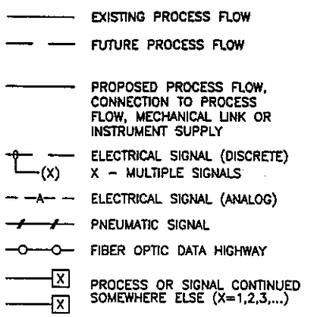
ACTUATOR OR OPERATORS



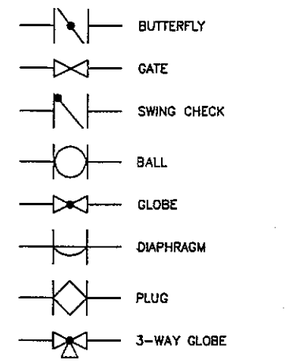
PRIMARY ELEMENTS



INSTRUMENT LINE SYMBOLS



VALVES & GATES



LEGEND

TO BE REMOVED AND TURN OVER TO OWNER

NOTES:

1. COMPONENTS AND PANELS SHOWN WITH A DIAMOND (◆) ARE TO BE PROVIDED UNDER SECTION "INSTRUMENTATION & CONTROLS".
2. COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (**) ARE TO BE PROVIDED AS PART OF A PACKAGED OR MECHANICAL SYSTEM.
3. THE PLC FURNISHED SHALL BE U.L. LISTED.
4. THE SINGLE INSTRUMENT & CONTROL SUPPLIER SHALL HAVE A U.L. APPROVED SHOP.
5. ALL PROCESS TUBING AND ISOLATION VALVES SHALL BE 1/4"- 316 S.S., UNLESS OTHERWISE NOTED.
6. ALL CONTROL PANELS SHALL BE FURNISHED AND INSTALLED WITH A 1P-15A CIRCUIT BREAKER.

HILLERS ELECTRICAL ENGINEERING, INC.
23257 STATE ROAD 7, SUITE 100
BOCA RATON, FL 33428
(561) 451-9165
(561) 451-4886 FAX
LICENSE NO: EB 0006877

KH12101 PRELIMINARY JUNE 30, 2000

REV	DATE	BY	DESCRIPTION

SCALE: NONE

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED PSM
DRAWN PSM
CHECKED PFH

SUBMITTED
PAUL MATURSE 41441
PROJECT ENGINEER P. E. NO. DATE

MONTGOMERY WATSON P. E. NO. DATE

MONTGOMERY WATSON
490 Sawgrass Corporate Parkway
Suite 300 Sunrise, Florida 33325
Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

2/7/00

PALM BEACH COUNTY
HILLSBORO ASR WELL
INSTRUMENT/CONTROL LEGEND SHEET

SHEET I-1
21 OF 23 SHEETS

EXISTING CENTRAL COMPUTER

ASR WELL PIT FLOOD ALARM QA 10
ASR PUMP FAILURE ALARM QA 100
ASR DISCHARGE PRESSURE TRIP ALARM QA 28
ASR RECHARGE VALVE POSITION INDICATION ZI 2
ASR PRESSURE CONTROL VALVE POSITION INDICATION ZI 1
ASR DISCHARGE TURBIDITY TO CANAL INDICATION/RECORDER/ALARM TIR 21 / TX 21 / TAH 21
ASR FLOW TO CANAL INDICATION/RECORDER/ TOTALIZER FIR 25 / FT 25
ASR DISCHARGE TO CANA, VALVE POSITION INDICATION ZI 4
ASR FLOW TO PLANT INDICATION/RECORDER/ TOTALIZER FIR 27 / FT 27
ASR DISCHARGE TO WTP VALVE POSITION INDICATION ZI 3
ASR METER PIT INTRUSION ALARM QA 30
ASR PANEL INTRUSION ALARM QA 31
ASR PANEL HIGH TEMP ALARM QA 50
ASR PUMP RUNNING STATUS Q 100
ASR PUMP START/STOP COMMAND HS 100
ASR DISCHARGE PRESSURE INDICATION/RECORDER PIR 29
ASR RECHARGE SETPOINT FX 2
ASR PRESSURE SETPOINT PX 1
ASR DISCHARGE CONDUCTIVITY TO CANAL INDICATION/RECORDER/ALARM CIR 20 / CX 20 / CAH 20 (SETPOINT)
ASR DISCHARGE CONDUCTIVITY INDICATION/RECORDER/ALARM CIR 22 / CX 22 / CAH 22 (SETPOINT)
ASR CANAL FLOW SETPOINT FX 4
ASR RECHARGE FLOW INDICATION/RECORDER/ TOTALIZER FIR 26 / FT 26
ASR WTP FLOW SETPOINT FX 3
ASR METER PIT FLOOD ALARM QA 11
ASR DISCHARGE DO TO CANAL INDICATION/RECORDER DOIR 24
RTU #7 LOSS OF POWER QA 40

