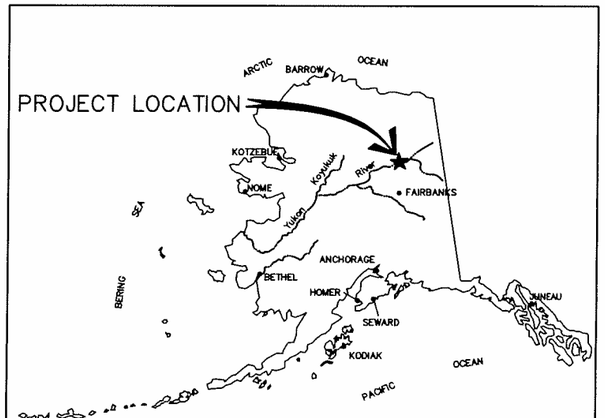
VILLAGE OF BEAVER, ALASKA

WATER TREATMENT SYSTEM

OCTOBER 2002

IN COOPERATION WITH THE STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
VILLAGE SAFE WATER PROGRAM U.S.
DEPARTMENT OF AGRICULTURE. RURAL ECONOMIC
AND COMMUNITY DEVELOPMENT

SHEET INDEX



LOCATION MAP

PROJECT NUMBER (CONSULTANT) 9966 (VSW) 16306
VSW PROJECT ENGINEER ROGER BURLEIGH
CONSTRUCTION FOREMAN
FINAL DESIGN (DATE) OCTOBER 14, 2002
ADEC APPROVAL (DATE) OCTOBER 2002
CONSTRUCTION PERIOD (FROM) (To)
AS-BUILTS (DATE)

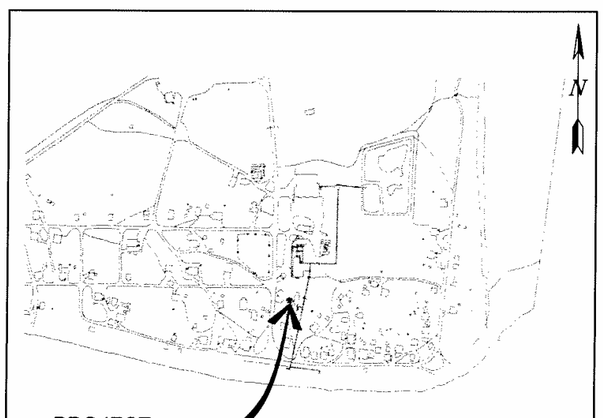
CRW ENGINEERING GROUP, LLC
3940 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
FAX: (907) 561-2273

STATE OF ALASKA 49TH DAVID S. KRUSCHEK AK 5123 REGISTERED PROFESSIONAL ENGINEER

CONSULTANT

STATUS:
ISSUED FOR CONSTRUCTION
DATE:
OCTOBER 14, 2002
REVISED:
SEPTEMBER 10, 2004

PROJECT STATUS



VICINITY MAP

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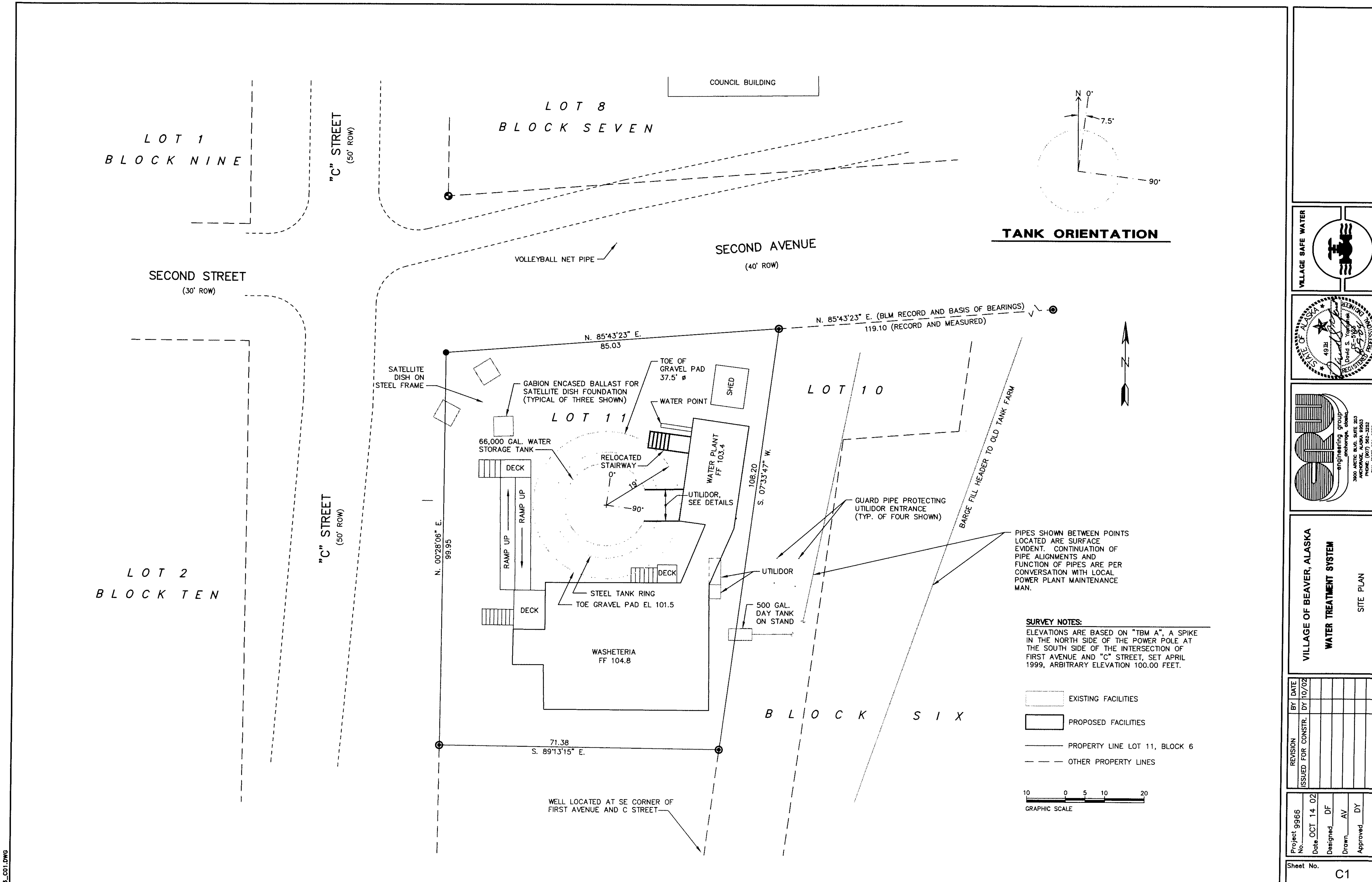
COUNCIL BUILDING
LOT 8
BLOCK SEVEN
LOT 1
BLOCK NINE
"C" STREET
(50' ROW)
TANK ORIENTATION
N 0°
7.5°
90°
VOLLEYBALL NET PIPE
SECOND AVENUE
(40' ROW)
SECOND STREET
(30' ROW)
N. 85°43'23" E. (BLM RECORD AND BASIS OF BEARINGS)
119.10 (RECORD AND MEASURED)
N. 85°43'23" E.
85.03
SATELLITE DISH ON STEEL FRAME
GABION ENCASED BALLAST FOR SATELLITE DISH FOUNDATION (TYPICAL OF THREE SHOWN)
TOE OF GRAVEL PAD 37.5' ø
SHED
WATER POINT
LOT 10
LOT 11
66,000 GAL. WATER STORAGE TANK
RELOCATED STAIRWAY
0°
19'
90°
WATER PLANT FF 103.4
UTILIDOR, SEE DETAILS
108.20
S. 07°33'47" W.
DECK
RAMP UP
RAMP UP
N. 00°28'06" E.
99.95
GUARD PIPE PROTECTING UTILIDOR ENTRANCE (TYP. OF FOUR SHOWN)
BARGE FILL HEADER TO OLD TANK FARM
PIPES SHOWN BETWEEN POINTS LOCATED ARE SURFACE EVIDENT. CONTINUATION OF PIPE ALIGNMENTS AND FUNCTION OF PIPES ARE PER CONVERSATION WITH LOCAL POWER PLANT MAINTENANCE MAN.
LOT 2
BLOCK TEN
"C" STREET
(50' ROW)
DECK
UTILIDOR
STEEL TANK RING
TOE GRAVEL PAD EL 101.5
DECK
500 GAL. DAY TANK ON STAND
WASHETERIA FF 104.8
SURVEY NOTES:
ELEVATIONS ARE BASED ON "TBM A", A SPIKE IN THE NORTH SIDE OF THE POWER POLE AT THE SOUTH SIDE OF THE INTERSECTION OF FIRST AVENUE AND "C" STREET, SET APRIL 1999, ARBITRARY ELEVATION 100.00 FEET.
BLOCK SIX
EXISTING FACILITIES
PROPOSED FACILITIES
PROPERTY LINE LOT 11, BLOCK 6
OTHER PROPERTY LINES
71.38
S. 89°13'15" E.
10 0 5 10 20
GRAPHIC SCALE
WELL LOCATED AT SE CORNER OF FIRST AVENUE AND C STREET
VILLAGE SAFE WATER
STATE OF ALASKA
David S. Yanagawa
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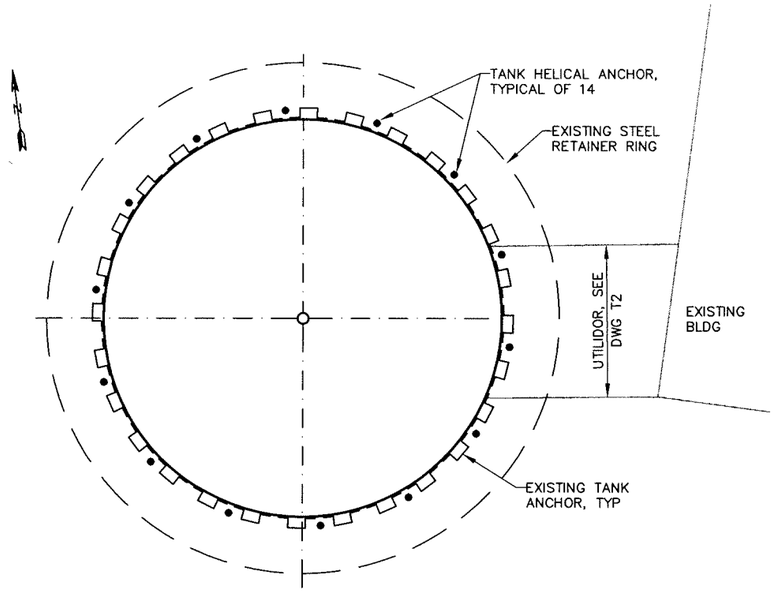
VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
SITE PLAN
REVISION | BY | DATE
ISSUED FOR CONSTR. | DY | 10/02
Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY
Sheet No. C1
DWG No. 2 of 21
66_C01.DWG

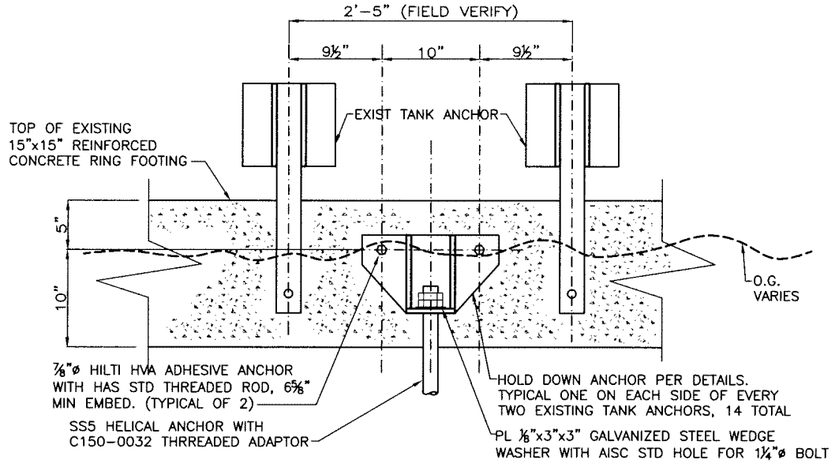


1/3 **TANK PLAN**

NOT TO SCALE

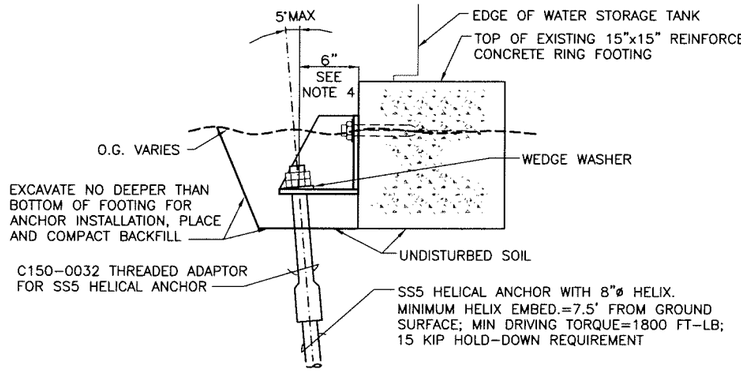
2/T1 **TANK ELEVATION**

NOT TO SCALE



3/T1 **TANK HOLD DOWN ANCHOR-ELEVATION**

NOT TO SCALE

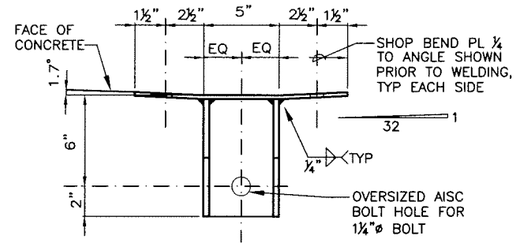


4/T1 **TANK HOLD DOWN ANCHOR-SECTION**

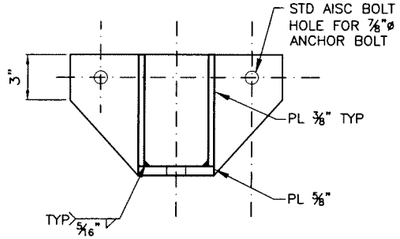
NOT TO SCALE

NOTES

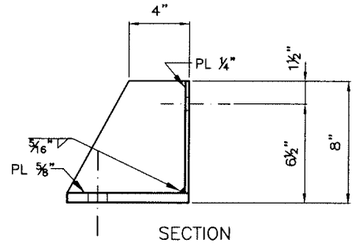
1. HELICAL ANCHORS SHALL BE SS5 WITH 8"ø HELIX BY CHANCE OR APPROVED EQUAL.
2. MINIMUM INSTALLATION TORQUE SHALL BE 1800 FT-LB.
3. INSTALL ANCHORS AT 14 LOCATIONS AS SHOWN IN DETAIL 3.
4. USE REMOVABLE EXTENSION BAR TO ALLOW MOTOR TO CLEAR WATER TANK AND RING FOOTING WHEN ADVANCING HELICAL ANCHORS TO REQUIRED DEPTH AND TORQUE.



PLAN



ELEVATION



SECTION

NOTES

1. ASTM A36 STEEL.
2. AFTER SHOP FABRICATION, SSPC-SP10 TO SURFACE PREPARATION WITH PRIMER AND TWO SHOP COATS 10 MDFT POLYMIDE COAL TAR EPOXY TNEMEC 46-413,, OR APPROVED EQUAL. TOP SHALL BE SILVER.
3. SHOP-PUNCHED BOLT HOLES.
4. REMOVE BURRS, GRIND EDGES AND CORNERS PRIOR TO PAINTING.

5/T1 **TANK HOLD DOWN DETAILS**

NOT TO SCALE

VILLAGE SAFE WATER

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VILLAGE OF BEAVER, ALASKA

WATER TREATMENT SYSTEM

WATER STORAGE TANK ANCHOR DETAILS

REVISION	BY	DATE
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Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

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DWG No. 3 Of 21

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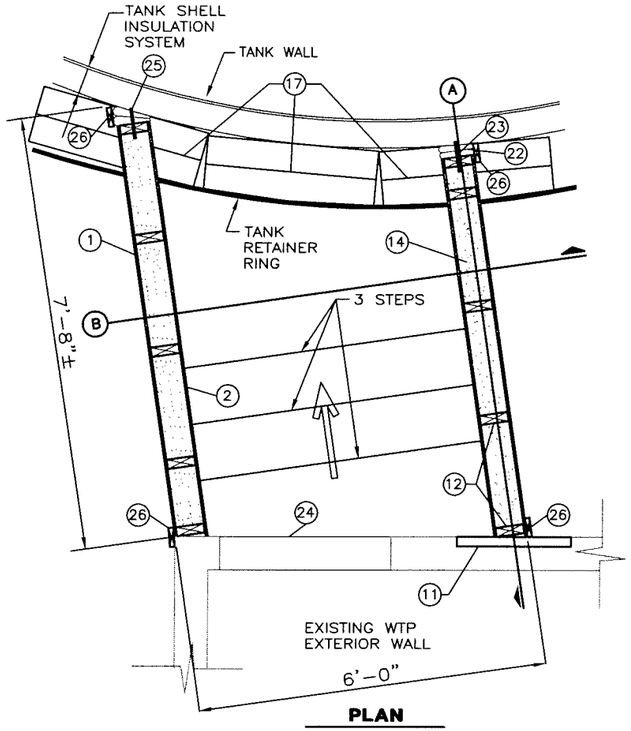

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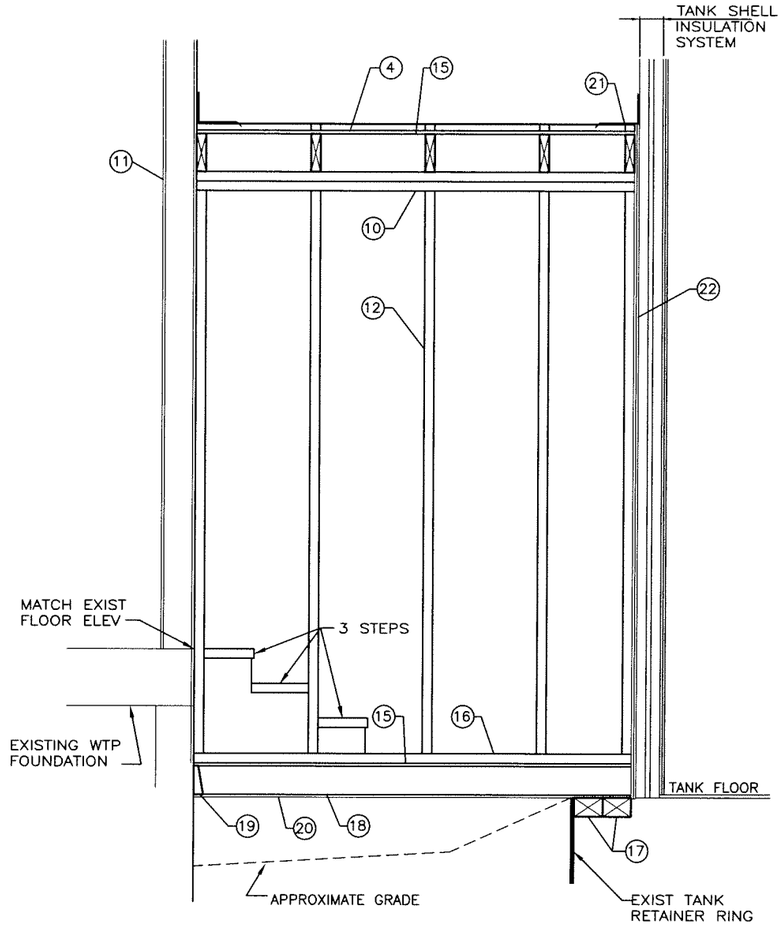
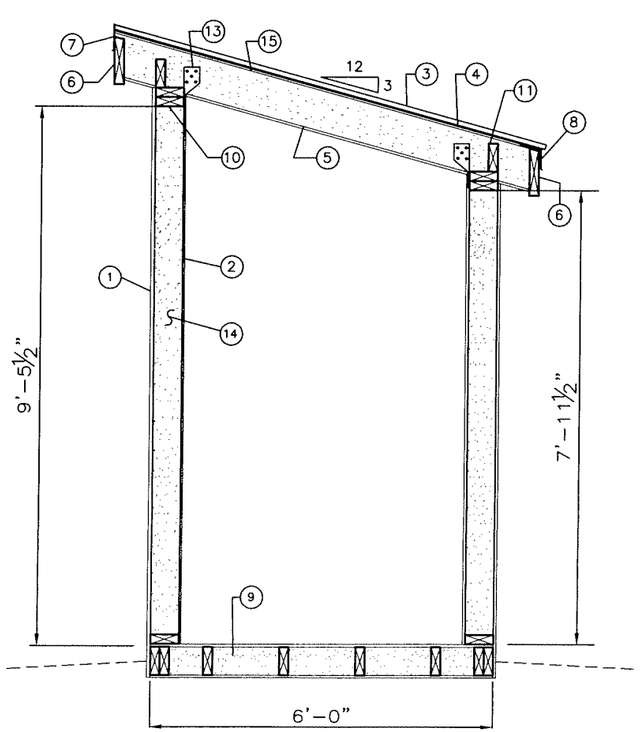


A SECTION



B SECTION

NOTE:
PAINT WOOD TO MATCH THE COLOR OF EXISTING WATER TREATMENT BUILDING.

MATERIALS KEY

1. ⅝" TEXTURE 111 PLYWOOD,8" OC GROOVES, PAINTED TO MATCH EXISTING BUILDING. LAP TO BOTTOM OF FLOOR JOISTS.
2. ½" A/C PLYWOOD OVER 10 MIL POLYURETHANE VAPOR BARRIER.
3. GALVANIZED STEEL, GRADE A, 24 GAUGE ROOFING PANELS, KLIP RIB OR EQUAL, FINISH COLOR TO MATCH EXISTING BUILDING ROOF COLOR.
4. 15# ROOFING FELT.
5. 2x8 RAFTER AT 24" OC, ALIGN OVER STUDS.
6. 2x10 FASCIA, PAINTED.
7. APEX EAVE FLASHING, 26 GAUGE MIN, COLOR TO MATCH ROOF PANELS.
8. EAVE FLASHING, 26 GAUGE MIN, COLOR TO MATCH ROOF PANELS
9. 2 LAYERS OF 2" AND 1 LAYER OF 1" THICK RIGID POLYSTYRENE INSULATION, STAGGER JOINTS.
10. 2x6 DOUBLE TOP PLATE.
11. 2x6 BACKING STUDS; REMOVE T1-11 SHEETING AND INSTALL BACKING STUDS, REPLACE T1-11.
12. 2x6 STUD AT 24" OC, TYPICAL.
13. HURRICANE TIE AT EACH RAFTER END.
14. 2 LAYERS OF 2" THICK RIGID POLYSTYRENE INSULATION BONDED TO INSIDE OF PLYWOOD WITH PANEL ADHESIVE. STAGGER JOINTS.
15. ⅝" CDX PLYWOOD, PAINT FLOOR WITH EPOXY FLOOR PAINT.
16. 2x6 SILL PLATE OVER SILL SEAL.
17. 4x6x36 TREATED TIMBER, CUT AS REQUIRED TO FIT AVAILABLE SPACE.
18. 2x6 TREATED JOISTS AT 16" OC. DOUBLE 2x6 AT EDGES.
19. 4x6 JOIST HANGER (EDGES). 2x6 JOIST HANGER ELSEWHERE.
20. ½" CDX TREATED PLYWOOD.
21. CORROSION RESISTANT FLASHING, 26 GAUGE MIN, COLOR TO MATCH ROOFING PANEL, ROLL TO 11'-6½" RADIUS, SEAL WITH FIBERED ROOF CEMENT.
22. 2 LAYERS OF 1" EXPANDED RUBBER INSULATION BONDED TO BOX WITH ARMSTRONG 520 CONTACT CEMENT, TYPICAL.
23. ½"x4" GALVANIZED LAG BOLT (3 EACH).
24. REMOVE EXISTING DOOR, FRAME, AND THRESHOLD (SEE DEMOLITION PLAN). INSTALL 8" WIDE FLAT THRESHOLD.
25. ATTACH WALL STUD TO EXISTING ½"STUD IN TANK WALL. DRILL OVERSIZE HOLE.
26. 1x6 CEDAR TRIM.

2 0 1 2
GRAPHIC SCALE

VILLAGE SAFE WATER

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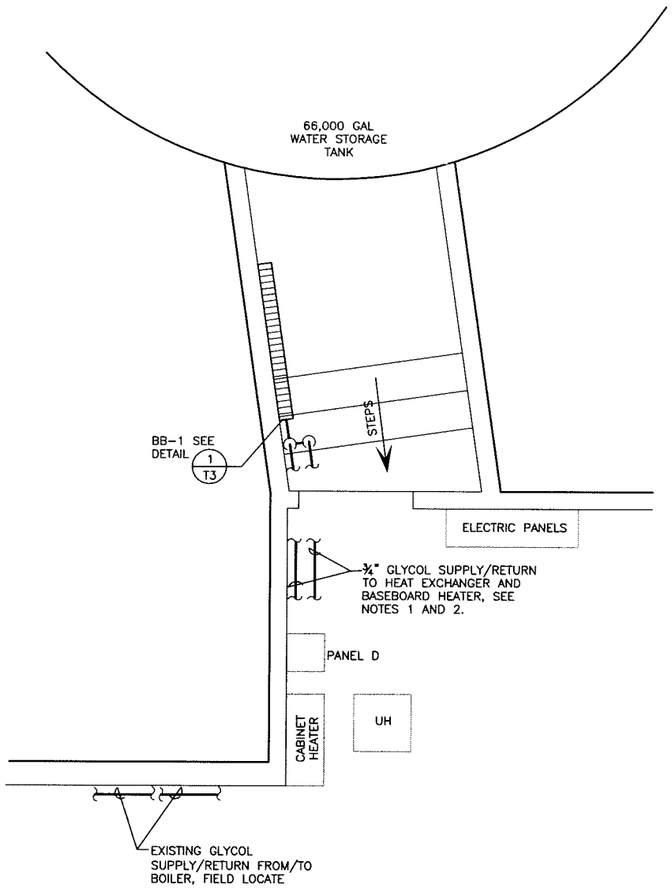
VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
UTILIDOR PLAN AND SECTIONS

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02

Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. T2
DWG No. 4 Of 21

86_UTILIDOR.DWG

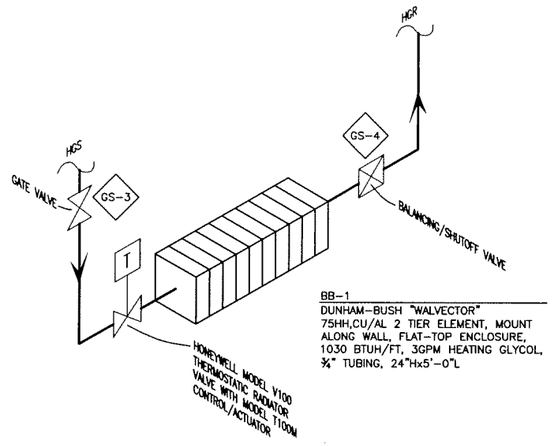


FLOOR PLAN-BASEBOARD HEATER

5 4 3 2 1 0 5
GRAPHIC SCALE

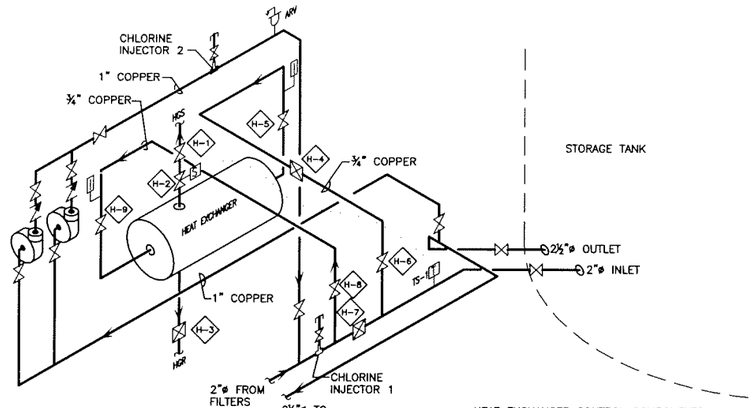
NOTES

1. SEE DETAIL 2/T3 FOR HEAT EXCHANGER CONNECTION AND DWG P4 FOR LOCATION.
2. F&I GATE ISOLATION VALVES AT CONNECTIONS TO EXISTING GLYCOL SYSTEM (GS-1 AND GS-2).
3. INSTALL BASEBOARD HEATER ON FLOOR BENEATH HEAT EXCHANGER AND HEATING CIRCULATION PUMPS.
4. CL INJECTOR 1 – FLOW ACTIVATED BY FLOW SWITCH @ RAW WATER INTAKE.
5. CL INJECTOR 2 – TIMER CONTROLLED BY OPERATOR @ CIRCULATION PUMP CONTROL PANEL.



BB-1
DUNHAM-BUSH "WALVECTOR"
75HH,CU/AL 2 TIER ELEMENT, MOUNT
ALONG WALL, FLAT-TOP ENCLOSURE,
1030 BTUH/FT, 3GPM HEATING GLYCOL,
¾" TUBING, 24"Hx5'-0"L

1/T3 BASEBOARD HEAT PIPING DETAIL



HEAT EXCHANGER CONTROL COMPONENTS

CONTROL VALVES: BRASS BODY SOLENOID VALVES, 120 VAC COIL. TANK HX-ASCO 8210B54, 1" BODY, Cv=13.

TEMPERATURE CONTROLS: TS-1, HONEYWELL T675A1516 REMOTE BULB TEMPERATURE SWITCH WITH THERMOWELL, 8 AMP, 120V.

2/T3 HEAT EXCHANGER SCHEMATIC

VILLAGE SAFE WATER

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VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
UTILIDOR
HEATING SYSTEM PLAN AND DETAILS

REVISION	BY	DATE
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Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. T3

66_P03-P05.DWG(LAYOUT4)

PIPE AND FITTING SYMBOLS

TWO–LINE SINGLE–LINE

- EXISTING PIPE
- NEW PIPE
- FLANGE JOINT
- FLANGED COUPLING ADAPTOR
- FLEXIBLE COUPLING
- FLEXIBLE PIPE CONNECTION
- 90° BEND–DOWN
- 90° BEND–UP
- TEE–UP
- TEE–DOWN
- LATERAL–UP
- LATERAL–DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- UNION
- CAP
- 90° BEND
- 45° BEND
- CROSS
- TEE
- LATERAL
- IN–LINE STATIC MIXER
- CHEMICAL INJECTION POINT

VALVE SYMBOLS

- PLAN / ELEV — GATE VALVE
- PLAN / ELEV — CHECK VALVE
- PLAN / ELEV — BUTTERFLY VALVE
- PLAN / ELEV — BALL VALVE

MISCELLANEOUS PIPING SYMBOLS

- PUMP
- METERING PUMP
- T — TIMER
- TS — THERMOSTAT
- TEMPERATURE GAUGE
- F — FLOW INDICATOR
- FLOW METER (PROPELLER)
- FS — FLOW SWITCH
- M — METER
- PS — PRESSURE SWITCH
- P — PRESSURE GUAGE
- DP — DIFFERENTIAL PRESSURE GAUGE
- REDUCED PRESSURE BACKFLOW PREVENTOR
- CALIBRATION TUBE
- AIR/WATER SEPARATOR
- SIGHT GLASS
- HOSE BIBB
- SAMPLE POINT (HOSE BIBB)
- KAMLOCK ADAPTOR
- STRAINER
- M — MOTORIZED VALVE
- PRESSURE RELIEF VALVE
- PRESSURE REGULATING VALVE
- CARV — COMBINATION AIR VACUUM/ AIR RELEASE VALVE
- ARV — AIR RELEASE VALVE
- FCV — FLOW CONTROL VALVE
- 3–WAY VALVE
- BALANCE VALVE
- DIAPHRAGM VALVE

ABBREVIATIONS

ASHB	ANTI–SIPHON HOSE BIBB	OD	OUTSIDE DIAMETER
AFF	ABOVE FINISH FLOOR ELEV	P	PRESSURE
AIR	AIR	PP	PRESSURE PUMP
ARV	AIR RELEASE VALVE	P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
ASSY	ASSEMBLY	PRV	PRESSURE REGULATING VALVE
BFP	BACK FLOW PREVENTOR	PSF	POUNDS PER SQUARE FOOT
BOP	BOTTOM OF PIPE	PSI	POUNDS PER SQUARE INCH
BP	BY–PASS	REQD	REQUIRED
BWP	BACKWASH PUMP	RW	RAW WATER
BWS	BACKWASH SUPPLY	SCHED	SCHEDULE
BWW	BACKWASH WASTE	SS	STAINLESS STEEL
C/C	CENTER TO CENTER	STA	STATION
CARV	COMBINATION AIR VACUUM/ AIR RELEASE VALVE	STD	STANDARD
CFR	CONSTANT FLOW REGULATOR	SW	SURFACE WASH
CFM	CUBIC FEET PER MINUTE	T	TEMPERATURE
CHEM	CHEM	TP	TRANSFER PUMP
CI	CAST IRON	TW	TREATED WATER
CIRC	CIRCULATING	TV	THROTTLING VALVE
CKV	CHECK VALVE	TYP	TYPICAL
CL	CHLORINE	UH	UNIT HEATER
CLR	CLEAR	V OR VERT	VERTICAL
CONC	CONCRETE	W	WATER LINE
CONN	CONNECTION	W/	WITH
CONSTR	CONSTRUCT OR CONSTRUCTION		
CP	CIRCULATION PUMP		
CPLG	COUPLING		
CTR	CENTER		
CTW	CIRCULATING TREATED WATER		
CU	COPPER		
CW	COLD WATER		
D	DRAIN		
DIA	DIAMETER		
DIM	DIMENSION		
DIP	DUCTILE IRON PIPE		
EA	EACH		
EFL	EFFLUENT		
EL OR ELEV	ELEVATION		
ELEC	ELECTRIC OR ELECTRICAL		
EQ	EQUAL		
EQ SP	EQUAL SPACING		
EQPT	EQUIPMENT		
FCV	FLOW CONTROL VALVE		
FD	FLOOR DRAIN		
FDN	FOUNDATION		
FE	FIRE EXTINGUISHER		
FF	FINISH FLOOR		
FL	FLUORIDE		
FM	FLOW METER		
FW	FILTERED WATER		
GA	GUAGE		
GALV	GALVANIZED		
GPD	GALLONS PER DAY		
GPM	GALLONS PER MINUTE		
GV	GATE VALVE		
GS	GLYCOL SUPPLY		
GR	GLYCOL RETURN		
H OR HORIZ	HORIZONTAL		
HB	HOSE BIBB		
HBP	HIGH BOOST PUMP		
HS	HYDRONIC SYSTEM		
HW	HOT WATER		
HWG	HOT WATER GENERATOR		
HX	HEAT EXCHANGER		
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION		
ILSM	IN–LINE STATIC MIXER		
INFL	INFLUENT		
KMnO4	POTASSIUM PERMANGANATE		
M	METER		
MAX	MAXIMUM		
MCC	MOTOR CONTROL CENTER		
MECH	MECHANICAL		
MFR	MANUFACTURER		
MGD	MILLION GALLONS PER DAY		
MIN	MINIMUM		
MP	METERING PUMP		
MV	MODULATING VALVE		
MXR	MECHANICAL MIXER		
NC	NORMALLY CLOSED		
NIC	NOT IN CONTRACT		
NO	NORMALLY OPEN		
NTS	NOT TO SCALE		

ISA INSTRUMENT SYMBOLS

	FIRST LETTER	SECOND LETTER	THIRD LETTER
A	ANALYSIS	ALARM	ALARM
B	–	BIAS	–
C	CONTROLLER	CONTROLLER	CONTROLLER
D	DENSITY	DIFFERENTIAL PRIMARY	DEVIATION
E	VOLTAGE	ELEMENT	–
F	FLOW	RATIO (FRACTION)	–
G	–	–	–
H	HAND (MANUAL)	–	HIGH
I	CURRENT	INDICATOR	INDICATOR
J	POWER	SCAN	SCAN
K	TIME	CONTROL STATION	CONTROL STATION
L	LEVEL	LIGHT (PILOT)	LOW
M	MOISTURE	–	INTERMEDIATE
N	SOUND	–	–
O	–	ORIFICE	–
P	PRESSURE (VACUUM)	POINT (TEST)	–
Q	QUALITY	INTERGRATE	–
R	–	RECORDER	RECORDER
S	SPEED (FREQUENCY)	SWITCH	SWITCH
T	TEMPERATURE	TRANSITTER	TRANSMITTER
U	MULTIVARIABLE	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY	VALVE OR DAMPER	VALVE
W	WEIGHT	–	–
X	(UNLISTED FUNCTIONS)	(UNLISTED FUNCTIONS)	(UNLISTED FUNCTIONS)
Y	STATUS	RELAY OR COMPUTE	RELAY OR COMPUTE
Z	POSITION	DRIVE OR ACTUATOR	DRIVE OR ACTUATOR

INSTRUMENTATION ABBREVIATIONS

- WCP= WELL CONTROL PANEL
- FCP= FILTER CONTROL PANEL
- BCP= BACKWASH CONTROL PANEL
- ACP= AIRWASH CONTROL PANEL
- MCC= MOTOR CONTROL CENTER

INSTRUMENTATION SYMBOLS

- MOUNTED AT REMOTE CONTROL PANEL
- MOUNTED AT LOCAL CONTROL PANEL
- MOUNTED AT LOCAL DEVICE
- * MOUNTED IN BACK PANEL
- PROGRAMMABLE LOGIC CONTROLLER (PLC)
- ---------- ELECTRICAL CONNECTION, P&ID ONLY

PIPE COLOR CODES

- OLIVE GREEN – RAW WATER
- DARK BLUE – FILTERED WATER
- BLACK – HEATING
- BROWN – WASTEWATER
- YELLOW – CHLORINE
- GREEN – NORMALLY OPEN VALVE HANDLES
- RED – NORMALLY CLOSED VALVE HANDLES

NOTE:
THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT ON THE PLANS.

VILLAGE SAFE WATER

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VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
SYMBOLS LEGEND AND ABBREVIATIONS

REVISION	BY	DATE
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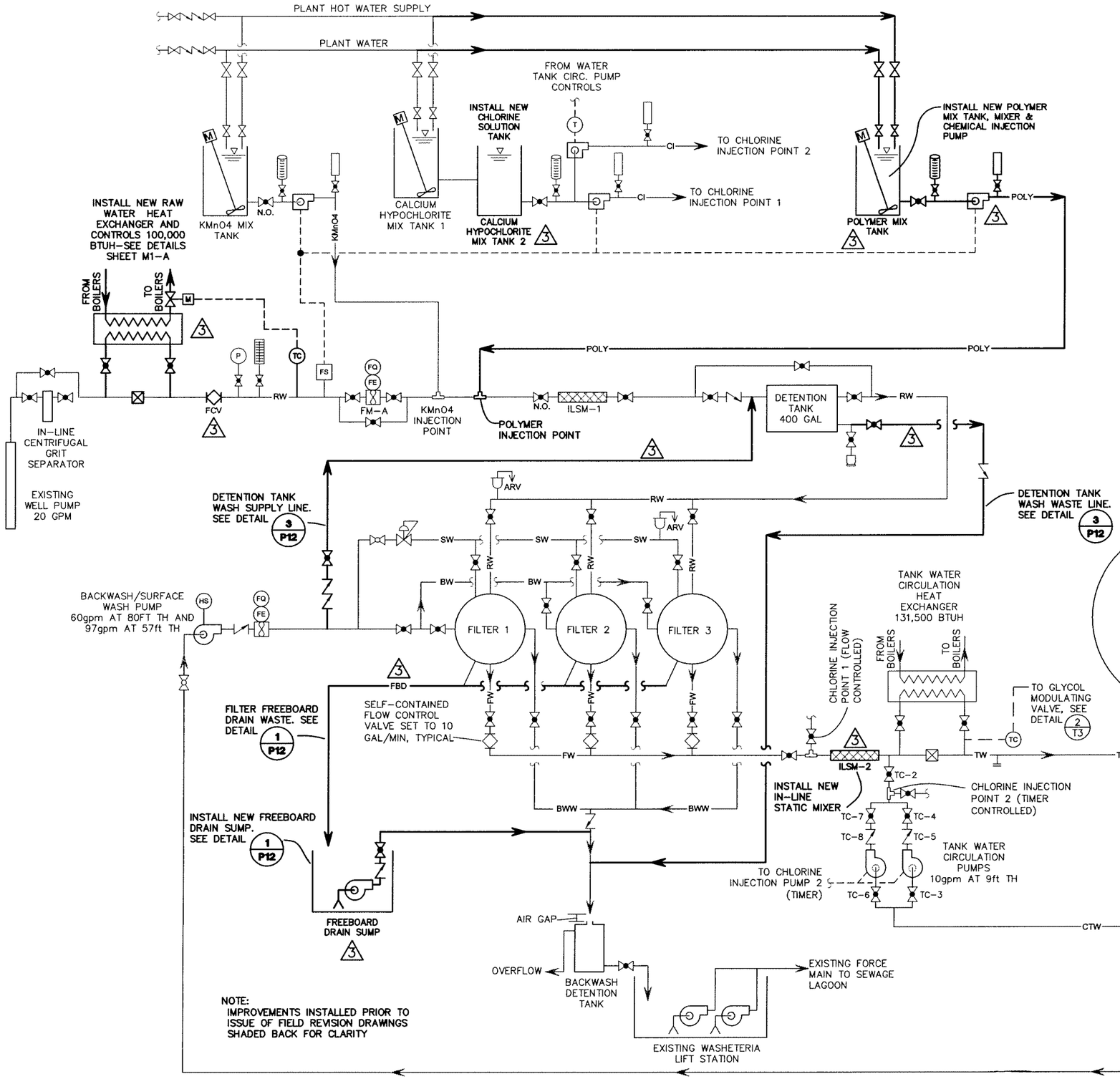
66_P01



EXISTING CONDITIONS (YEAR 2002)

- AVERAGE WATER DEMAND: 1,000 GAL/DAY
- PEAK WATER DEMAND: 45 GAL/MIN
- WELL CAPACITY: 7.7 GAL/MIN
- STORAGE VOLUME: 4,000 GAL
- INFLUENT IRON CONCENTRATION: 12.3 mg/L
- INFLUENT MANGANESE CONCENTRATION: 1.3 mg/L
- INFLUENT pH: 7.6

WATER TREATMENT FACILITY DESIGN CONSIDERATIONS (YEAR 2022)

FLOW RATE

- DESIGN POPULATION: 138 PERSONS
- AVERAGE WATER DEMAND: 11,200 GAL/DAY=7.8 GAL/MIN
- MAXIMUM DAY WATER DEMAND: 2.5xAVERAGE=28,000 GAL/DAY=19.4 GAL/MIN
- PEAK HOUR WATER DEMAND: 5.0xAVERAGE=56,000 GAL/DAY=38.9 GAL/MIN