MODIFICATIONS PROVIDED BY OTHERS

RADIO TRANSMISSION

RADIO ◆

RTU #7 PANEL

ASR WELL PIT FLOOD Q 10
ASR PUMP FAILURE Q 100
ASR PUMP RUNNING Q 100
ASR PUMP START/STOP Y 100
ASR DISCHARGE PRESSURE HIGH Q 28
ASR DISCHARGE PRESSURE P 29
ASR RECHARGE VALVE OPEN Q 2
ASR RECHARGE VALVE POSITION Z 2
ASR RECHARGE CONTROL PID 2
ASR DISCHARGE PCV OPEN Q 1
ASR PRESSURE CONTROL VALVE POSITION Z 1
ASR PRESSURE CONTROL PID 1
ASR DISCHARGE CONDUCTIVITY TO CANAL C 20
ASR DISCHARGE TURBIDITY TO CANAL T 21
ASR DISCHARGE CONDUCTIVITY C 22
ASR FLOW TO CANAL F 25
ASR DISCHARGE TO CANAL VALVE OPEN Q 4
ASR DISCHARGE TO CANAL VALVE POSITION Z 4
ASR CANAL FLOW CONTROL PID 4
ASR RECHARGE FLOW F 26
ASR FLOW TO WTP F 27
ASR DISCHARGE TO WTP VALVE OPEN Q 3
ASR DISCHARGE TO WTP VALVE POSITION Z 3
ASR WTP FLOW CONTROL PID 3
ASR METER PIT FLOOD Q 11
ASR METER PIT INTRUSION Q 30
ASR DISCHARGE DO TO CANAL DO 24
ASR PANEL INTRUSION Q 31 / ZS 31 — INTRUSION SWITCH
RTU #7 LOSS OF POWER Q 40 / ES 40 — LOSS OF 120V AC POWER
ASR PANEL HIGH TEMP Q 50 / TS 50 — HIGH TEMP SWITCH

RTU/PLC

PSH 28, PI, PIT 29
MS HOR SSRVS
LS 10 ##
ZS 1 # / ZT 1 # — 120VAC — M HOR — *** PCV-1
ZS 2 # / ZT 2 # — 120VAC — M HOR — *** FCV-2
CIT 22 — 120VAC
CE 22
CIT 20 — 120VAC
AIT 21 — 120VAC
TURB
AE 21
CE 20
FIT 25
ZS 4 # / ZT 4 # — 120VAC — M HOR — *** FCV-4
FE 2
FIT 26
FIT 27
ZS 3 # / ZT 3 # — 120VAC — M HOR — *** FCV-3
FE 1
LS 11 ##
ZS 30 — INTRUSION SWITCH
AIT 24 — 120VAC — DO
AE 24 — DO

SUBMERSIBLE RECOVERY PUMP 3500 gpm, 170 ft. TDH

ASR WELL

SAMPLE POINT No. 1 CONDUCTIVITY

SAMPLE POINT No. 2 TURBIDITY/CONDUCTIVITY

ORIFICE PLATE

ENERGY DISSIPATOR

CASCADE AERATION

SAMPLE POINT No. 3 DISSOLVED OXYGEN

RAW WATER PRODUCTION WELL #25

RAW WATER PRODUCTION WELL #17

TO WTP.