SUPPLY

- WELL CAPACITY: 20 GAL/MIN

STORAGE

- TANK CAPACITY: 60,000 GAL

PRESSURE SYSTEM

- THREE EACH WX–422 HYDROPNEUMATIC TANKS. TOTAL USABLE VOLUME: 100 GAL

TREATMENT

- GREENSAND FILTRATION USING POTASSIUM PERMANGANATE AND MULTIMEDIA PRESSURE FILTERS, BASED PRIMARILY ON A WATER ASSESSMENT STUDY DATED SEPTEMBER 12, 2000. TREATMENT OBJECTIVE IS TO REDUCE IRON CONCENTRATIONS TO DRINKING WATER STANDARDS.
- INFLUENT IRON CONCENTRATION: 15 mg/L
- FILTER LOADING RATE: 2 GAL/MIN/SQ FT
- BACKWASH RATE: 15 GPM/SQ FT
- POTASSIUM PERMANGANATE SOLUTION: 3.0%=30,000 mg/L
- CHEMICAL DETENTION TIME: 20 MINUTES
- INFLUENT MANGANESE CONCENTRATION: 1.5 mg/L
- INFLUENT pH: 7.6
- ESTIMATED BACKWASH FREQUENCY: ONE PER DAY AT 11,200 GPD

VILLAGE SAFE WATER

STATE OF ALASKA — JAMES C. EDDE — 9749 — REGISTERED PROFESSIONAL ENGINEER

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ANCHORAGE, ALASKA 99503
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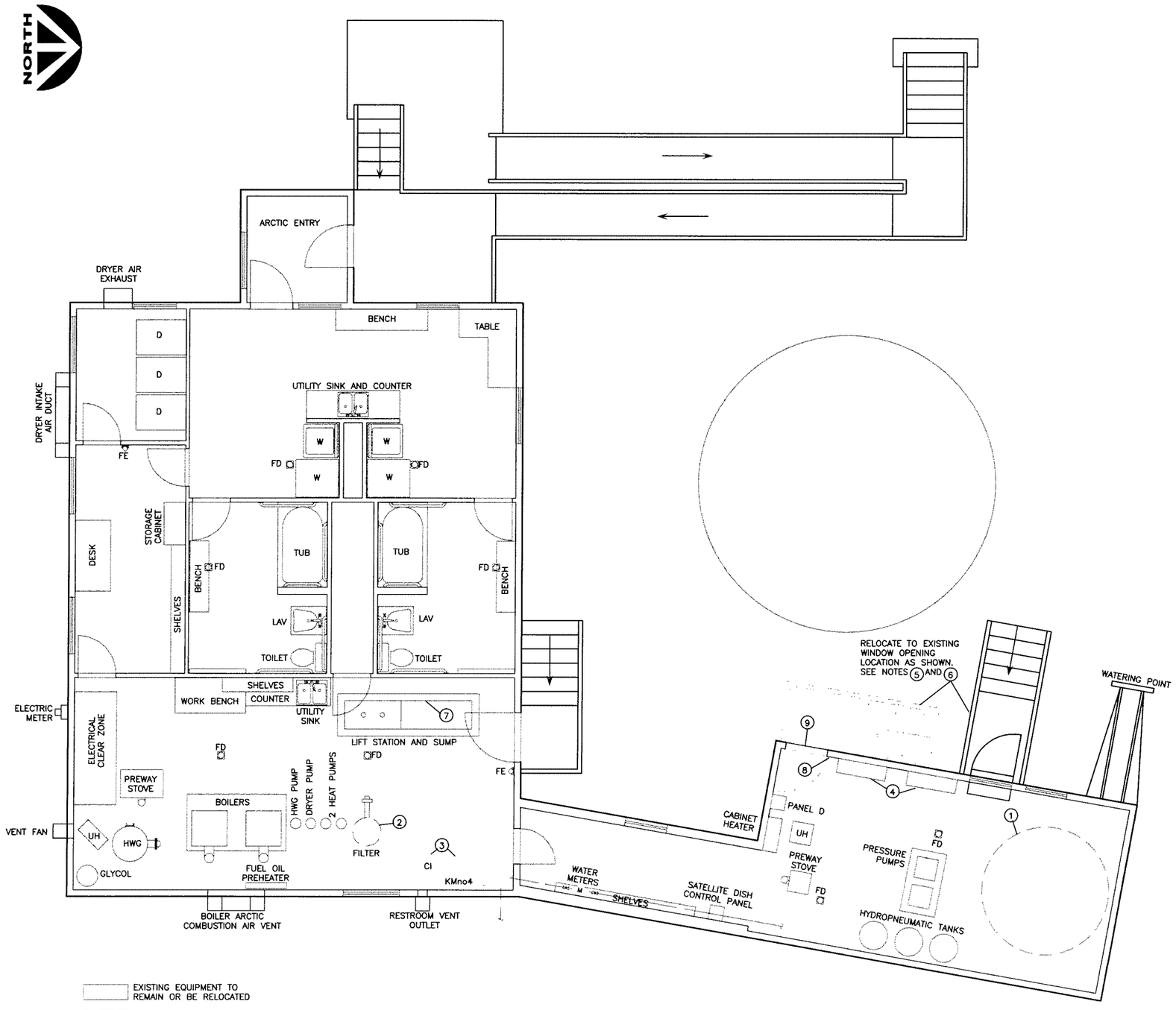
VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
PROCESS FLOW DIAGRAM

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02
1 ADDED PUMP	DY	09/04
2 CHANGED & ADDED TANKS	DY	03/06
3 FIELD REVISIONS	DY	05/06

Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P2A
DWG No. P2A Of 21

9966\WTF_PNID\Field Revisions\P2A.dwg



DEMOLITION NOTES

1. DEMOLISH AND REMOVE EXISTING 4,000 GALLON WATER STORAGE TANK, INCLUDING RELATED FILL AND DISCHARGE LINES AND APPURTENANCES.
2. REMOVE AND REPLACE EXISTING GREENSAND FILTER WITH NEW GREENSAND FILTERS AS SHOWN ON PROCESS FLOOR PLAN DRAWING.
3. REMOVE AND REPLACE EXISTING CHEMICAL FEED SYSTEMS AS SHOWN ON PROCESS FLOOR PLAN DRAWING. SEE ISOMETRIC AND PIPING VIEWS FOR NEW CHEMICAL INJECTION POINT LOCATIONS.
4. MODIFY AND/OR REPLACE EXISTING ELECTRICAL PANELS AS SHOWN ON ELECTRICAL DRAWINGS.
5. REMOVE EXISTING DOOR, LANDING, AND STAIRS AND RELOCATE TO WINDOW OPENING AS SHOWN.
6. ADD HANDRAILS TO RELOCATED LANDING AND STAIRS. SET RELOCATED LANDING HEIGHT 7 INCHES ABOVE EXISTING FLOOR. CONSTRUCT TREAD 10 INCHES WIDEx7 INCHES TALLx36 INCHES LONG INSIDE DOOR.
7. REMOVE EXISTING BACKWASH SUMP (FUNNEL AND APPRURTENANCES).
8. RELOCATE EXISTING FIRE EXTINGUISHERS AS REQUIRED TO ACCOMMODATE IMPROVEMENTS.
9. REMOVE EXISTING LIGHT ABOVE DOOR.
10. DISCARD ALL DEMOLISHED MATERIALS AT CITY OF BEAVER LANDFILL UNLESS OTHERWISE DIRECTED BY ENGINEER.

VILLAGE SAFE WATER

STATE OF ALASKA — 49TH — REGISTERED PROFESSIONAL ENGINEER — DANIEL J. FLURY — CE-7102

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VILLAGE OF BEAVER, ALASKA

WATER TREATMENT SYSTEM

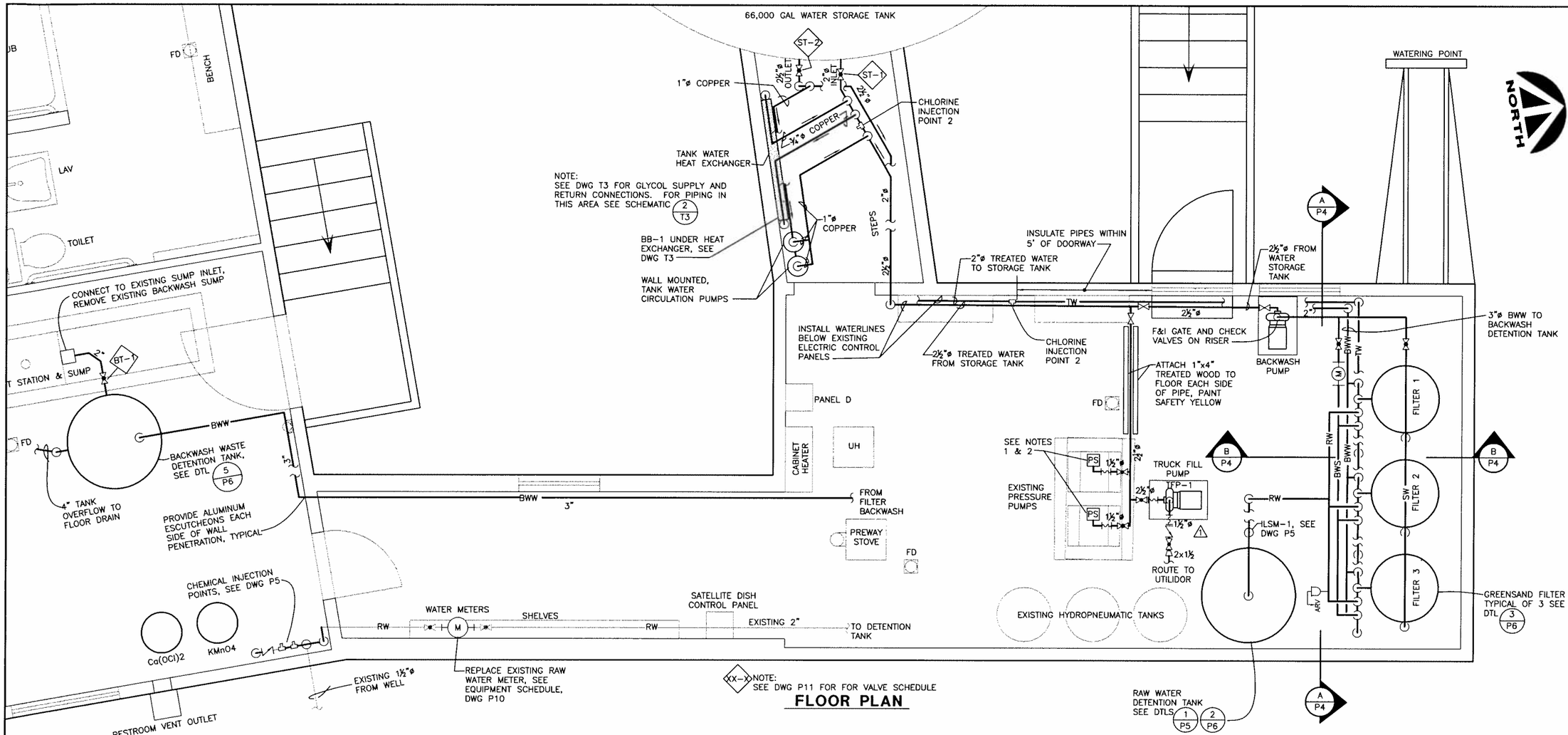
DEMOLITION PLAN

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02

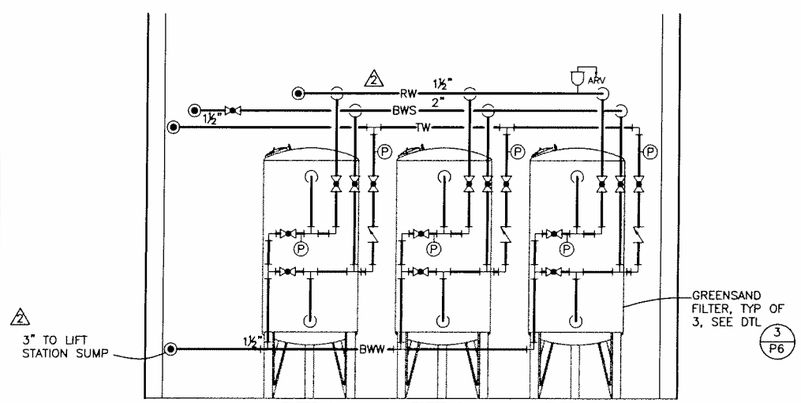
Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P3
DWG No. 8 Of 21

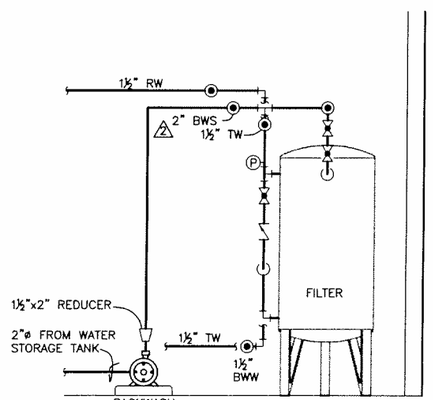
68_P03-P05.DWG(LAYOUT1)



FLOOR PLAN



A/P4 SECTION



B/P4 SECTION

NOTES:

1. REMOVE AND REPLACE EXISTING TWO PRESSURE SWITCHES WITH SQUARE D "PUMPTORL", OR APPROVED EQUAL.
2. EXISTING PRESSURE PUMPS AND TANKS TO REMAIN IN USE.

EXISTING EQUIPMENT

PROPOSED EQUIPMENT

5 4 3 2 1 0 5
GRAPHIC SCALE

VILLAGE SAFE WATER

STATE OF ALASKA — DAVID S. KANOSHIRO — 5123 — REGISTERED PROFESSIONAL ENGINEER — 10-31-04

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VILLAGE OF BEAVER, ALASKA

WATER TREATMENT SYSTEM

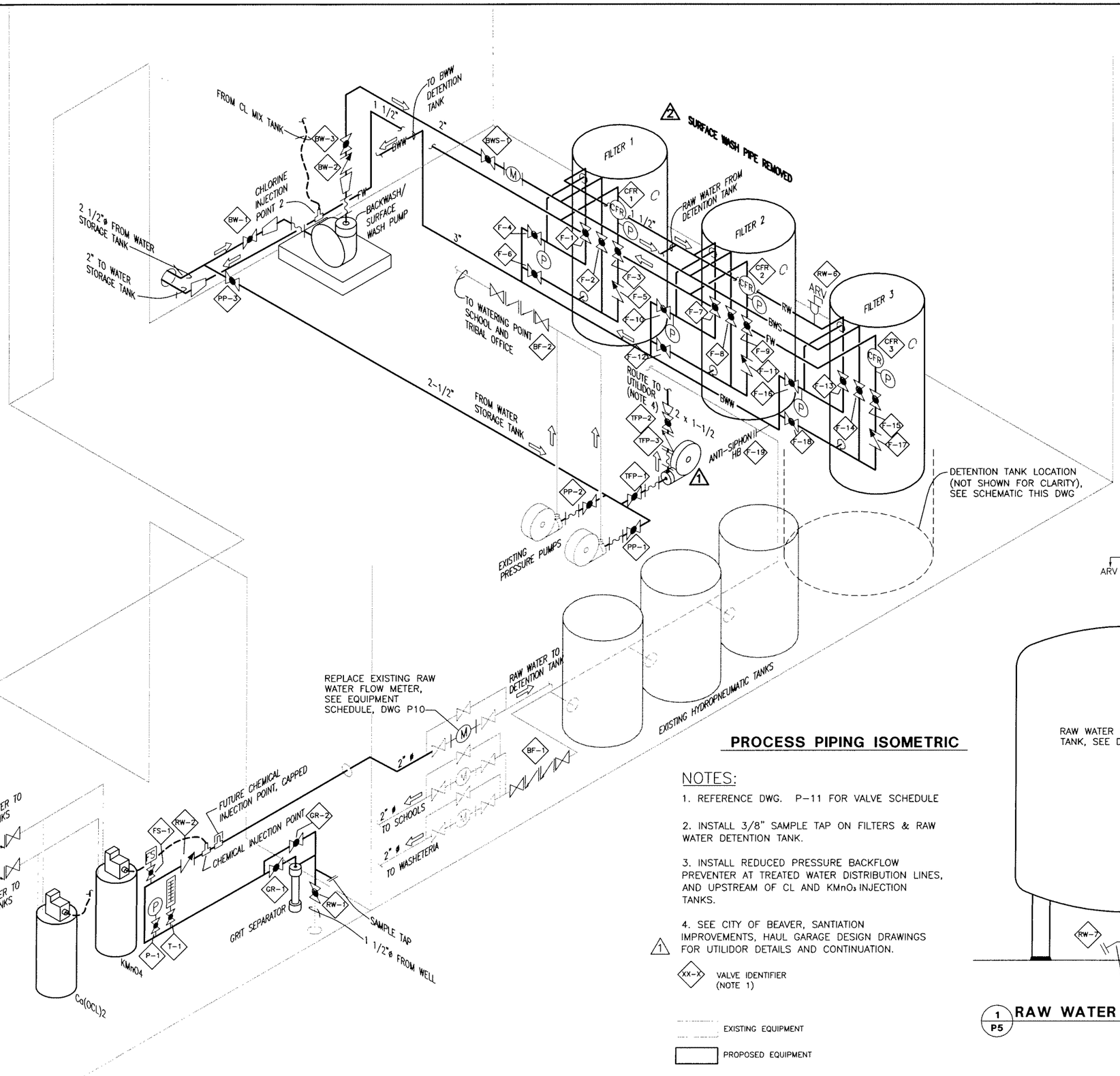
WTF FLOOR PLAN AND SECTIONS

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02
1 ADDED PUMP	DY	08/04
2 DIMENSION REVISE	DY	09/04

Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P4
DWG No. 9 Of 21

06_P03-P05.DWG(LAYOUT2)



PROCESS PIPING ISOMETRIC

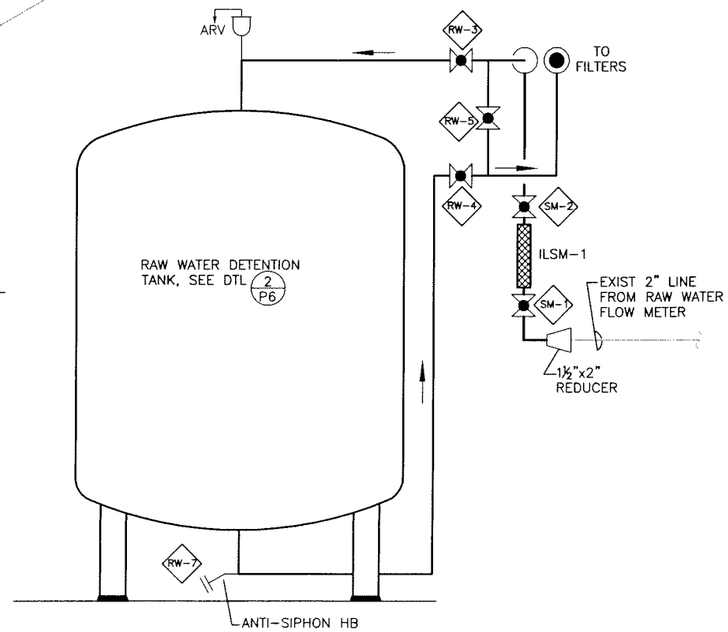
NOTES:

1. REFERENCE DWG. P-11 FOR VALVE SCHEDULE
2. INSTALL 3/8" SAMPLE TAP ON FILTERS & RAW WATER DETENTION TANK.
3. INSTALL REDUCED PRESSURE BACKFLOW PREVENTER AT TREATED WATER DISTRIBUTION LINES, AND UPSTREAM OF CL AND $KMnO_4$ INJECTION TANKS.
4. SEE CITY OF BEAVER, SANTIATION IMPROVEMENTS, HAUL GARAGE DESIGN DRAWINGS FOR UTILIDOR DETAILS AND CONTINUATION.

(1) XX-X VALVE IDENTIFIER (NOTE 1)

EXISTING EQUIPMENT

PROPOSED EQUIPMENT



(1/P5) RAW WATER DETENTION TANK SECTIONAL SCHEMATIC

VILLAGE SAFE WATER

STATE OF ALASKA — 49TH — DAVID S. KANOSHEVICH — CE-5123 — REGISTERED PROFESSIONAL ENGINEER

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VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
FILTRATION ISOMETRIC DIAGRAM

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02
1 ADDED PUMP	DY	05/04
2 REMOVED SW PIPE	DY	09/04

Project No. 9966
Date OCT 14 02
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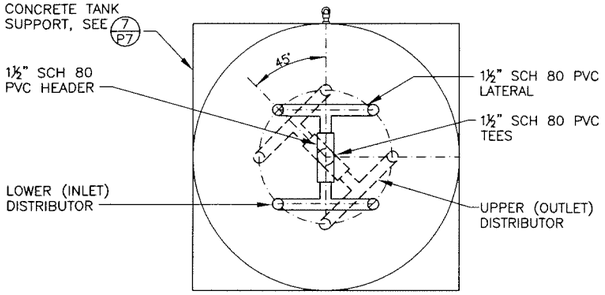
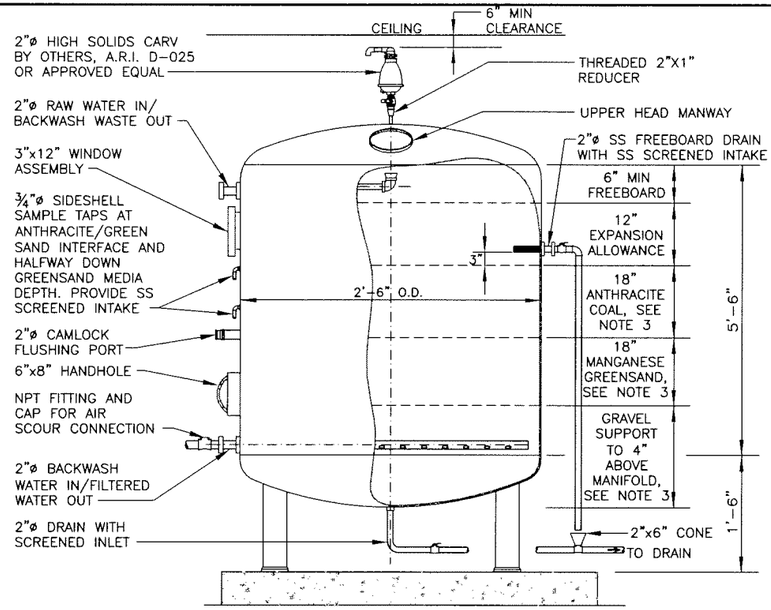
Drawn AV
Approved DY

Sheet No. P5
DWG No. 10 Of 21

06_P03-P05.DWG(LAYOUT3)



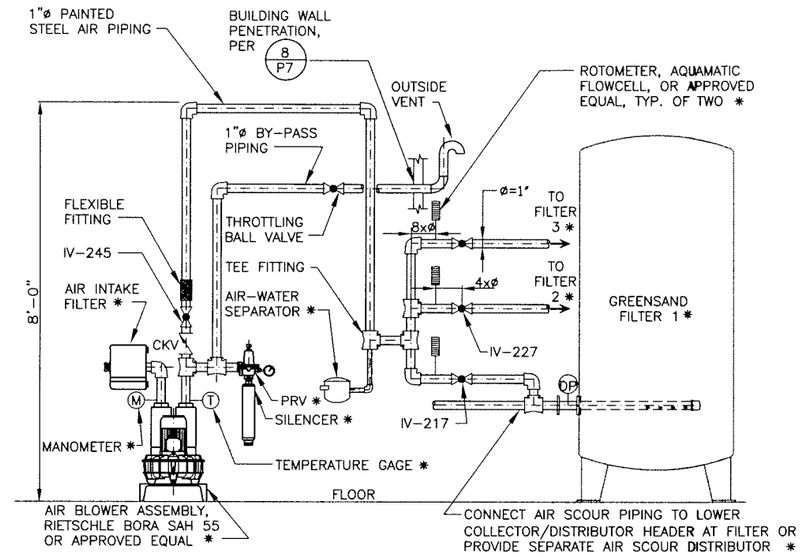
1/P6 **RAW WATER DETENTION TANK DETAIL: PLAN**
NTS



NOTES:

1. REFER TO PROCUREMENT SPECIFICATIONS FOR TANK AND MEDIA DETAILS.
2. TANK MANUFACTURER RESPONSIBLE FOR ALL INTERNAL PIPING AND ALL EXTERNAL NOZZLES.
3. OR AS RECOMMENDED BY TANK MANUFACTURER.

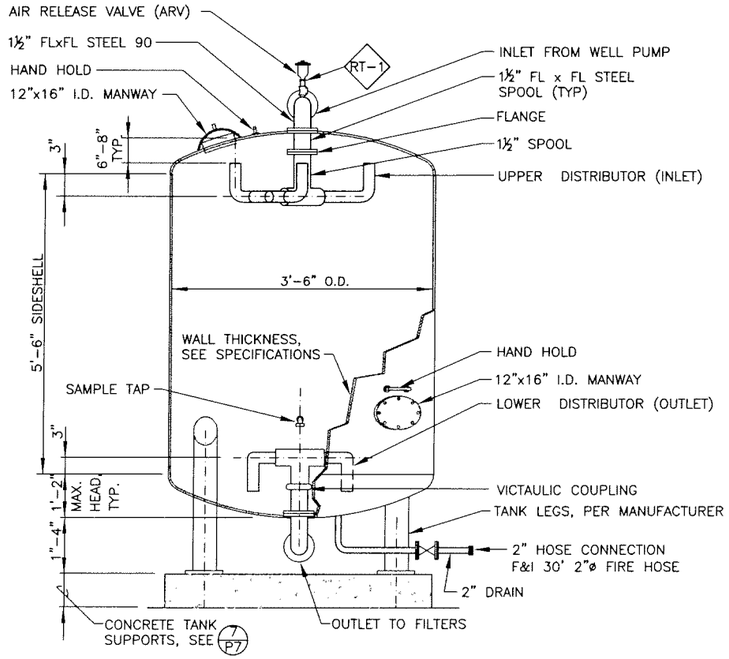
3/P6 **MANGANESE GREENSAND FILTER**
NTS



NOTE:
PROVIDE EQUAL PIPING LENGTHS BETWEEN TEE FITTING AND GREENSAND FILTERS SO THAT RESISTANCE TO AIR FLOW WILL BE EQUALIZED.

* = PROVIDED BY FILTER MANUFACTURER

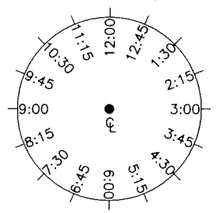
5/P6 **AIR PIPING SCHEMATIC**
NTS



NOTES:

1. PRESSURE VESSELS SHALL BE ASME-RATED.
2. TANK MANUFACTURER RESPONSIBLE FOR ALL INTERNAL PIPING INTEGRAL AND EXTERNAL NOZZLES.

2/P6 **RAW WATER DETENTION TANK: ELEVATION**
NTS

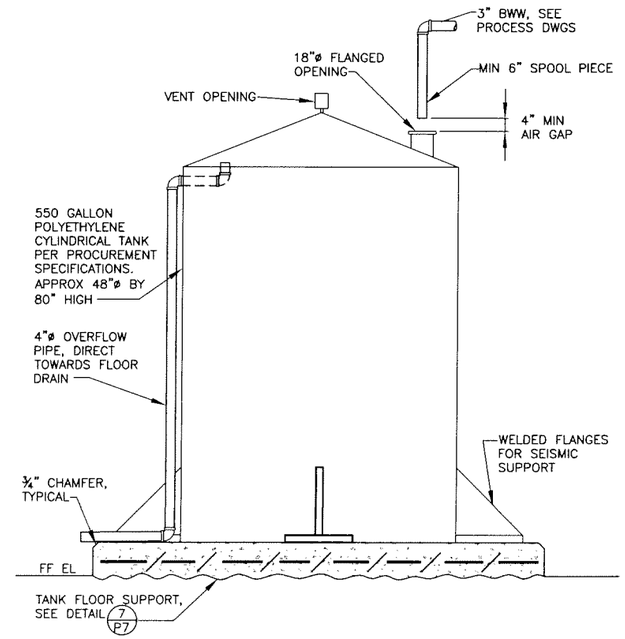


FILTER CONNECTION SCHEMATIC

OPENING	FILTER 1	FILTER 2	FILTER 3
UPPER HEAD MANWAY	7:30	7:30	7:30
LOWER SIDESHELL MANWAY	4:30	4:30	4:30
FILTER INLET/BACKWASH OUT	6:00	6:00	6:00
FILTER OUTLET/BACKWASH IN/AIR SCOUR *	6:00	6:00	6:00
FREEBOARD DRAIN	9:00	9:00	9:00
SAMPLE TAPS	6:45	6:45	6:45
MEDIA FLUSHING PORT	7:30	7:30	7:30
WINDOW ASSEMBLY	7:30	7:30	7:30

* IF SEPARATE DISTRIBUTOR IS PROVIDED

4/P6 **FILTER CONNECTIONS POSITION SCHEDULE**
NTS



6/P6 **BACKWASH DETENTION TANK**
NTS

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3900 ARCTIC BLVD, SUITE 203
ANCHORAGE, ALASKA 99503
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VILLAGE SAFE WATER

STATE OF ALASKA 49TH REGISTERED PROFESSIONAL ENGINEER David S. Fonseca CE-5123

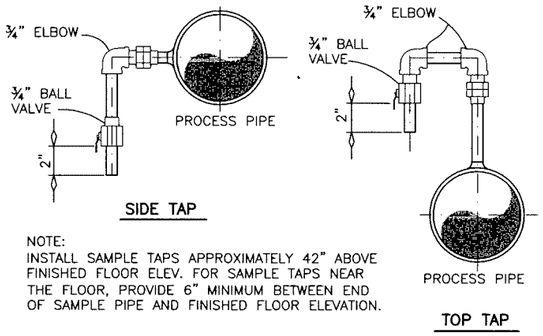
VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
TANK & MISCELLANEOUS PIPE DETAILS

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02
1 TANK MODIFICATIONS	DY	9/04

Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

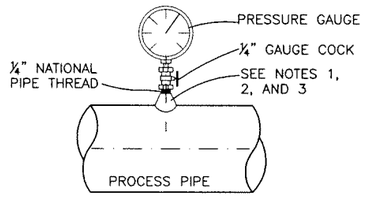
Sheet No. P6
DWG No. 11 Of 21

08_P06.DWG



NOTE:
INSTALL SAMPLE TAPS APPROXIMATELY 42" ABOVE FINISHED FLOOR ELEV. FOR SAMPLE TAPS NEAR THE FLOOR, PROVIDE 6" MINIMUM BETWEEN END OF SAMPLE PIPE AND FINISHED FLOOR ELEVATION.

1/P7 **TYPICAL SAMPLE TAP DETAIL**
NTS

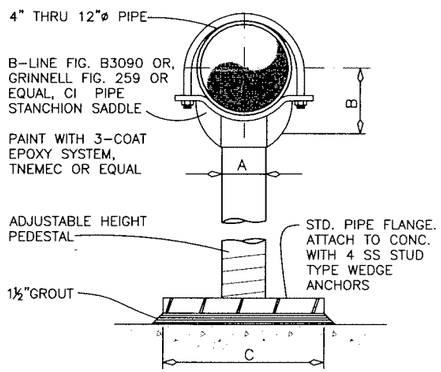


NOTES
1. FOR COPPER PIPE USE STANDARD BRASS, COPPER OR BRONZE FITTINGS.
2. FOR STEEL, GALVANIZED STEEL, AND PVC 2½" AND SMALLER, USE A BUSHING TEE.
3. FOR DUCTILE IRON, ALL SIZES, USE PIPE SADDLE WITH BUSHING.
4. FOR STEEL AND STAINLESS STEEL PIPES 3" AND LARGER, USE THREAD-O-LET AS SHOWN.

4/P7 **PRESSURE GAUGE MOUNTING DETAIL**
NTS

PIPE HANGER NOTES:

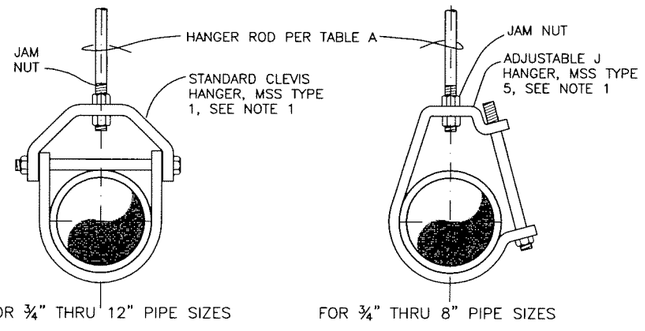
1. SUPPORT SPACING SHALL NOT EXCEED MFR'S. RECOMMENDATIONS, NOR THE SPANS SHOWN IN THE NOTES ON DWG P9.
2. SUPPORT SIZES SHALL NOT BE SMALLER THAN MFR'S RECOMMENDATIONS, NOR LESS THAN THE SIZES SHOWN IN THE NOTES ON DWG P9.
3. SUPPORT SPACING AND LOADING SHALL NOT CAUSE STRUCTURAL MEMBERS TO BE OVER-STRESSED.
4. PROVIDE A MINIMUM OF TWO PIPE HANGERS PER PIPE LENGTH.
5. ROD AND SUPPORTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION, UNLESS SPECIFIED OTHERWISE. NUTS, BOLTS, AND WASHERS MAY BE ZINC PLATED, EXCEPT THOSE SUBJECT TO MOISTURE OR CORROSIVE ATMOSPHERE SHALL BE TYPE 304 STAINLESS STEEL.
6. MSS REFERS TO MANUFACTURER'S STANDARDIZATION SOCIETY OF THE VALVES NAD FITTINGS INDUSTRY, STANDARD PRACTICE SP58 AND SP69.
7. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION SHIELD, SIMILAR TO GRINNELL FIG. 167 OR EQUAL, WHERE PIPING IS INSULATED.
8. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE 'W' OR KORFUND KORPAD 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
9. FOR BASE, HEIGHT AND FLANGE DIMENSIONS SEE TABLE.



DIMENSION TABLE A

PIPE SIZE	A	B	C
4"	3"	4 3/16"	9"
5"	3"	4 13/16"	9"
6"	3"	5 7/16"	9"
8"	3"	6 15/16"	9"
10"	3"	8 7/16"	9"
12"	3"	9 15/16"	9"

2/P7 **PIPE SUPPORT**
NTS



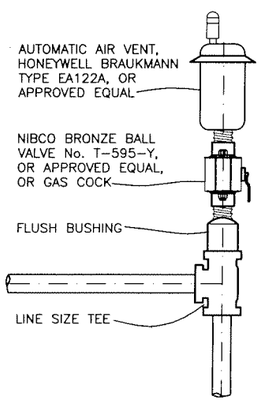
NOTE:
1. USE ISOLATION STRIPS OR COPPER/BRASS HANGERS FOR COPPER PIPE SUPPORTS.

5/P7 **TYPE A PIPE HANGER**
NTS

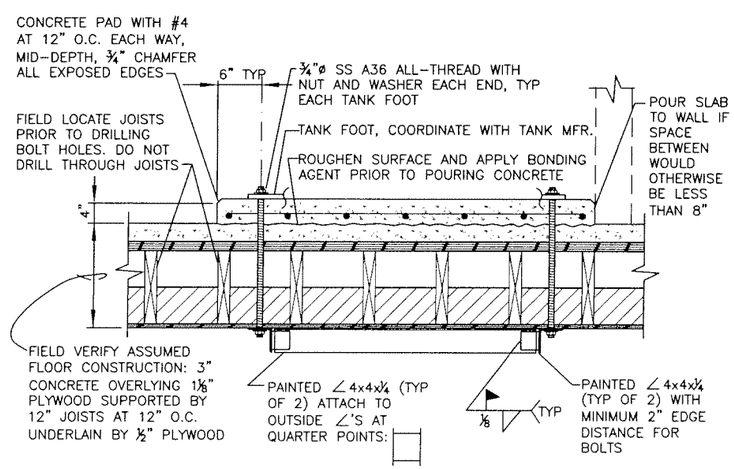
6/P7 **TYPE B PIPE HANGER**
NTS

EQUIPMENT PAD NOTES:

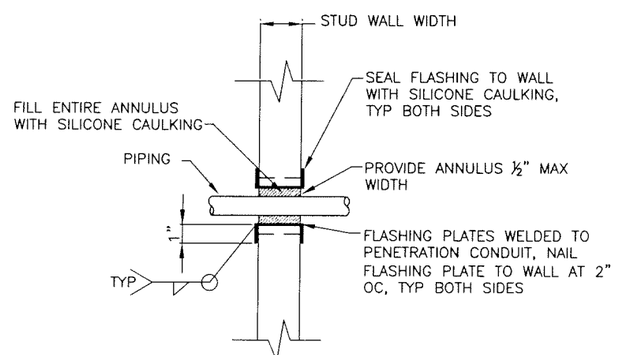
1. PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS OR AS INDICATED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER, AND SHALL BE AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE DRILLED-IN, EXPANSION TYPE, KWIK- BOLT II OR APPROVED EQUAL.
3. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS SPECIFIED OTHERWISE.
4. WEDGES OR SHIMS SHALL BE USED TO SUPPORT THE BASE WHEN THE NON-SHRINK GROUT IS PLACED. TEMPORARY LEVELING NUTS SHALL BE BACKED OFF. IF LEFT IN, THE WEDGES OR SHIMS SHALL NOT BE EXPOSED TO VIEW.
5. WHEN ANCHORAGE OF EQUIPMENT TO SLAB IS REQUIRED, USE S.S.T. WEDGE ANCHORS SPECIFIED.
6. MINIMUM ⅝"ø ANCHOR BOLT WITH MINIMUM 6" EMBEDMENT. PIPE SUPPORT ANCHOR BOLTS SHALL BE ½"ø GALVANIZED STEEL WITH 2¼" EMBEDMENT INTO EXISTING CONCRETE SLAB. BOLT LENGTHS SHALL BE SIZED TO ACCOMMODATE BASE PLATE PLUS GROUT PAD THICKNESSES IN ADDITION TO EMBEDMENT DEPTH.



3/P7 **TYPICAL AUTOMATIC AIR VENT INSTALLATION**



7/P7 **TANK FLOOR SUPPORT DETAIL**
NTS TYPICAL OF 5 TANKS



NOTE:
PIPE PENETRATION SHALL NOT PENETRATE WALL STUD.

8/P7 **WALL PENETRATION DETAIL**
NTS

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anchorage, alaska
3900 ARCTIC BLVD, SUITE 203
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PHONE: (907) 562-3252
FAX: (907) 561-2273

VILLAGE SAFE WATER

STATE OF ALASKA — 49TH — REGISTERED PROFESSIONAL ENGINEER — David S. Kinsman — CERTIFICATE NUMBER 12123

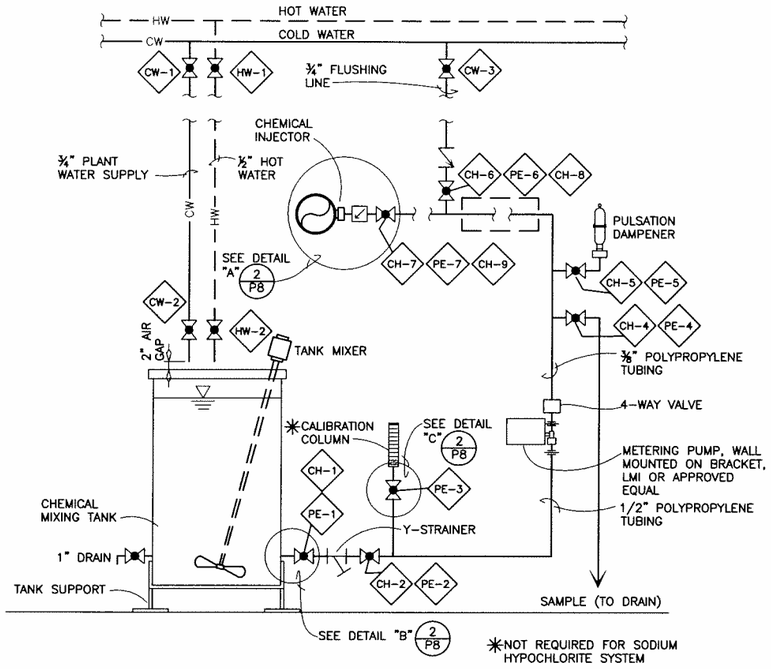
VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
MISCELLANEOUS DETAILS

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02
⚠ ADDED DWGS 7 & 8	DY	9/04

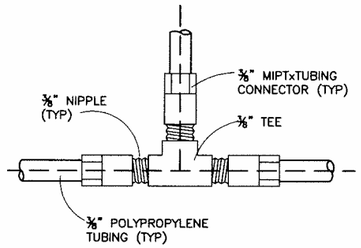
Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P7
DWG No. 12 Of 21

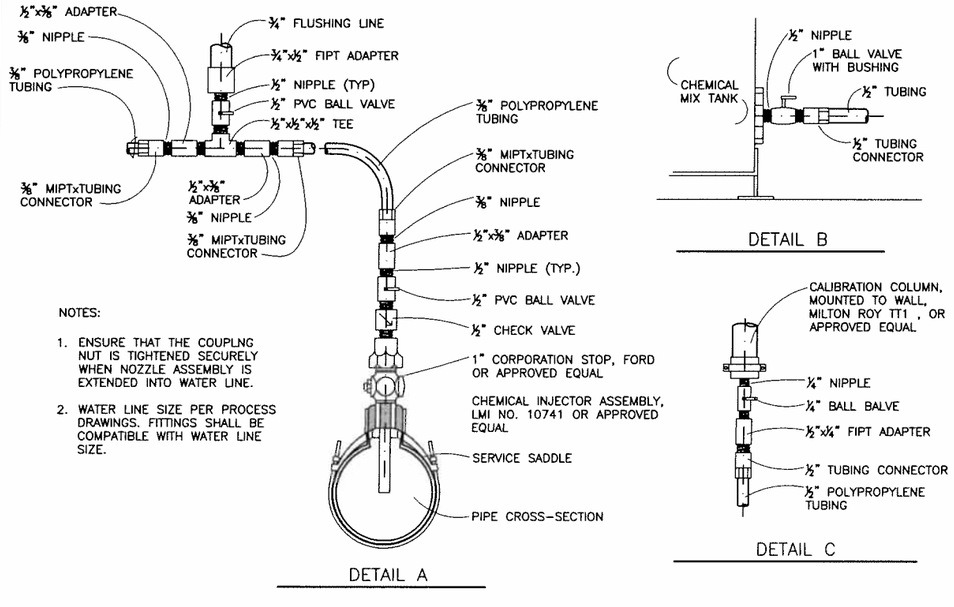
66_P07.DWG (LAYOUT 1)



1 P8 **CHEMICAL FEED SYSTEM (TYPICAL)**
NTS



3 P8 **TYPICAL TUBING X TUBING CONNECTION**
NTS



2 P8 **CHEMICAL INJECTOR ASSEMBLY DETAILS**
NTS

VILLAGE SAFE WATER

STATE OF ALASKA — REGISTERED PROFESSIONAL ENGINEER — DAVID E. FURRY CE-7102

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VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
CHEMICAL MIX DETAILS AND VALVE SCHEDULE

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02

Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P8
DWG No. 13 Of 21

66_P08.DWG

GENERAL

1. INSTALL PIPING TO MEET REQUIREMENTS OF LOCAL AND STATE CODES; EXCERCISE CARE IN THE TRANSPORTING AND HANDLING TO AVOID DAMAGE TO PIPE AND FITTINGS: STORE MATERIALS ON THE SITE SO AS TO PREVENT DAMAGE; KEEP MATERIALS CLEAN, DRY, AND FREE FROM DELETERIOUS CONDITIONS; DO NOT STORE MATERIAL DIRECTLY ON THE GROUND.

2. NO PLUMBING FIXTURE, DEVICE, EQUIPMENT, OR PIPE CONNECTION SHALL BE INSTALLED THAT WILL PROVIDE A CROSS CONNECTION BETWEEN A POTABLE WATER SUPPLY AND ANY SOURCE OF NON-POTABLE WATER.