EXISTING 24" RW MAIN

TO HILLSBORO CANAL

NOTES :

◆ INDICATES EQUIPMENT TO BE SUPPLIED BY RTU/INSTRUMENT CONTRACTOR.

# INDICATES EQUIPMENT TO BE SUPPLIED WITH VALVE.

INDICATES EQUIPMENT TO BE SUPPLIED BY ELECTRICAL CONTRACTOR.

*** INDICATES EQUIPMENT TO BE SUPPLIED BY MECHANICAL CONTRACTOR.

SEE ELECTRICAL DRAWINGS FOR ACTUAL LOCATION OF CONTROL PANELS AND RTU.

RADIO CONTROLLED ASR WELL P&ID

KH12102 PRELIMINARY JUNE 30, 2000

REV	DATE	BY	DESCRIPTION

SCALE: NONE

WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED PSM
DRAWN PSM
CHECKED PFH

SUBMITTED
PAUL MATURSE 41441
PROJECT ENGINEER P. E. NO. DATE

MONTGOMERY WATSON P. E. NO. DATE

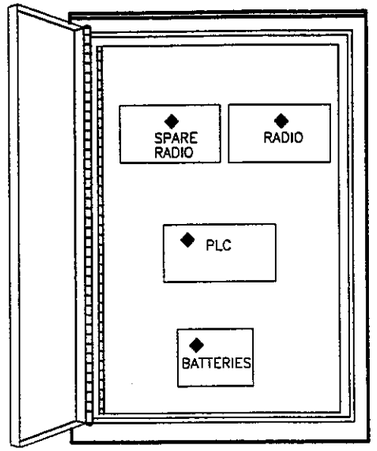
MONTGOMERY WATSON
490 Sawgrass Corporate Parkway
Suite 300 Sunrise, Florida 33325
Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

HILLERS ELECTRICAL ENGINEERING, INC.
23257 STATE ROAD 7, SUITE 100
BOCA RATON, FL 33428
(561) 451-9185
(561) 451-4585 FAX
LICENSE NO. EB 0006877

PALM BEACH COUNTY
HILLSBORO ASR WELL
P&ID – ASR WELL SYSTEM

SHEET I-2
22 OF 23 SHEETS



SPARE RADIO IS TO BE INSTALLED AND FULLY PROGRAMMED FOR IMMEDIATE USE AT THE INSTALLED WELL SITE.

SPARE RADIO IS NOT TO BE WIRED TO PREVENT DAMAGE IN CASE OF LIGHTNING STRIKE. COMMUNICATION, BATTERY AND ANTENNA CABLES MUST BE LEFT LONG ENOUGH FOR CONNECTION TO EITHER RADIO.

11 GAUGE 304L STAINLESS STEEL CABINET, NEMA 3R, 24"Hx24"Wx12"D MINIMUM WITH 21"X21" REMOVABLE SUB PANEL.

PANELS TO BE EQUIPPED WITH 316 SS SUN SHADES ON ALL EXPOSED SIDES.

THE CABINET SIZE SHALL BE ADJUSTED AT NO ADDITIONAL COST TO THE OWNER IN ORDER TO ACCOMMODATE THE DIFFERENT EQUIPMENT SIZES FURNISHED AND I/O ARRANGEMENT.

EQUIP DOORS WITH 3 POINT SS PAD-LOCKABLE HANDLE AND AUTOMATIC LATCH TO HOLD DOOR OPEN.

ALL PANELS SHALL BE FROM A SINGLE UL 508A PANEL BULIDER AND LABELED ACCORDINGLY.

SEE PROJECT SPECIFICATION SECTION 13300 FOR ADDITIONAL DETAILS AND SPECIFICATIONS.