3. WATER LINES SHALL BE COLOR CODED AND FLOW DIRECTION SHALL BE INDICATED. REFER TO LEGEND DRAWING FOR COLOR CODE.

4. RUN PIPES PARALLEL WITH THE LINES OF THE BUILDING WHEREVER POSSIBLE; NO WATER PIPE SHALL BE BURIED IN FLOORS EXCEPT FLOOR DRAIN TRAP PRIME PIPING, AND ANY LINES SPECIFICALLY INDICATED ON THE DRAWINGS OR APPROVED BY THE OWNER'S REPRESENTATIVE.

5. ALL MATERIALS AND COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL BE ANSI/NSF 60- AND 61- APPROVED.

PIPING

1. COPPER PIPE: SEAMLESS COPPER WATER TUBE ASTM B88 TYPE K, HARD DRAWN FOR UNDERGROUND AND TYPE L, HARD DRAWN FOR ABOVE GROUND; COPPER DRAINAGE TUBE (DWV) ASTM B306.

2. COPPER FITTINGS: WROUGHT COPPER AND BRONZE SOLDER-JOINT PRESSURE FITTINGS ANSI B16.22; CAST BRONZE THREADED FITTINGS ANSI B16.15, 250 LBS CLASS; CAST BRONZE SOLDER-JOINT PRESSURE FITTINGS ANSI B16.18 AND B16.18A; CAST BRONZE SOLDER-JOINT DRAINAGE FITTINGS (DWV) ANSI B16.23; BRONZE FLANGES AND FLANGE FITTINGS ANSI B16.24, 150 LBS CLASS; CAST BRONZE FITTINGS FOR FLARED COPPER TUBES ANSI B16.26; BRAZING FILLER MATERIAL AWS 5.8; SOLDER METAL ASTM B32, GRADE 95TA, 95-5 WIRE SOLDER; BRAZING FLUX FS 0-F-499 TYPE B; SOLDERING FLUX FS 0-F-506, TYPE 1. ONLY LEAD FREE SOLDER MAY BE USED IN THE POTABLE WATER SYSTEM

3. FIXTURE STOPS: SLOW COMPRESSION ANGLE VALVE WITH WHEEL HANDLE, ALL BRASS POLISHED CHROME PLATED, ½-INCH IPS FEMALE INLET, OUTLET OT SLIP ½-INCH OD. FLEXIBLE TUBING, CHROME PLATED CAST BRASS ESCUTCHEON WITH SET SCREW; 150 PSI SCREWED CAST IRON OR COPPER UNIONS, GROUND JOINT NON-FERROUS SEAT; EACH HOT AND COLD WATER SUPPLY TO EACH FIXTURE SHALL BE PROVIDED WITH A COMPRESSION ANGLE VALVE IN AN ACCESSIBLE LOCATION NEAR THE FIXTURE.

4. HOSE BIBB ASSEMBLY SHALL CONSIST OF GLOBE OR ANGLE VALVE TO SUIT INSTALLATION. ATMOSPHERIC VACUUM BREAKER AND A SWIVEL TYPE HOSE BIBB; 1-INCH WITH AMERICAN NATIONAL STRAIGHT THREAD HOSE CONNECTION; BRONZE.

5. ALL CHANGES IN PIPE SIZE SHALL BE MADE WITH REDUCING FITTINGS ONLY; REDUCING BUSHINGS WILL NOT BE PERMITTED. ALL CHANGES IN DIRECTION (EXCEPT FOR MINOR MISALIGNMENTS) SHALL BE MADE BY THE APPROPRIATE USE OF 45° WYES (WITH SCREWED PLUG), LONG OR SHORT SWEEP BENDS, OR EQUIVALENT FITTINGS; USE OF LONG SWEEP BENDS IS PREFERRED OVER THE SHORT TYPE; SLIP JOINTS WILL BE PERMITTED ONLY IN TRAP SEALS OR ON THE INLET SIDE OF THE TRAPS; PIPE BENDING WILL NOT BE PERMITTED.

6. PIPE DRAINAGE: BOTH HOT AND COLD WATER LINES ARE TO BE INSTALLED SO AS TO BE DRAINED; DRAINAGE CAN BE ACCOMPLISHED BY USING PLUGGED OR CAPPED FITTINGS OR BY DISCONNECTING THE SUPPLY PIPE AT THE FIXTURE; PIPE DRAINS SHALL CONSIST OF ½-INCH GLOBE VALVE WITH RENEWABLE DISKS AND ¾-INCH HOSE NIPPLES; ALL OTHER LOW POINTS ARE TO BE PROVIDED WITH ½-INCH SCREWED BRASS PLUGS.

7. WATER HAMMER ARRESTERS: AN AIR CHAMBER SHALL BE PROVIDED ON HOT AND COLD WATER LINES NEAR EACH SOLENOID VALVE, CONTROL VALVE, OR FLUSH VALVE; UNLESS SHOWN OTHERWISE ON THE DRAWINGS. AIR CHAMBERS CONSIST OF A 12-INCH LENGTH OF PIPE OF THE SAME DIAMETER AS THE BRANCH SUPPLY, CAPPED. COMMERCIAL TYPE SNUBBERS, IF INSTALLED SHALL BE ACCESSIBLE FOR MAINTENANCE.

8. DIELECTRIC UNIONS SHALL BE INSTALLED BETWEEN FERROUS AND NON-FERROUS METALLIC PIPE AND AT CONNECTIONS TO WATER HEATERS. UNIONS SHALL BE PROVIDED ADJACENT TO ALL EQUIPMENT FOR DISCONNECTION, AND SHALL NOT BE CONCEALED IN WALLS, CEILINGS, OR PARTITIONS.

9. PIPES PASSING BETWEEN CONCRETE FLOORS OR WALLS SHALL BE PROVIDED WITH STANDARD WEIGHT STEEL PIPE SLEEVES. SLEEVES SHALL EXTEND 1-INCH ABOVE FLOOR IN UNFINISHED AREAS AND ¼-INCH ABOVE FLOOR IN FINISHED AREAS, BUT ALLOW PLACEMENT OF ESCUTCHEONS.

10. ESCUTCHEONS SHALL BE PROVIDED AT ALL FINISHED SURFACES WHERE EXPOSED PIPING, BARE OR INSULATED, PASSES THROUGH FLOORS, WALLS, OR CEILINGS; TO BE FASTENED SECURLEY TO PIPE OR PIPE COVERING AND ARE CHROME PLATED IRON OR CHROME PLATED BRASS, EITHER ONE PIECE OR SPLIT PATTERN, HELD IN PLACE BY INTERNAL SPRING TENSION OR SET SCREW.

11. FURNISH ACCESS PANELS OF APPROVED ADEQUATE SIZE FOR ALL VALVES AND EQUIPMENT REQUIRING SERVICE AND INSTALLED ABOVE CEILINGS, BEHIND WALLS OR IN FURRING, COMPLETE WITH CORRECT FRAME FOR TYPE OF BUILDING CONSTRUCION INVOLVED; USE NO PANEL SMALLER THAN 12-INCHES BY 12-INCHES FOR SIMPLE MANUAL ACCESS OR NO SMALLER THAN 16-INCHES BY 20-INCHES WHERE PERSONNEL MUST PASS THROUGH.

12. SWING JOINTS, OFFSETS, EXPANSION JOINTS, AND THE LIKE, SHALL BE PROVIDED WHERE NECESSARY TO ACCOMMODATE EXPANSION OF PIPING, WHICH WILL BE APPROXIMATELY 2-INCHES PER 100 FEET OF COPPER HOT WATER PIPING.

PIPE INSTALLATION:

1. THREADED JOINTS: THREADS ANSI B1.201, NPT; CUT THREADS FULL AND CLEAN WITH SHARP DIES; REAM ENDS OF PIPE AFTER THREADING AND BEFORE ASSEMBLY TO REMOVE BURRS; LEAVE NOT MORE THAN THREE (3) PIPE THREADS EXPOSED AT EACH CONNECTION; JOINT SEALER TEFLON THREAD TAPE.

2. COPPER PIPE: BEND PIPE BY ANY METHOD AND TO ANY RADIUS WITHIN MANUFACTURER'S RECOMMENDATION; SURFACE SHALL BE FREE OF CRACKS AND BUCKLES AFTER BENDING.

3. SOLDER JOINTS: REAM OR FILE PIPE TO REMOVE BURRS; CLEAN AND POLISH CONTACT SURFACES OF JOINT; APPLY FLUX TO BOTH MALE AND FEMALE ENDS; INSERT END OF TUBE INTO FITTINGS FULL DEPTH OF SOCKET; BRING JOINT TO SOLDERING TEMPERATURE, IN AS SHORT A TIME AS POSSIBLE; FORM CONTINUOUS SOLDER BEAD AROUND ENTIRE CIRCUMFERENCE OF JOINT; LET COOL WITHOUT DISTURBING. USSE ONLY LEAD FREE SOLDER.

4. BRAZED JOINTS: REAM OR FILE PIPE TO REMOVE BURRS; CLEAN AND POLISH CONTACT SURFACES OF JOINT; APPLY FLUX TO BOTH MALE AND FEMALE ENDS; INSERT END OF TUBE INTO FITTINGS FULL DEPTH OF SOCKET; BRING JOINT TO BRAZING TEMPERATURE, IN AS SHORT A TIME AS POSSIBLE; FORM CONTINUOUS BEAD OF FILLER MATERIAL AROUND ENTIRE CIRCUMFERENCE OF JOINT; LET COOL WITHOUT DISTURBING.

5. FLARED JOINTS: REAM OR FILE PIPE TO REMOVE BURRS; SLIP FITTING OVER TUBE END TO BE FLARED; EXPAND END OF TUBE USING FLARING TOOL; TIGHTEN JOINT FITTING.

6. UNIONS: USE DIELECTRIC UNIONS FOR ALL CONNECTIONS BETWEEN COPPER AND FERROUS MATERIALS.

PIPE HANGERS AND SUPPORTS:

1. SEISMIC BRACING: BRACE ALL PIPING 2½-INCH INSIDE DIAMETER AND LARGER FOR SEISMIC ZONE 2B FORCES IN ACCORDANCE WITH THE LATEST EDITION OF THE UNIFORM BUILDING CODE; LATERAL SUPPORTS FOR SEISMIC LOADS SHALL BE PROVIDED AT ALL CHANGES IN DIRECTION.

2. STANDARD HANGERS AND SUPPORTS: MSS SP-58 OR FS WW-H-171; TYPE AS REQUIRED FOR CONDITIONS OR AS INDICATED; HANGER RODS CARBON STEEL, ASTM A575; CONCRETE INSERTS MSS SP-58 OR FS WW-H-171; CONCRETE INSERTS (MANUFACTURED CONTINUOUS) UNISTRUT P-3200 SERIES OR APPROVED EQUIVALENT, GALVANIZED. USE ISOLATION STRIPS OR BRASS/COPPER HANGERS FOR COPPER PIPE.

3. MANUFACTURER'S HANGERS AND SUPPORTS: UNISTRUT, KINDORF OR APPROVED EQUIVALENT; TYPE AS REQUIRED FOR CONDITIONS OR AS INDICATED; CONTINUOUS CONCRETE INSERTS UNISTRUT P-3200 SERIES, HOT-DIPPED GALVANIZED TO ASTM A123 OR A153, 2 OZ./SQ. FT. COATING WEIGHT; INDIVIDUAL INSERTS UNISTRUT M26 OR APPROVED EQUIVALENT, SWIVEL-TYPE CONCRETE INSERT, HOT-DIPPED GALVANIZED TO ASTM A123 OR A153, 2 OZ./SQ. FT. COATING WEIGHT. USE ISOLATION STRIPS OR BRASS/COPPER HANGERS FOR COPPER PIPE.

4. METAL FRAMING: UNISTRUT 1⅝-INCH CHANNEL WIDTH SERIES OR APPROVED EQUIVALENT, CONTINUOUS SLOT CHANNEL, HOT-DIPPED GALVANIZED TO ASTM A123 OR A153.

5. END CLOSURES, JOINT COVERS, CLOSURE STRIPS, PARTS, SCREWS AND NUTS: ELECTRO-GALVANIZED, FS QQ-Z-325 OR CADMIUM PLATED.

6. CONCRETE AND FABRICATED HANGERS AND SUPPORTS: COMPLETE INSTALLATION TO PRESENT NEAT ORDERLY APPEARANCE; DO NOT BLOCK OPENINGS OR PASSAGEWAYS WITH PIPING; RUN PIPING PARALLEL TO WALLS OF BUILDING; KEEP PIPING FREE FROM CONTACT WITH STRUCTURE OR INSTALL ITEMS; ALLOW CLEARANCES FOR PIPE EXPANSION AND CONTRACTION; ANCHOR HORIZONTAL RUNS OVER 50 FEET AT MIDPOINT TO FORCE EXPANSION EQUALLY TOWARD ENDS.

7. PLACEMENT OF VERTICAL PIPING: SECURE AT SUFFICIENTLY CLOSE INTERVALS TO KEEP PIPE IN ALIGNMENT AND TO SUPPORT WEIGHT OF PIPE AND CONTENTS; INSTALL SUPPORTS AT EACH FLOOR OR VERTICALLY AT INTERVALS OF NOT MORE THAN 10 FEET; IF PIPING IS TO STAND FREE OF SUPPORT, OR IF NO STRUCTURAL ELEMENT IS AVAILABLE FOR SUPPORT DURING CONSTRUCTION, SECURE IN POSITION WITH WOODEN STAKES OR BRACES FASTENED TO PIPE.

8. PLACEMENT OF HORIZONTAL PIPING: SUPPORT AT SUFFICIENTLY CLOSE INTERVALS TO MAINTAIN ALIGNMENT AND PREVENT SAGGING; INSTALL HANGERS AT ENDS OF RUNS OR BRANCHES AND AT EACH CHANGE OF DIRECTION OR ALIGNMENT; SUPPORT SPACING SHALL NOT EXCEED THE MANUFACTUR'S RECOMMENDATIONS NOR AS LISTED BELOW:

PIPE	SIZE	SUPPORT SPACING (FEET)
HDPE	2-INCH	4.9
	3-INCH	6.0
	4-INCH	6.8
	6-INCH	8.3
COPPER	UNDER 1½"	6
	1½" TO 4-INCH	8
	OVER 4-INCH	16
PVC	UNDER 2½"	4
	2½" AND OVER	8

INSULATION:

1. GENERAL: FURNISH AND INSTALL COVERING AND INSULATION OF THE TYPES HEREINAFTER SPECIFIED ON PIPING; ALL INSULATION THICKNESS SHALL MEET OR EXCEED ASHRAE 90A-1980 REQUIREMENTS; ALL SEALERS, SOLVENTS, TAPES, ADHESIVES, AND MASTICS USED IN CONJUNCTION WITH THE INSTALLATION OF ALL INSULATION SPECIFIED HEREIN SHALL POSSESS THE MAXIMUM POSSIBLE FIRE-SAFE QUALITIES AVAILABLE AND SHALL BE OF A TYPE AS APPROVED UNDER NFPA STANDARDS; STORE INSULATING MATERIALS ON THE SITE IN THEIR ORIGINAL WRAPPINGS AND PROTECT THEM FROM WEATHER, WATER, CHEMICAL, DIRT AND PHYSICAL DAMAGE; DAMAGED INSULATION SHALL NOT BE INSTALLED AND SHALL BE REMOVED FROM THE PROJECT SITE.

2. INSTALLATION: ALL PIPING SHALL BE DRY AND FREE OF DUST, GREASE, AND OTHER FOREIGN MATTER BEFORE INSULATION IS APPLIED; NO PIPING SHALL BE INSULATED UNTIL TESTED AND APPROVED; AT ALL OPENINGS IN INSULATION, PROTECT INSULATION EDGES WITH NEATLY APPLIED METAL FRAMES; ALL LONGITUDINAL OVERLAP IN EXPOSED WORK SHALL BE TOWARD CEILING OR WALL; OVERLAPS SHALL BE A MINIMUM OF 2 INCHES; INSULATION ON WORK PASSING THROUGH SLEEVES OR OTHER OPENINGS SHALL BE CONTINUOUS THROUGH THE SLEEVE OR OPENING; INSULATION THROUGH FIRE-RATED WALLS AND FLOORS SHALL MAINTAIN RATING INTEGRITY AND AN APPROVED FIRE STOP SEALANT APPLIED.

3. PIPING INSULATION: ALL PIPING SHALL BE INSULATED WITH MOLDED SECTIONAL FIBERGLASS INSULATION WITH REINFORCED, FOIL-FACED FIRE RETARDANT VAPOR JACKET; FIBERGLASS SHALL HAVE A DENSITY OF APPROXIMATELY 4 POUNDS PER CUBIC FOOT, THICKNESS OF 1-INCH, THERMAL CONDUCTIVITY K=0.24 AT 100 DEGREES F; PIPING 2½-INCHES AND LARGER SHALL HAVE 1½-INCH THICK INSULATION; PIPING UNDER 2½-INCHES SHALL HAVE 1-INCH THICK INSULATION.

4. PROTECTIVE COVERING: EXPOSED PORTIONS OF PIPING SUBJECT TO TRAFFIC AREAS OR VANDALISM SHALL HAVE, IN ADDITION TO THE VAPOR BARRIER JACKET, A STUCCO-EMBOSSED CASING OF 0.020-INCH ALUMINUM SECURED BY ALUMINUM OR STAINLESS STEEL BANDS AND SEALED WITH WEATHER PROOF COMPOUND; PIPE INSULATION SHALL BE MOLDED SECTIONAL GLASS FIBER WITH ALL SERVICE JACKET, 1-1/2-INCH THICK, OWENS-CORNING OR EQUAL.

5. FIRE HAZARD RATING: INSULATION AND JACKETING, SEALERS, TAPES, ADHESIVES, MASTICS, AND OTHER ACCESSORIES USED IN CONJUNCTION WITH THE INSTALLATION OF INSULATION SHALL HAVE A FIRE HAZARD RATING NOT TO EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED; ALL MATERIAL SHALL BE OF TYPES APPROVED UNDER NFPA 90A AND UNDERWRITERS LABORATORIES AND BY F.I.A.; UNDERWRITERS LABORATORIES, INC., LABEL OR LISTING, SATISFACTORY TEST RESULTS FROM THE NATIONAL BUREAU OF STANDARDS, OR CERTIFIED TEST REPORT FROM AN APPROVED TESTING LABORATORY SHALL BE REQUIRED TO INDICATE THAT FIRE HAZARD RATINGS FOR MATERIALS PROPOSED FOR USE DO NOT EXCEED THOSE SPECIFIED; FLAME-PROOFING TREATMENTS SUBJECT TO DETERIORATION DUE TO THE EFFECT OF MOISTURE OR HIGH HUMIDITY ARE NOT ACCEPTABLE.

6. INSULATION, JACKETS AND FACINGS: ALL VAPOR BARRIERS SHALL BE SEALED AND CONTINUOUS THROUGHOUT; ALL VOIDS SHALL BE FILLED WITH INSULATING CEMENT PRIOR TO APPLYING VAPOR BARRIER JACKETS; NO STAPLES SHALL BE USED IN VAPOR BARRIER JACKETS; NO HANGERS SHALL PENETRATE INSULATION.

7. INSULATION FOR PIPE FITTINGS: THICKNESS OF INSULATION APPLIED TO FITTINGS SHALL MATCH THE PIPE INSULATION THICKNESS; PRE-MOLDED FIBERGLASS FITTINGS SHALL BE USED PREFERABLY WITH FACTORY-FURNISHED VAPOR BARRIER JACKET; COVER WITH SPIRAL WRAPPED GLASS MESH TAPE, FINISH WITH A VAPOR BARRIER COATING APPLIED AT LEAST 1/16-INCH THICK.

VALVES:

1. GENERAL: ALL VALVES AND ACCESSORIES SHALL BE INSTALLED IN A MANNER AND LOCATION AS SHOWN ON THE DRAWINGS OR AS REQUIRED FOR THE APPLICATION AND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS; SIZE OF VALVE EQUAL TO LINE PIPING IN WHICH VALVE IS INSTALLED UNLESS OTHERWISE NOTED ON DRAWINGS; SUPPORT ALL VALVES WHERE NECESSARY.

2. STORAGE AND HANDLING: STORE VALVES, OPERATORS AND ACCESSORIES IN AN AREA PROTECTED FROM WEATHER, MOISTURE, OR POSSIBLE DAMAGE; DO NOT STORE MATERIAL DIRECTLY ON THE GROUND; TRANSPORT AND HANDLE ITEMS WITH CARE TO PREVENT INTERIOR OR EXTERIOR DAMAGE; REPAIR OR REPLACE DAMAGED MATERIAL TO SATISFACTION OF OWNER'S REPRESENTATIVE.

3. BUTTERFLY VALVES: NOT FOR CHEMICAL USE; TIGHT-CLOSING WITH RUBBER SEATS WHICH ARE SECURELY BONDED TO THE VALVE BODY; RATING 175 PSI W.O.G. DRIP-TIGHT, WITH FLOW IN EITHER DIRECTION; AWWA C504; FLANGED ENDS; DRILLING AND FACING ANSI B16.1, CLASS 125; ON COUNTERCLOCKWISE; PROVIDE HAND WHEEL WITH EACH VALVE ABOVE GRADE.

4. GATE VALVES (2½-INCHES AND SMALLER): BRONZE BODY AND TRIM; SOLID WEDGE FOR VERTICAL PIPE RUNS; DOUBLE DISC FOR HORIZONTAL PIPE RUNS; RATING 200 PSI W.O.G.; FEDERAL SPECIFICATION WW-V-54; SCREWED OR FLANGED ENDS; RISING STEM; STEM SEALS GRAPHITE IMPREGNATED ASBESTOS PACKING; UNION BODY-BONNET CONNECTION; MANUAL HAND WHEEL OPERATOR, COUNTERCLOCKWISE OPENING.

5. GATE VALVES (3-INCHES AND OVER): IRON BODY AND BRONZE TRIM; SOLID WEDGE FOR VERTICAL PIPE RUNS; DOUBLE DISC, PARALLEL SEAT FOR HORIZONTAL PIPE RUNS; RATING 200 PSI W.O.G.; AWWA C-500; FLANGED, MECHANICAL JOINT ENDS; NON-RISING STEM; NEOPRENE "O" RING STEM SEALS; MANUAL OPERATORS COUNTERCLOCKWISE TO OPEN, WITH OPERATOR MARKED TO SHOW DIRECTION TO OPEN; HAND WHEEL, CHAIN WHEEL WITH CHAIN (VALVES INSTALLED OVER 6 FEET HIGH).

6. BALL VALVES (3-INCHES AND SMALLER): RATING 300 PSI, W.O.G.; FULL PORT TYPE, SAME AS LINE SIZE; BRONZE BODY AND RIM; SCREWED ENDS; TFE OR VITON "O" RING STEM SEALS, "IN-LINE" SEAL REPLACEMENT AND ADJUSTMENT; REPLACEABLE TFE SEATS SUITABLE FOR WATER AND AIR SERVICE; LEVER OPERATOR WITH INDICATOR STOP.

7. PVC VALVES - GENERAL: USE PVC VALVES FOR ALL LIQUID CHEMICAL SERVICE.

8. PVC BALL VALVES: RATING 150 PSI; PVC BODY AND TRIM; SCREWED UNION ENDS; VALVE CAN BE REMOVED FROM THE LINE WITHOUT INSTALLING ADDITIONAL UNIONS; TFE SEATS; VITON "O"RING STEM SEALS; LEVER HANDLE OPERATOR WITH OPEN/CLOSED STOPS.

9. PVC BALL CHECK VALVES: RATING 150 PSI; PVC BODY AND TRIM; SCREWED UNION ENDS; VALVE CAN BE REMOVED FROM THE LINE WITHOUT INSTALLING ADDITIONAL UNIONS; VITON "O" RING BALL AND BODY SEALS.

10. MOTORIZED VALVES: TWO-WAY GLOBE PATTERN ENERGIZE TO OPEN; DIRECT ACTING VALVE (⅜-INCH AND SMALLER), INTERNAL PILOT OPERATED VALVE (½-INCH AND LARGER), RATING 200 PSI W.O. G.; SUITABLE FOR SEDIMENT CARRYING WATER; FORGED BRASS/BRONZE BODY AND TRIM; SCREWED OR FLANGED ENDS; IF SCREWED ENDS, A UNION MUST BE INSTALLED UPSTREAM ADJACENT TO THE VALVE; TFE SEAT OR AS REQUIRED FOR SPECIFIC APPLICATION; INTERNAL PARTS IN CONTACT WITH FLUID ARE STAINLESS STEEL; ENCLOSURES NEMA TYPE 4, WATERTIGHT AND DUST TIGHT, INDOOR AND OUTDOOR; COIL RATED FOR CONTINUOUS DUTY AT 40 DEGREE F AMBIENT TEMPERATURE; 120 VOLTS, 60 HERTZ, SINGLE-PHASE A.C.; FLUID TEMPERATURE PER SPECIFIC APPLICATION.

11. DISC CHECK VALVES (2½-INCHES AND SMALLER): HORIZONTAL LIFT CHECK FOR HORIZONTAL LINE INSTALLATION; VERTICAL LIFT CHECK FOR VERTICAL LINE INSTALLATION; RATING 300 PSI, W.O.G.; MUST BE SUITABLE FOR SEDIMENT CARRYING WATER; BRONZE BODY AND TRIM; SCREWED ENDS; RENEWABLE COMPOSITION DISC AS REQUIRED FOR SPECIFIC APPLICATION.

12. SWING CHECK VALVES (3-INCHES AND LARGER);FULL OPENING, WITH OUTSIDE LEVER WITH ADJUSTABLE WEIGHTS; AWWA C 508; IRON BODY, BRONZE MOUNTED; FLANGED ENDS; BRONZE DISC FACING; STAINLESS STEEL HINGE PINS; RIGHT HAND SIDE OUTSIDE LEVER POSITION WHEN FACING THE VALVE INLET; LEVER SEAL HINGE PIN EXTENDED THROUGH OUTSIDE LUBRICATED BRONZE BUSHING AND "O" RING SEALS; GREASE FITTINGS FOR OUTSIDE LUBRICATION OF LEVER SEALS.

13. ACCESSORIES: PROVIDE ALL ACCESSORIES NECESSARY FOR PROPER VALVE OPERATION AS SPECIFIED OR REQUIRED FOR THE APPLICATION.

14. VALVE OPERATORS: VALVES SHALL BE INSTALLED WITH THE OPERATOR IN A POSITION FOR CONVENIENT OPERATION; PARTICULAR CARE SHALL BE TAKEN TO INSURE THAT SPACE IS AVAILABLE FOR OPERATION OF LEVER OR HAND WHEEL OPERATED VALVES WITHOUT INTERFERENCE FROM WALLS, PIPING OR EQUIPMENT; OPERATORS FOR MANUAL VALVES SHALL BE LEVER OR HAND WHEEL AS IS STANDARD WITH THE MANUFACTURER UNLESS ANOTHER TYPE OF OPERATOR IS SPECIFIED OR REQUIRED BY THE MANUFACTURER.

15. PLUMBING VALVES: ISOLATION VALVES SHALL BE GATE VALVES UNLESS OTHERWISE SPECIFIED OR INDICATED; VALVES SHALL BE ALL BRASS WITH THREADED ENDS FOR FERROUS PIPE AND SWEAT-TYPE CONNECTIONS FOR COPPER TUBING.

16. VALVE IDENTIFICATION: IDENTIFY VALVES OF THE PLUMBING SYSTEMS TO INDICATE THEIR FUNCTION AND SYSTEM SERVED; ALL OTHER VALVES PROVIDE WITH NUMBERED BRASS DISCS ATTACHED TO VALVE BY BRASS CHAIN; PROVIDE VALVE CHART INDICATING VALVE TAG NUMBER, LOCATION OF VALVE, SERVICE, AND NORMAL POSITION OF VALVE; VALVES SHALL BE TAGGED WITH A PERMANENT LABEL UNDER HAND WHEEL INDICATING TYPE OF DISC INSTALLED; ALL VALVES MUST BE FULLY IDENTIFIED BY THE MANUFACTURER INCLUDING SIZE, MANUFACTURER'S NAME, AND PRESSURE RATNG.

17. ADJUSTMENTS: CHECK AND ADJUST VALVES AND ACCESSORIES FOR SMOOTH OPERATION; LUBRICATE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

18. TESTING: TEST ALONG WITH PIPING AS DESCRIBED ABOVE.

19. GATE VALVE OPERATING WHEELS SHALL BE COLOR CODED AS FOLLOWS:
    NORMALLY CLOSED-RED
    NORMALLY OPEN-GREEN

20. AIR RELEASE VALVES SHALL BE LOCATED AT HIGH POINTS AS REQUIRED AND SHOWN ON THE DRAWINGS.

VILLAGE SAFE WATER

STATE OF ALASKA DEPT. OF ENVIRONMENTAL CONSERVATION REGISTERED SYSTEM CS-7102

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VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
GENERAL NOTES

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02

Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P9
DWG No. 14 Of 21

65_P09-11.DWG (LAYOUT 1)

TESTING:

1. GENERAL: ALL PIPE AND FITTINGS SHALL BE PRESSURE-TESTED AS SPECIFIED HEREIN; EACH SYSTEM MAY BE TESTED AS A UNIT OR IN SECTIONS AS DIRECTED BY THE OWNER'S REPRESENTATIVE, BUT EACH COMPLETE SYSTEM SHALL SUCCESSFULLY MEET THE REQUIREMENTS SPECIFIED HEREIN BEFORE ACCEPTANCE BY THE OWNER'S REPRESENTATIVE; SHOULD ANY DEFECTS APPEAR IN THE PIPE OR FITTINGS, THE NECESSARY REPAIR SHALL BE MADE, AND THE LINE RETESTED UNTIL IT SHALL MEET THE REQUIREMENTS; TAKE ALL NECESSARY PRECAUTIONS TO PREVENT ANY JOINTS FROM DRAWING WHILE THE PIPELINES AND THEIR APPURTENANCES ARE BEING TESTED.

2. WATER: ALL PIPING EXCEPT DRAIN PIPE SHALL BE HYDROSTATICALLY PRESSURE TESTED AS SPECIFIED HEREIN; TEST PRESSURE FOR WATER PIPING SHALL BE 150 PSI IN EXCESS OF PRESSURE UNDER WHICH IT WILL OPERATE; TEST SHALL BE MADE BY CLOSING VALVES OR PROVIDING BULKHEADS OR PLUGS AND FILLING THE PIPELINE WITH WATER; PROVISIONS SHALL BE MADE FOR RELEASE OF ALL AIR IN THE LINES; LINES MAY BE FILLED WITH WATER SOMETIME BEFORE TESTING TO ALLOW FOR ABSORPTION OF WATER BY PIPE OR JOINT MATERIAL; TEST PRESSURE MUST BE MAINTAINED A MINIMUM OF ONE (1) HOUR OR SUFFICIENTLY LONGER TO PERMIT THE OWNER'S REPRESENTATIVE TO MAKE AN INSPECTION OF THE SYSTEM; DURING THE TEST, PIPE, FITTINGS AND JOINTS SHALL BE COMPLETELY TIGHT.

CLEANING:

1. GENERAL: EQUIPMENT, PIPES, VALVES, FITTINGS, FIXTURES, APPLIANCES, AND THE LIKE, SHALL BE THOROUGHLY CLEANED OF GREASE, DIRT, METAL CUTTINGS, AND THE LIKE, AND LEFT IN A SATISFACTORY CONDITION FOR USE.

2. PIPING: DRAIN AND FLUSH TO REMOVE GREASE AND FOREIGN MATTER; THOROUGHLY CLEAN OUT VALVES, TRAPS, AND STRAINERS.

REPAIRS AND ADJUSTMENTS:

1. GENERAL: ANY STOPPAGE, DISCOLORATION, OR OTHER DAMAGE TO THE FINISH, FURNISHINGS, OR PARTS OF THE BUILDINGS, SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE; CHECK AND ADJUST ALL VALVES, FIXTURES, ACCESSORIES, AND THE LIKE, FOR SMOOTH AND PROPER OPERATION.

DISINFECTION:

1. AFTER PRESSURE TESTS HAVE BEEN MADE, THE ENTIRE POTABLE WATER SYSTEM SHALL BE THOROUGHLY FLUSHED WITH WATER UNTIL ALL ENTRAINED DIRT AND MUD HAVE BEEN REMOVED AND THE ENTIRE SYSTEM DISINFECTED.

PIPE ARROWS AND FLOW DIRECTION ARROWS:

1. COLOR: LETTERING AND ARROWS-BLACK PRINT, OSHA SAFETY YELLOW BACKGROUND.

2. MATERIAL: MANUFACTURE FROM OR ENCASE IN OUTDOOR GRADE PLASTIC OR VINYL THAT WILL RESIST DAMAGE OR FADING FROM WASHDOWN, SUNLIGHT, MILDLY CORROSIVE ATMOSPHERE, DIRT, GREASE, AND ABRASION.

3. LABEL, LETTERING SIZE, AND COLOR: ANSI A13.1.

4. SNAP-AROUND TYPE: SIZE FOR FINISHED OUTSIDE DIAMETER OF PIPE AND INSULATION.

5. MANUFACTURERS AND PRODUCTS: T & B/WESTLINE, RARITON NJ, MODEL WSS; SNAP-AROUND, SETON NAME PLATE CORP., NEW HAVEN, CT, SETMARK SERIES.

6. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. LOCATE AT ALL CONNECTIONS TO EQUIPMENT, VALVES, OR BRANCHING FITTINGS AT WALL BOUNDARIES, AT INTERVALS ALONG PIPING NOT GREATER THAN 18 FEET ON CENTER WITH AT LEAST ONE LABEL APPLIED TO EACH EXPOSED HORIZONTAL AND VERTICAL RUN OF PIPE, AND AT EXPOSED PIPING NOT NORMALLY IN VIEW SUCH AS ABOVE SUSPENDED CEILINGS AND IN CLOSETS AND CABINETS. FIRMLY GRIP PIPE SO LABELS REMAIN FIXED IN VERTICAL PIPE RUNS.

PUMPS

TAG	SERVICE	FLOW GPM	HEAD FEET	MOTOR	ELECTRICAL	MANUFACTURER/MODEL*	COMMENTS
CP-1	WATER STORAGE TANK CIRCULATION	10	9	1/12 HP	115 V	GRUNDFOS UP-25-64SF	
CP-2	WATER STORAGE TANK CIRCULATION	10	9	1/12 HP	115 V	GRUNDFOS UP-25-64SF	
BW-1	BACKWASH/SURFACE WASH	60 97	80 57	2.3 HP	208 V, 3ø	BURKS G6-1½	
WT-1	WELL PUMP	20	120	3/4 HP	230 V, 1ø	GOULDS 18GS07412	REPLACE EXISTING PUMP
FP-1	POTASSIUM PERMANGANATE FEED PUMP	0.042	231	--	120 V,	LMI B-72	
FP-2	PRIMARY CHLORINE FEED PUMP	0.042	231	--	120 V,	LMI B-72	
FP-3	SECONDARY CHLORINE FEED PUMP	0.042	231	--	120 V,	LMI B-72	
⚠1 TFP-1	WATER TRUCK FILL PUMP	60	24	3/4 HP	208 V, 3ø	GOULDS 4SH2D5D0	

HEAT EXCHANGER

TAG	SERVICE	CAPACITY BTUH/FT	HOT SIDE				COLD SIDE				MANUFACTURER/MODEL*	COMMENTS
			FLUID	T IN	T OUT	FLOW	FLUID	T IN	T OUT	FLOW		
HX-1	WATER STORAGE TANK CIRCULATION	131,500	GLYCOL	180	140	7.0	WATER	37	63	10.1	DOUCETTE CTZ 5M2.5/IP-4SCC	

UNIT HEATERS

TAG	SERVICE	CAPACITY BTUH/FT	FLOW GPM	EWT (50% PG)	CFM	MOTOR ELECTRICAL	MANUFACTURER/MODEL*	COMMENTS
BB-1	UTILIDOR HEAT	1,030	3	--	--	--	DUNHAM-BUSH 75HH	SEE DETAIL, DWG T3

TANKS

TAG	SERVICE	CONNECTION				PRESSURE RATING	CAPACITY GAL	MANUFACTURER/MODEL*	COMMENTS
		INLET	OUTLET	DRAIN	VENT				
TK-1	RAW WATER DETENTION	1½"	1½"	2"	ARV	SEE SPEC	400	BY PROCUREMENT SPECIFICATION	SEE DETAIL DWG P6
TK-2	BACKWASH DETENTION	18"	2"	--	--	ATM	550	TANKS DIRECT-LINEAR POLYETHYLENE VERTICAL	SEE DETAIL DWG P6
TK-3	POTASSIUM PERMANGANATE	--	½"	1"	--	ATM	50	NALGENE	
TK-4	CALCIUM HYPOCHLORITE	--	½"	1"	--	ATM	50	NALGENE	

FILTERS

TAG	SERVICE	CONNECTION		FLOW GPM	BACKWASH GPM	SIDESHELL HEIGHT	SURFACE AREA (S.F.)	MANUFACTURER/MODEL*	COMMENTS
		INLET	OUTLET						
GSF-1	IRON REMOVAL	1½"	1½"	10	75	AS REQ'D	4.9	BY PROCUREMENT SPECIFICATION	SEE DETAIL DWG P6
GSF-2	IRON REMOVAL	1½"	1½"	10	75	AS REQ'D	4.9	BY PROCUREMENT SPECIFICATION	SEE DETAIL DWG P6
GSF-3	IRON REMOVAL	1½"	1½"	10	75	AS REQ'D	4.9	BY PROCUREMENT SPECIFICATION	SEE DETAIL DWG P6

MISCELLANEOUS PROCESS EQUIPMENT

TAG	SERVICE	ITEM	CONNECTION INLET	CONNECTION OUTLET	FLOW GPM	MFR/MODEL*	COMMENTS
FM-1	RAW WATER	FLOW METER	¾"	¾"	¾-50	BADGER M40	BUILT-IN INTEGRATOR
FM-2	FINISHED WATER	FLOW METER	1½"	1½"	2-120	BADGER M40	BUILT-IN INTEGRATOR
ILSM	RAW WATER	IN-LINE STATIC MIXER	2"	2"	-	KOMAX A-SERIES	5 ELEMENTS
GS	RAW WATER	GRIT SEPARATOR	1"	1"	19-32	LAKOS ILB-0100	

*OR APPROVED EQUAL

VILLAGE SAFE WATER

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VILLAGE OF BEAVER, ALASKA
WATER TREATMENT SYSTEM
NOTES AND EQUIPMENT SCHEDULE

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02
⚠1 ADDED PUMP	DY	05/04

Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P10
DWG No. 15 Of 21

86_P09-11.DWG (LAYOUT 2)

VALVE SCHEDULE

SYSTEM	EQUIPMENT OR SUBSYSTEM	FUNCTION /LOCATION	No.	SIZE	TYPE	N.O.	N.C.
PUMPS	EXIST PRESSURE PUMP 1	UPSTREAM	PP-1	1½	BALL	X	
	EXIST PRESSURE PUMP 2	UPSTREAM	PP-2	1½	BALL	X	
		ISOLATION	PP-3	2½	BALL △2	X	
	△1 TRUCK FILL PUMP	UPSTREAM	TFP-1	2½	BALL	X	
		DOWNSTREAM	TFP-2	1½	BALL	X	
		CHECK	TFP-3	1½	CHECK		
	BACKWASH/SURFACE WASH PUMP	UPSTREAM	BW-1	2½	BALL	X	
		DOWNSTREAM	BW-2	2	BALL	X	
		CHECK	BW-3	2	CHECK		
	TANK WATER CIRCULATION PUMPS	UPSTREAM	TC-1	1	BALL	X	
		DOWNSTREAM	TC-2	1	BALL	X	
	TANK WATER CIRCULATION PUMP 1	UPSTREAM	TC-3	1	BALL	X	
		DOWNSTREAM	TC-4	1	BALL	X	
		CHECK	TC-5	1	CHECK		
	TANK WATER CIRCULATION PUMP 2	UPSTREAM	TC-6	1	BALL	X	
		DOWNSTREAM	TC-7	1	BALL	X	
		CHECK	TC-8	1	CHECK		
RAW WATER INLET	WELL	ISOLATION	RW-1	1½	BALL	X	
	GRIT SEPARATOR	DOWNSTREAM	GR-1	1½	BALL	X	
		BY-PASS	GR-2	1½	BALL		X
	FLOW METER	UPSTREAM	FM-1	1½	BALL	X	
		DOWNSTREAM	FM-2	1½	BALL	X	
		BY-PASS	FM-3	1½	BALL		X
	THERMOMETER	ISOLATION	T-1	1/4	COCK	X	
	PRESSURE GAUGE	ISOLATION	P-1	1/4	COCK	X	
	FLOW SWITCH	ISOLATION	FS-1	1/4	COCK	X	
	RAW WATER SUPPLY	CHECK	RW-2	1½	CHECK		
	IN-LINE STATIC MIXER	UPSTREAM	SM-1	1½	BALL	X	
		DOWNSTREAM	SM-2	1½	BALL	X	
	RAW WATER DETENTION TANK	ISOLATION	RW-3	1½	BALL	X	
		ISOLATION	RW-4	1½	BALL	X	
		BY-PASS	RW-5	1½	BALL		X
		AIR RELEASE	RW-6	1½		X	
		DRAIN	RW-7	1	ASHB		X
WATER STORAGE TANK	WATER STORAGE TANK	INLET	ST-1	2	BALL	X	
		OUTLET	ST-2	2½	BALL	X	
FILTERS	CONSTANT FLOW REGULATOR	DOWNSTREAM FILTER 1	CFR-1	1½	REGULATING	X	
		DOWNSTREAM FILTER 2	CFR-2	1½	REGULATING	X	
		DOWNSTREAM FILTER 3	CFR-3	1½	REGULATING	X	
	BACKWASH SUPPLY	ISOLATION	BWS-1	2	BALL	X	
	SURFACE WASH SUPPLY	ISOLATION	SW-1	2	BALL		X
		SUPPLY-FILTER 1	SW-2	2	BALL		X
		SUPPLY-FILTER 2	SW-3	2	BALL		X
		SUPPLY-FILTER3	SW-4	2	BALL		X
		COMB. AIR VACUUM/AIR RELEASE	SW-5				X
	RAW WATER SUPPLY	COMB. AIR VACUUM/AIR RELEASE	RW-6				X
	FILTER 1	RAW WATER INLET	F-1	1½	BALL	X	
		BACKWASH SUPPLY	F-2	2	BALL		X
		TREATED WATER OUTLET	F-3	1½	BALL	X	
		BACKWASH WASTE ISOLATION	F-4	2	BALL		X
		TREATED WATER CHECK	F-5	1½	CHECK △2		
		BACKWASH WASTE ISOLATION	F-6	2	BALL		X
	FILTER 2	RAW WATER INLET	F-7	1½	BALL	X	
		BACKWASH SUPPLY	F-8	2	BALL		X
		TREATED WATER OUTLET	F-9	1½	BALL	X	
		BACKWASH WASTE ISOLATION	F-10	2	BALL		X
		TREATED WATER CHECK	F-11	1½	CHECK △2		
		BACKWASH WASTE ISOLATION	F-12	2	BALL		X
	FILTER 3	RAW WATER INLET	F-13	1½	BALL	X	
		BACKWASH SUPPLY	F-14	2	BALL		X
		TREATED WATER OUTLET	F-15	1½	BALL	X	
		BACKWASH WASTE ISOLATION	F-16	2	BALL		X