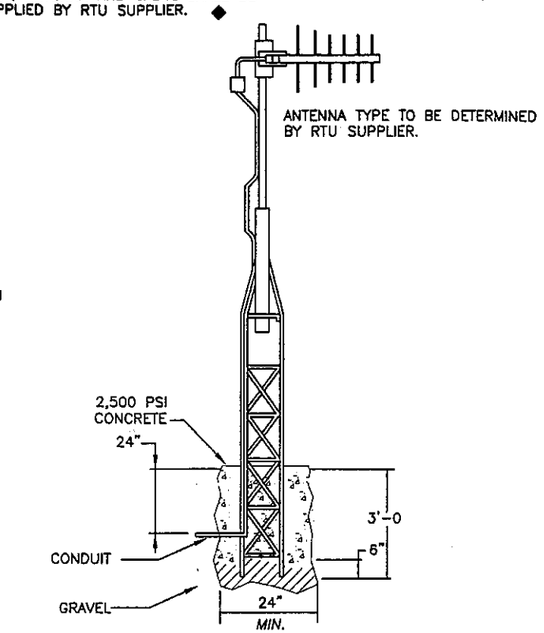
SEE ELECTRICAL DRAWING E-4 FOR RTU ENCLOSURE MOUNTING DETAIL.

◆RTU #7 PANEL
NOT TO SCALE

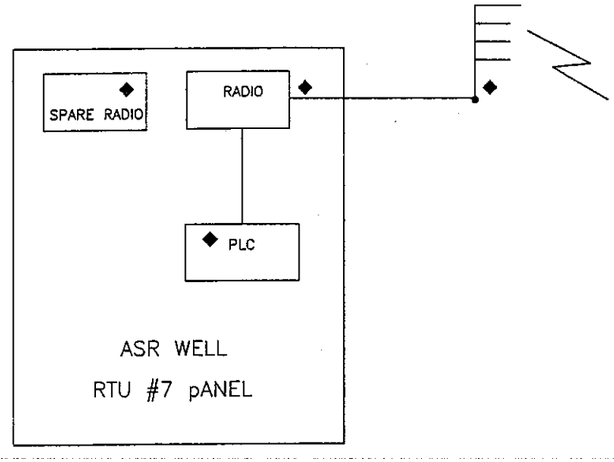
MAST, ANTENNA AND CABLE SHALL BE SUPPLIED BY RTU SUPPLIER. ◆

NOTES :

1. GRAVEL SHOULD EXTEND 6" BELOW BOTTOM OF TOWER BASE.
2. COAX CONNECTORS SHOULD BE WRAPPED IN ALPHA HEAT SHRINK FIT-321-1INCH.
3. A SERVICE LOOP SHOULD BE LEFT IN THE COAX CABLE AT THE TOP OF THE TOWER SECTION TO ALLOW FOR ANTENNA ROTATION.
4. ANTENNA HEIGHT SHALL BE DETERMINED BY THE RADIO SURVEY. FINAL CONCRETE BASE SIZE TO BE ADJUSTED AS REQUIRED BY FINAL ANTENNA HEIGHT.
5. MAST & METAL STRUCTURE SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C. SECTION 810-21.
6. CONTRACTOR TO VERIFY ANTENNA MOUNTING DETAIL WILL MEET THE SOUTH FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS AND MAKE ANY ADJUSTMENTS NECESSARY.
7. SEE ELECTRICAL DRAWINGS FOR LIGHTNING PROTECTION REQUIREMENTS AND GROUNDING SPECIFICATIONS/INSTRUCTIONS.



◆ RADIO ANTENNA MOUNTING DETAIL
NOT TO SCALE



WELL COMMUNICATION

◆ EQUIPMENT SUPPLIED BY RTU/INSTRUMENT CONTRACTOR.

HILLERS ELECTRICAL ENGINEERING, INC.
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BOCA RATON, FL 33428
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PAUL MATURSE 41441
PROJECT ENGINEER P. E. NO. DATE

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490 Sawgrass Corporate Parkway
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Certificate of Authorization Number 6773

Palm Beach County
Water Utilities Department

PALM BEACH COUNTY
HILLSBORO ASR WELL
INSTRUMENT/CONTROLS DETAILS

SHEET 1-3
23 OF 23 SHEETS

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