VALVE SCHEDULE

SYSTEM	EQUIPMENT OR SUBSYSTEM	FUNCTION /LOCATION	No.	SIZE	TYPE	N.O.	N.C.
		TREATED WATER CHECK	F-17	1½	CHECK △2		
		BACKWASH WASTE ISOLATION	F-18	2	BALL		X
		DRAIN	F-19	1	ASHB		X
CHEMICAL FEED SYSTEMS	CALCIUM HYPOCHLORITE	TANK OUTLET	CH-1	1	BALL	X	
		ISOLATION	CH-2	1/2	BALL	X	
		NOT USED	CH-3				
		SAMPLE LINE	CH-4	3/8	BALL		X
		PULSATION DAMPER	CH-5	3/8	BALL	X	
		PRIMARY INJECTOR ISOLATION	CH-6	3/8	BALL	X	
		PRIMARY INJECTOR CHECK	CH-7	3/8	CHECK		
		SECONDARY INJECTOR ISOLATION	CH-8	3/8	BALL	X	
		SECONDARY INJECTOR CHECK	CH-9	3/8	CHECK		
		BACKFLOW PRENENTION	BF-3		ASSY		
	POTASSIUM PERMANGANATE	TANK OUTLET	PE-1	1/2	BALL	X	
		ISOLATION	PE-2	1/2	BALL	X	
		CALIBRATION COLUMN	PE-3	1/2	BALL		
		SAMPLE LINE	PE-4	3/8	BALL		X
		PULSATION DAMPER	PE-5	3/8	BALL	X	
		INJECTOR ISOLATION	PE-6	3/8	BALL	X	
		INJECTOR CHECK	PE-7	3/8	CHECK		
	PLANT HW SUPPLY TO CHEM. TNKS	BACKFLOW PREVENTION	BF-3	1/2	ASSY		
	PLANT CW SUPPLY TO CHEM. TNKS	BACKFLOW PREVENTION	BF-4	1/2	ASSY		
MISCELLANEOUS	BACKWASH WASTE DETENTION TANK	OUTLET	BT-1	2	BALL	X	
	RAW WATER DETENTION TANK	AIR RELIEF	RT-1				X
BASEBOARD HEATER	GLYCOL SUPPLY	ISOLATION	GS-1	3/4	GATE	X	
	GLYCOL RETURN	ISOLATION	GS-2	3/4	GATE	X	
	GLYCOL SUPPLY	UPSTREAM	GS-3	3/4	GATE	X	
	GLYCOL RETURN	BALANCING	GS-4				
HEAT EXCHANGER	GLYCOL SUPPLY	ISOLATION	H-1	3/4	GATE	X	
	GLYCOL SUPPLY	SOLENOID	H-2	3/4	GATE		X
	GLYCOL RETURN	BALANCING	H-3				
	COLD WATER RETURN	BALANCING	H-4				
	COLD WATER RETURN	ISOLATION	H-5	3/4	GATE	X	
	COLD WATER RETURN	ISOLATION	H-6	3/4	GATE	X	
	COLD WATER	BALANCING	H-7				
	COLD WATER SUPPLY	ISOLATION	H-8	3/4	GATE		
	COLD WATER SUPPLY	ISOLATION	H-9	3/4	GATE		
DISTRIBUTION SYSTEMS	SCHOOL/WASHETERIA/TRIBAL OFFICE	BACKFLOW PREVENTION	BF-1	2"	ASSY		
	WATERING POINT	BACKFLOW PREVENTION	BF-2	3/4"	ASSY		

VILLAGE SAFE WATER

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VILLAGE OF BEAVER, ALASKA

WATER TREATMENT SYSTEM

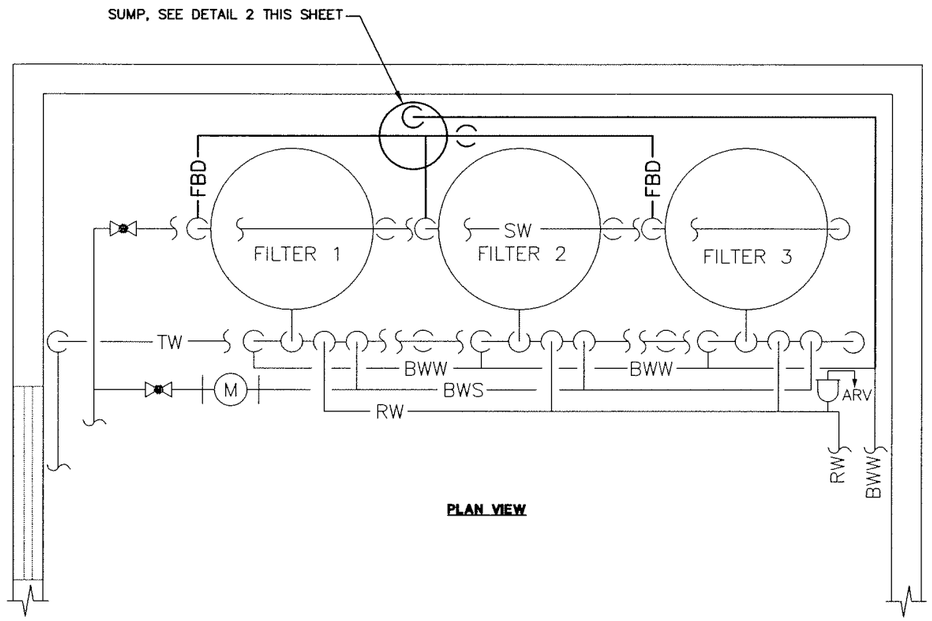
VALVE SCHEDULE

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02
△1 ADDED PUMP & VALVES	DY	05/04
△2 TEXT REVISIONS	DY	09/04

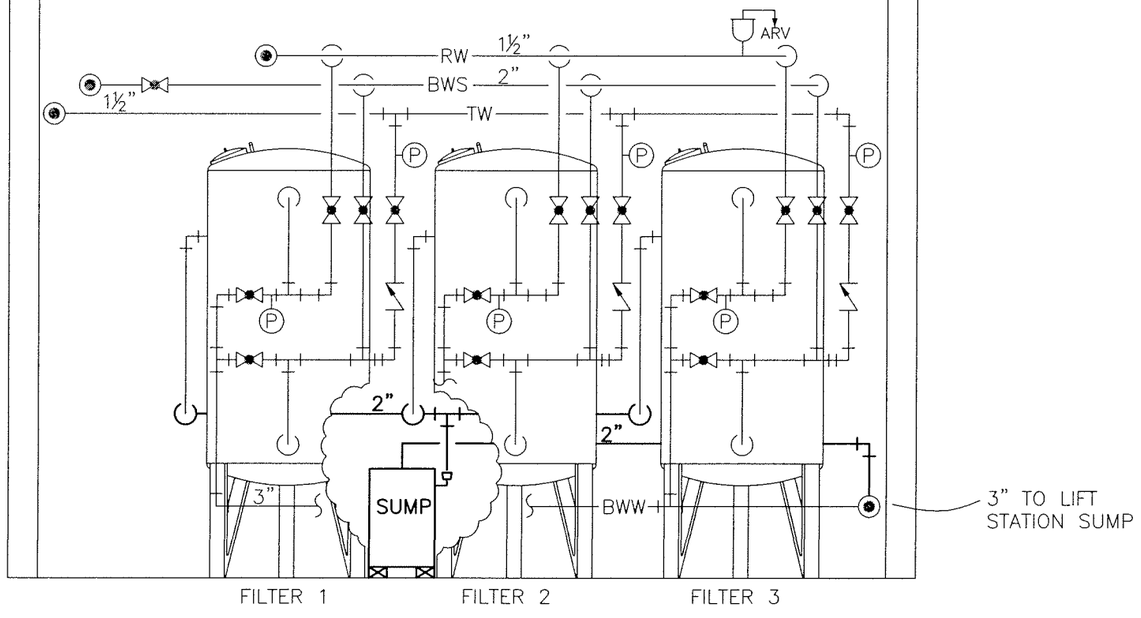
Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P11
DWG No. 16 Of 21

86_P09-11.DWG (LAYOUT 3)

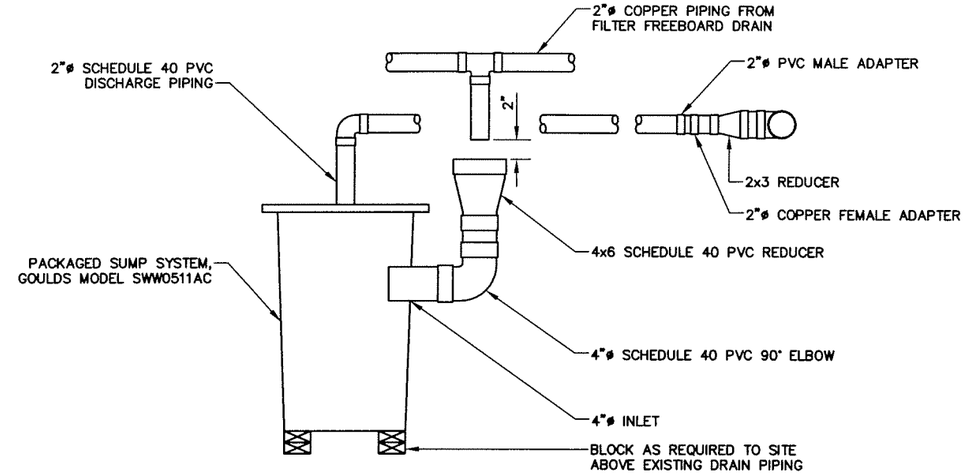


PLAN VIEW

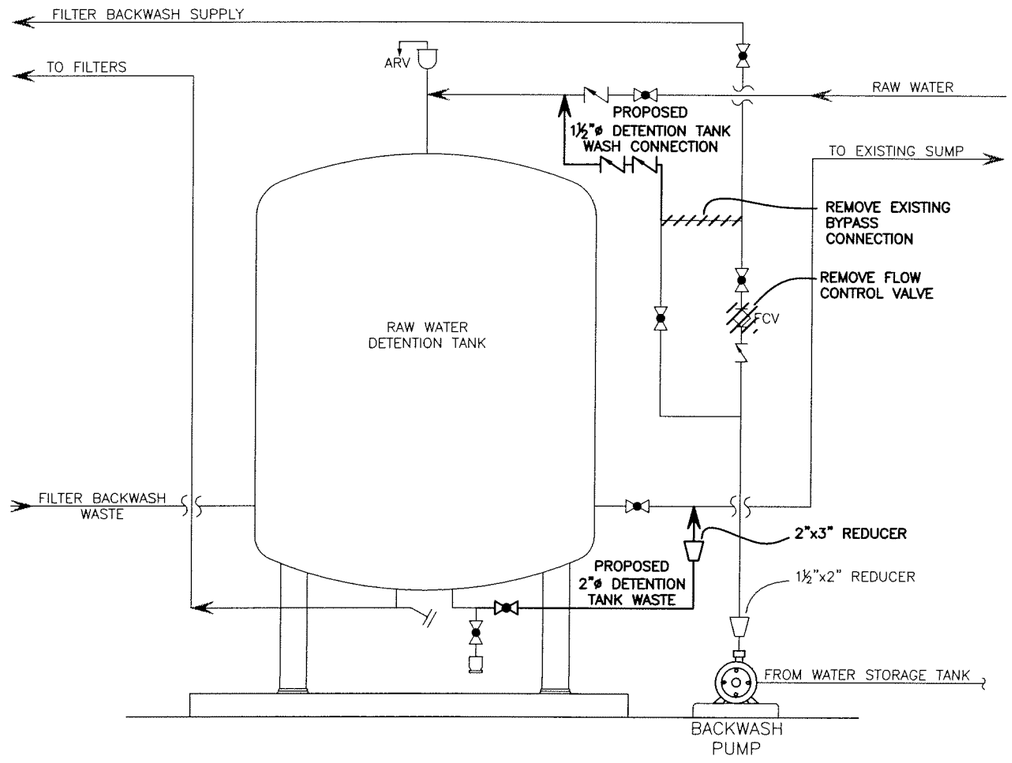


ELEVATION VIEW

1/P12 FREEBOARD DRAIN AND SUMP SCHEMATIC



2/P12 SUMP DETAIL



3/P12 DETENTION TANK WASH SCHEMATIC

VILLAGE SAFE WATER

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VILLAGE OF BEAVER, ALASKA

WATER TREATMENT SYSTEM

SUMP & DETENTION TANK WASH DETAILS

REVISION	BY	DATE
ISSUED FOR CONSTR.	DY	10/02
1 FIELD REVISIONS	DY	05/06

Project No. 9966
Date OCT 14 02
Designed DF
Drawn AV
Approved DY

Sheet No. P12
DWG No. P12 Of 21

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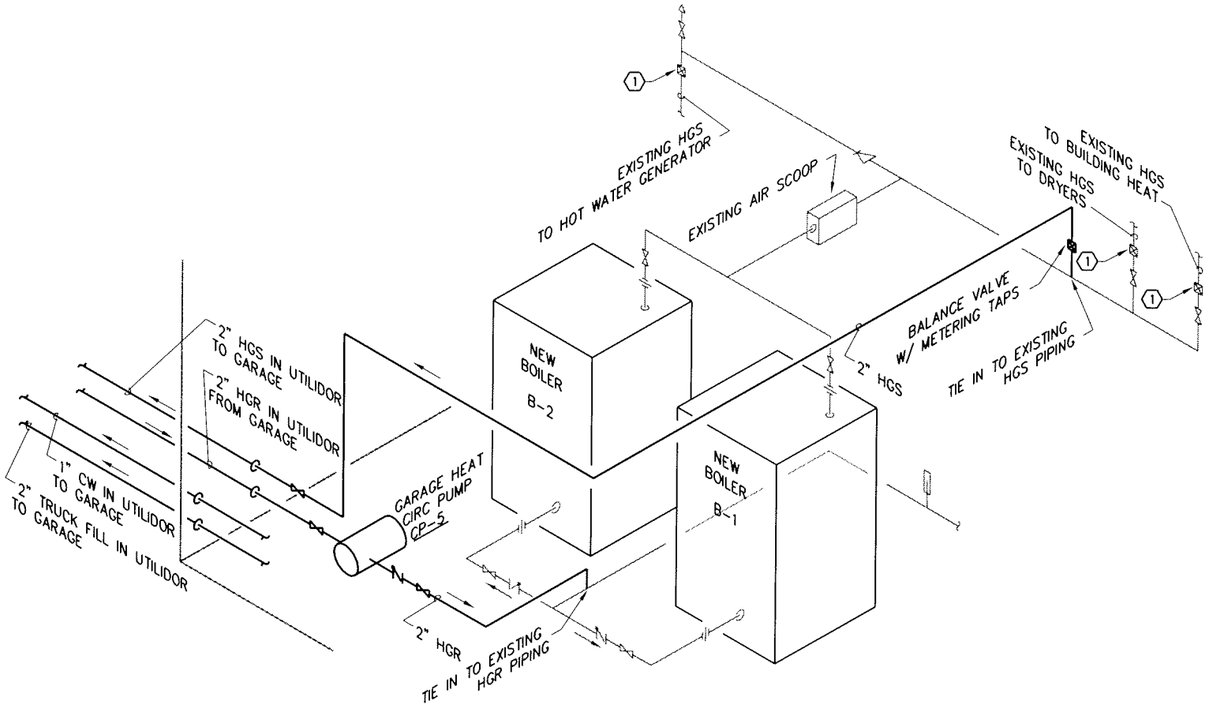
BOILER SCHEDULE

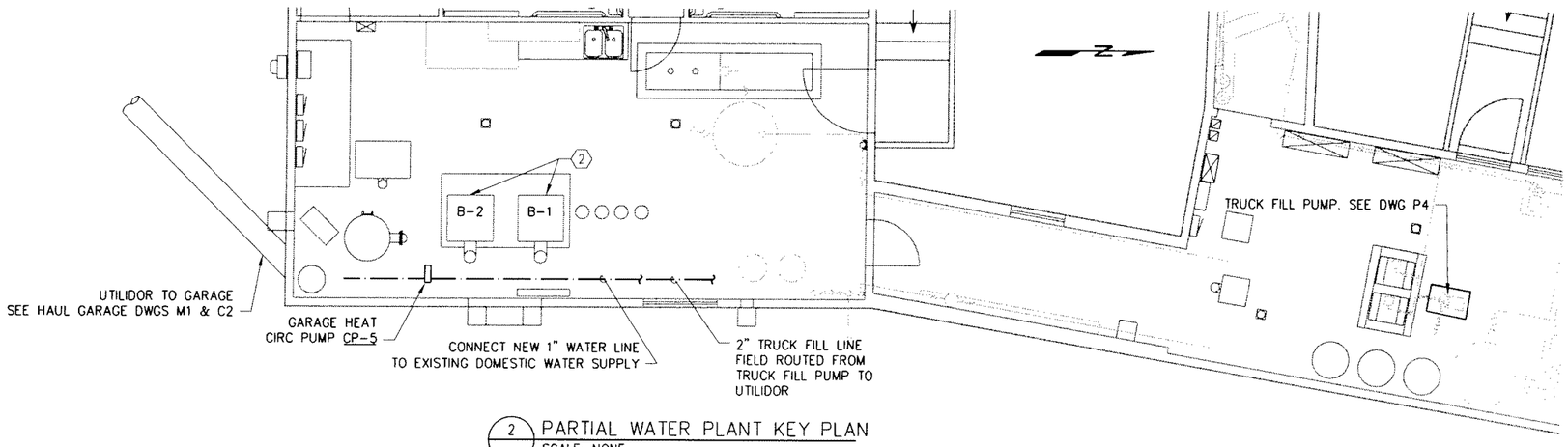
TAG NO.	SERVICE	CAPACITY NET, BTUH	FUEL RATE GPH	OPERATING TEMP	BURNER MOTOR	ELECTRICAL	MANUFACTURER/MODEL/NOTES
B-1	BUILDING & PROCESS HEATING	562	5.6	200	1/2 HP	120V/1P	BURNHAM V-905-AWO
B-2	BUILDING & PROCESS HEATING	562	5.6	200	1/2 HP	120V/1P	BURNHAM V-905-AWO

CIRCULATING PUMP SCHEDULE

TAG NO.	SERVICE	FLOW GPM	HEAD FT	MOTOR	ELECTRICAL	MANUFACTURER/MODEL/NOTES
CP-5	GARAGE HEATING	36	16.5	1/2	120V/1P	GRUNDFOS UPS32-80, SPEED 3



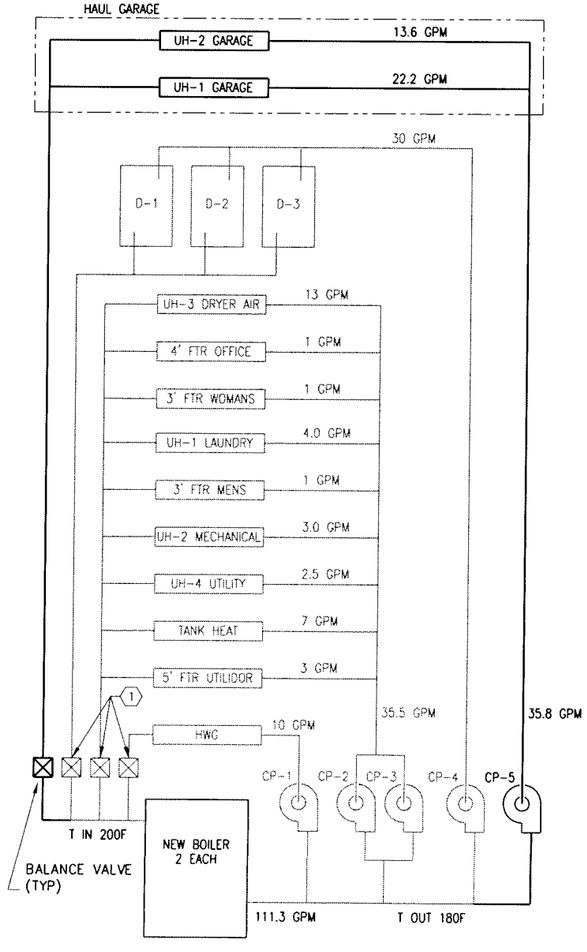
1 BOILER TIE-IN PIPING SCHEMATIC
SCALE: NONE



2 PARTIAL WATER PLANT KEY PLAN
SCALE: NONE

NOTES

1. NOTE EXISTING FLOW BEFORE MODIFICATIONS. RESET TO SAME FLOW AFTER COMPLETION.
2. REPLACE EXISTING BOILERS. IF EXISTING FLUES ARE AT LEAST 8", CONNECT TO EXISTING. IF NOT, INSTALL NEW 8" OIL-RATED DOUBLE WALL PRE-FABRICATED CHIMNEYS THROUGH ROOF W/ FLASHING AND CAP. FOR BOILER TIE-IN PIPING SEE 1/-



NOTE: DARK LINES REPRESENT NEW WORK.
LIGHT LINES REPRESENT EXISTING PIPING AND EQUIPMENT

3 HYDRONIC SYSTEM SCHEMATIC
SCALE: NONE

VILLAGE SAFE WATER

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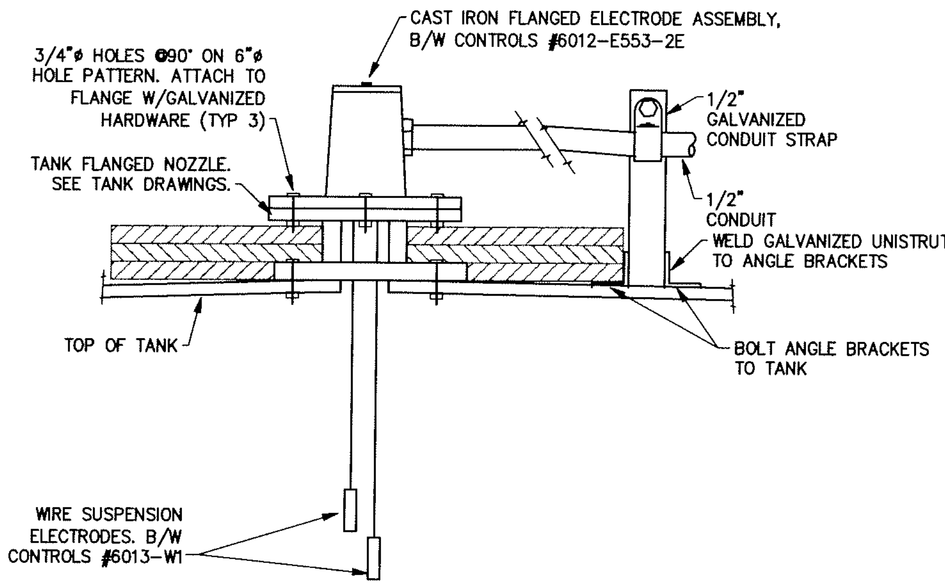
CITY OF BEAVER, ALASKA
Water & Sewer System Improvements

MECHANICAL
PIPING SCHEMATICS

REVISION	BY	DATE
ISSUED FOR CONSTRUCTION	EDC	10/02
1 ADDED PUMP	EDC	8/04

Project No. CRWBVR
Date JUNE 2004
Designed KLH
Drawn LCS
Approved

Sheet No. M1
SHEET OF 21



TANK HI/HI LEVEL PROBE

NO SCALE

LEGEND

Symbol	Description
———	EXPOSED CONDUIT, GRC UNLESS OTHERWISE SHOWN
– – – – –	CONDUIT RUN UNDERGROUND OR IN CONCRETE
X-Y,Z	HOMERUN TO PANEL "X", CIRCUITS NO. Y AND Z CONDUIT RUNS NOT DEFINED ARE 1/2"C W/3#12.
⏚	GROUND
LSL	LEVEL SWITCH LOW
LSH	LEVEL SWITCH HIGH
FS	FLOW SWITCH
TS	TEMPERATURE SWITCH
LT	LEVEL TRANSMITTER
	LIQUID-TIGHT FLEXIBLE CONDUIT
HP	MOTOR, 3 PHASE
F	MOTOR, FRACTIONAL HP, SINGLE PHASE
J	JUNCTION BOX OR FITTING
	DISCONNECT SWITCH
	PANELBOARD
	COMBINATION MAGNETIC MOTOR STARTER
	MANUAL MOTOR STARTER, CUTLER HAMMER SERIES A302XN W/ #C799MP11 ENCLOSURE & C320MSL1A INDICATING LIGHT, 'X' IS SELECTED TO MATCH MOTOR FULL LOAD CURRENT
$	SINGLE POLE SWITCH, 20A, 277V, LEVITON #1221-2 OR EQUAL.
$3	3-WAY SWITCH, 20A, 277V, LEVITON #1223-2 OR EQUAL.
	120V DUPLEX RECEPTACLE, NEMA CONFIGURATION 5-20R, LEVITON #5362 OR EQUAL.
GFI	120V DUPLEX GROUND FAULT INTERRUPT RECEPTACLE, NEMA CONFIGURATION 5-20R, LEVITON #6899 OR EQUAL.
	120V SIMPLEX RECEPTACLE, NEMA CONFIGURATION 5-20R.
	LOCAL CONTROL PANEL (WCP OR PPCP)
	KILOWATT-HOUR METER
	CHEMICAL FEED PUMP

ABBREVIATIONS

ø	DIAMETER
A	AMPERE
AFF	ABOVE FINISH FLOOR
BCU	BARE COPPER
c	CONDUCTOR
C	CONDUIT
DWG	DRAWING
G	GROUND CONDUCTOR
GFI	GROUND FAULT INTERRUPTING
GRC	GALVANIZED RIGID (STEEL) CONDUIT
H	HOT CONDUCTOR
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
IMC	INTERMEDIATE METALLIC CONDUIT
KVA	KILO-VOLT-AMPERES
LTF	LIQUID TIGHT FLEXIBLE CONDUIT (METALLIC)
N	NEUTRAL CONDUCTOR
P	POLE
TWSH	TWISTED/SHIELDED PAIR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLTS
WTP	WATER TREATMENT PLANT
XFMR	TRANSFORMER

GENERAL

ALL WIRING SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) BY OR UNDER THE SUPERVISION OF STATE OF ALASKA LICENSED JOURNEYMEN ELECTRICIANS.

ALL WIRING SHALL BE IN METALLIC CONDUIT IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

ALL EXTERIOR OR INTERIOR WIRING BELOW 36" SHALL BE GALVANIZED RIGID METAL CONDUIT.

ALL REMAINING INTERIOR WIRING SHALL BE IN IMC, EMT OR LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT.

CONDUIT SUPPORT SHALL BE PROVIDED WITH 2-HOLE STRAPS (INTERIOR AND EXTERIOR). PINCH TYPE (CADDY) CLAMPS ARE APPROVED FOR USE ON EMT OR GRC ON INTERIOR WALLS AND CEILING ONLY.

CONDUCTORS FOR USE ON THIS PROJECT SHALL BE STRANDED COPPER WITH THWN-2 INSULATION FOR INTERIOR AND XHHW-2 INSULATION FOR EXTERIOR. COLOR CODE AS FOLLOWS:
120/208V WIRING- PHASE A=BLACK, PHASE B=RED, PHASE C=BLUE NEUTRAL=WHITE, GROUND=GREEN OR BARE COPPER.

CONTROL WIRING- ANY COLOR OTHER THAN RED, BLACK, BLUE GREEN OR WHITE AS ALLOWED UNDER U/L AND NFPA 79.

UNLESS OTHERWISE NOTED, ALL WIRING SHOWN SHALL CONSIST OF 1/2"C, 3#12. ONE OF THE #12 IS A GREEN (OR BARE) GROUND.

PRIOR TO ROUTING ANY NEW WIRING IN EXISTING WIREWAYS OR RACEWAYS, VERIFY THAT THE WIRE FILL CAPACITIES, PER THE NEC ARTICLES 300-17 & 362-5, WILL NOT BE EXCEEDED.

FEEDERS, BRANCH CIRCUITS AND CONTROL WIRING TO NEW OR RE-LOCATED EQUIPMENT SHALL BE RUN CONTINUOUSLY FROM THE SOURCE PANELBOARD OR CONTROL PANEL. NO SPLICING IS ALLOWED UNLESS SPECIFICALLY APPROVED BY THE ENGINEER. SPLICES WILL BE ALLOWED ONLY IN ACCESSIBLE JUNCTION BOXES OR PANELS, SPLICING IS NOT ALLOWED IN WIREWAYS.

FITTINGS - ALL NON-HUB CONDUIT TERMINATIONS SHALL BE BUSHED EITHER WITH NON-METALLIC BUSHINGS ON THREADED CONDUITS OR INSULATED THROAT CONNECTORS ON EMT AND FLEXIBLE CONDUITS. EMT COUPLINGS AND CONNECTORS SHALL BE COMPRESSION TYPE - NO SETSCREW TYPE ALLOWED.

BOXES SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
INTERIOR WITH GRC: TYPE FS OR FD DEVICE BOXES, CAST BOXES WITH BLANK COVERS.
INTERIOR WITH EMT: PRESSED STEEL WITH APPROPRIATE GALVANIZED DEVICE COVER.
EXTERIOR: NEMA 4 WITH GASKETED COVER.

ALL DEVICES SHALL BE SERVED FROM ABOVE UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS.

ALL COMPONENTS FURNISHED FOR THIS PROJECT SHALL BE LISTED OR LABELED BY AN AGENCY ACCEPTABLE TO THE STATE OF ALASKA DEPARTMENT OF LABOR MECHANICAL INSPECTIONS DIVISION. U/L (UNDERWRITERS LABORATORIES) ETL (EDISON TEST LAB) FM (FACTORY MUTUAL) ARE ACCEPTABLE. NOTE THAT NRTL APPROVAL IS REQUIRED FOR CSA LABELS.

INSTALLATION OF CONTROLS AND CALIBRATION SHALL BE PERFORMED IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS. PROVIDE COPIES OF ALL CUT SHEETS AND DOCUMENTATION RECEIVED DURING SHIPPING TO OWNERS REPRESENTATIVE UPON COMPLETION.

COORDINATE INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. MAINTAIN CLEARSPACE AT ALL COMPONENTS THAT MAY REQUIRE ADJUSTING OR TROUBLE SHOOTING WHILE ENERGIZED.

TESTING

TEST ALL CONDUCTORS PRIOR TO TERMINATION WITH A 500VDC MEGOHMETER. REPLACE ALL CONDUCTORS EXHIBITING LESS THAN 10 MEGOHM IMPEDANCE. REPEAT TEST.

MATERIALS

GENERAL COMPONENTS SHALL BE AS CALLED OUT ON THE PLANS AND LEGEND. PROVIDE AS SPECIFIED AND SHOWN. MANUFACTURER AND PART NUMBER DESIGNATIONS INDICATE THE MINIMUM PERFORMANCE AND QUALITY REQUIRED ON THIS PROJECT.

SUBMITTALS

PRIOR TO PURCHASING ANY MATERIAL OR EQUIPMENT FOR USE ON THIS PROJECT, PROVIDE SUBMITTALS TO THE ENGINEER FOR APPROVAL. SUBMITTALS SHALL INCLUDE MANUFACTURER'S CATALOG DATA SHEETS WITH THE EXACT MODEL/PART NUMBER AND ALL ACCESSORIES CLEARLY IDENTIFIED. MATERIAL PURCHASES SHALL BE DONE ONLY AFTER RECEIPT OF APPROVED SUBMITTALS.

VILLAGE SAFE WATER 10/14/02

STATE OF ALASKA 49TH REGISTERED PROFESSIONAL ENGINEER John H. Faschan EE 8286

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CITY OF BEAVER, ALASKA
Water & Sewer System Improvements

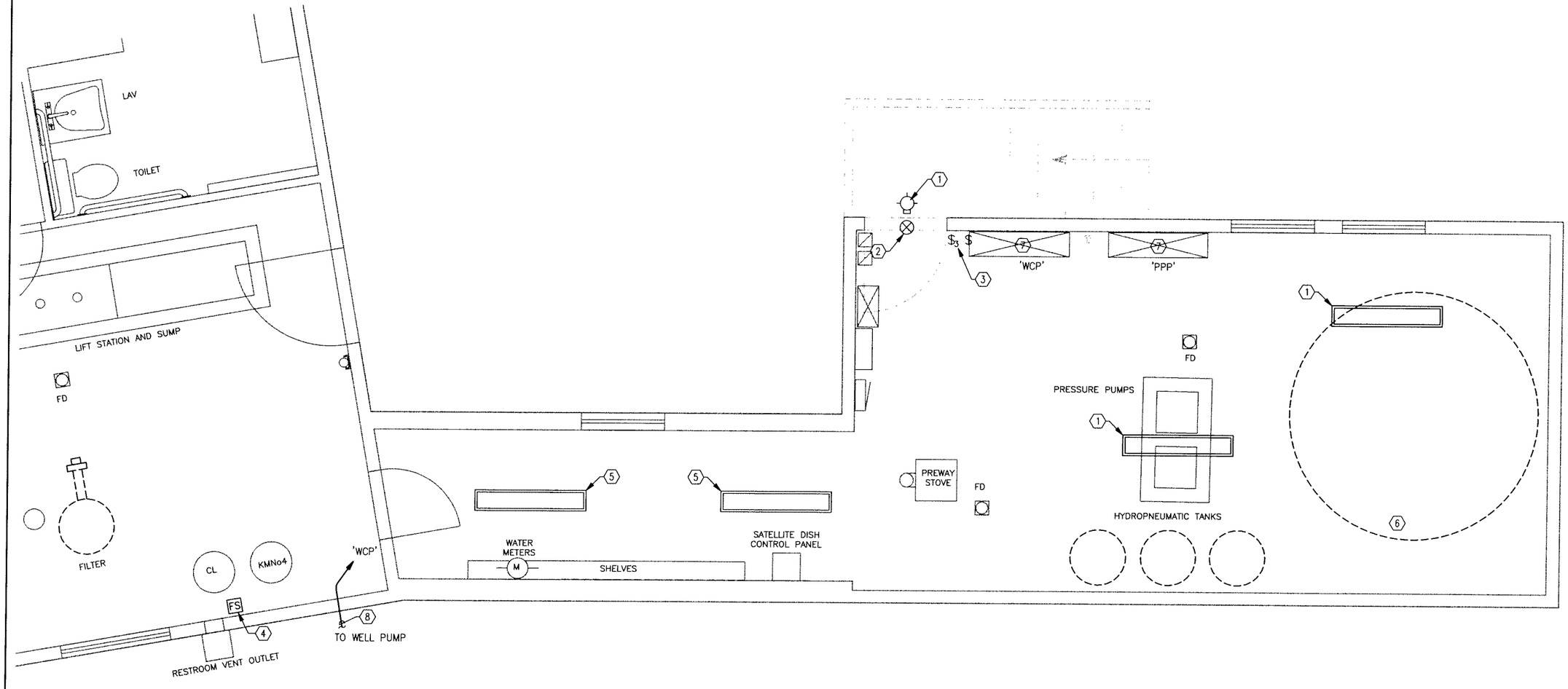
ELECTRICAL
LEGEND & ONE-LINE

REVISION	BY	DATE
ISSUED FOR CONSTRUCTION	JHF	10/02

Project No. CRWBVR
Date OCT 2002
Designed JHF
Drawn AYN
Approved DY

Sheet No. E1

SHEET 17 OF 21



ELECTRICAL DEMOLITION PLAN

0 2' 4'

GENERAL NOTES

ALL CONDUIT & WIRING SERVING DEVICES TO BE REMOVED SHALL ALSO BE REMOVED COMPLETELY FROM THE DEVICE BACK TO THE POINT OF ORIGIN.

NOTES

1. EXISTING FIXTURE TO BE REMOVED
2. EXISTING EXIT SIGN TO BE RELOCATED. SEE DWG E4, NOTE 9 FOR NEW LOCATION.
3. EXISTING 2-GANG BOX AND LIGHT SWITCHES TO BE RELOCATED. SEE DWG E4, NOTE 10 FOR NEW LOCATION.
4. EXISTING FLOW SWITCH TO BE REMOVED AND REPLACED.
5. EXISTING FIXTURE TO REMAIN.
6. EXISTING TANK LEVEL SWITCHES TO BE REMOVED. REMOVE WIRING BETWEEN LEVEL SWITCHES AND THE PRESSURE PUMP, WELL PUMP AND ALARM PANELS.
7. EXISTING WELL AND PRESSURE PUMP PANELS TO REMAIN.
8. REMOVE AND REPLACE ALL EXISTING CONDUCTORS BETWEEN THE WELL PUMP AND THE WELL CONTROL PANEL 'WCP'. CONDUCTORS SHALL BE RUN CONTINUOUS. NO SPLICING ALLOWED.

VILLAGE SAFE WATER

10/14/02

STATE OF ALASKA 9349 JAMES H. FISHER REGISTERED PROFESSIONAL ENGINEER

EDC, INC.
213 W. FIREWEED LANE
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CITY OF BEAVER, ALASKA
Water & Sewer System Improvements

ELECTRICAL DEMOLITION PLAN

REVISION	BY	DATE
ISSUED FOR CONSTRUCTION	JHF	10/02

Project No. CRWBVR
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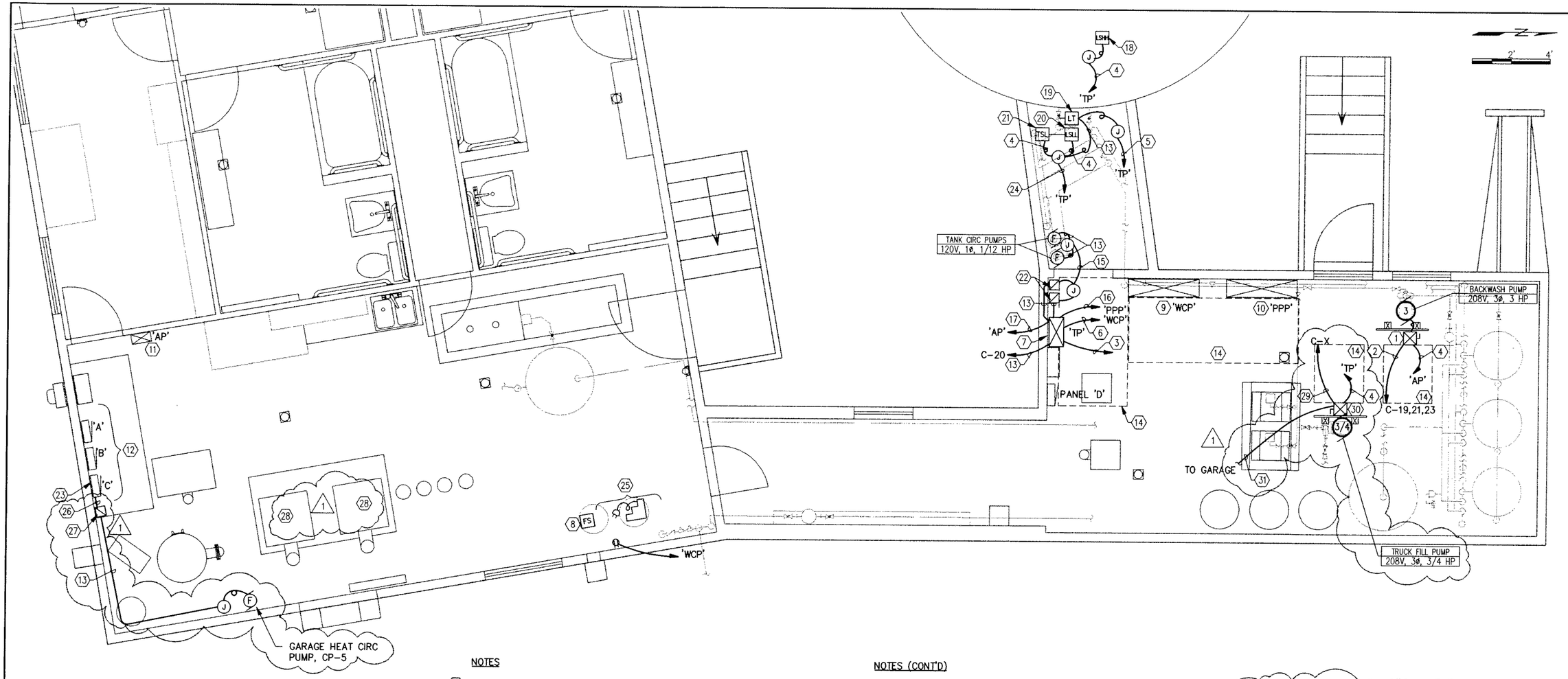
Drawn AYN
Approved DY

Sheet No. E2
SHEET 18 OF 21



NOTES

1. COMBINATION MOTOR STARTER, 208V, 3ø, SIZE 0, NEMA 12, W/120V CONTROL TRANSFORMER & COIL, ON/OFF SELECTOR SWITCH AND RUN LIGHT. SQUARE D #CLASS 8538 TYPE SBA21V02. MOUNT STARTER ON GALVANIZED UNISTRUT HARD STAND. SEE DWG E5 FOR WIRING SCHEMATIC.
2. 1/2"C, 4#12 (3H,G).
3. 1/2"C, 3#12 (2 SIG,G). ROUTE TO BACKWASH PUMP MOTOR STARTER.
4. 1/2"C, 3#14 (2 SIG,G)
5. 1/2"C, 1-PR#19 TWSH
6. 5#14 (4 SIG,G). ROUTE IN EXISTING WIREWAY.
7. TANK CONTROL PANEL, 'TP'. SEE DWG E5 FOR DETAILS.
8. FLOW SWITCH, SPDT, 20 GPM, 1 1/2"ø PIPE. McDONNELL & MILLER #FS4-3 OR EQUAL. INSTALL IN SAME LOCATION AS EXISTING FLOW SWITCH AND RE-CONNECT TO EXISTING CIRCUIT.
9. EXISTING WELL CONTROL PANEL 'WCP'
10. EXISTING PRESSURE PUMP PANEL 'PPP'
11. EXISTING ALARM PANEL 'AP'
12. EXISTING PANELBOARDS
13. 1/2"C, 3#12 (H,N,G)
14. MAINTAIN CLEARSPACE IN FRONT OF EQUIPMENT PER NEC ARTICLE 110-26. MIN OF 36"D x 30"W.

NOTES (CONT'D)

15. 1/2"C, 5#12 (2H,2N,G)
16. 3#14 (2 SIG,G). ROUTE IN EXISTING WIREWAY.
17. 1/2"C, 5#14 (4 SIG,G)
18. TANK HIGH/HIGH LEVEL PROBE. SEE DETAIL ON DWG E1.
19. TANK LEVEL TRANSMITTER. SEE DWG E5, COMPONENT SCHEDULE ITEM 3. INSTALL IN 2" FEMALE THREADED TANK FITTING.
20. TANK LOW/LOW LEVEL SWITCH. SEE DWG E5, COMPONENT SCHEDULE ITEM 17.
21. TANK LOW TEMPERATURE SWITCH. SEE DWG E5, COMPONENT SCHEDULE ITEM 18.
22. TANK CIRC PUMP MANUAL MOTOR STARTERS.
23. PROVIDE A NEW 15A, 120V, SINGLE POLE AND A 25A, 208V, 3-POLE CIRCUIT BREAKER IN PANEL 'C' FOR THE TANK PANEL, 'TP', AND BACKWASH PUMP STARTER CIRCUITS RESPECTIVELY.
24. 3/4"C, 5#14 (4 SIG,G) & 3#12 (H,N,G)
25. AN ADDITIONAL CHEMICAL FEED PUMP IS BEING ADDED (TOTAL OF 3). EACH OF THE FEED PUMPS ARE CONNECTED TO SWITCHED RECEPTACLES WHICH ARE CONTROLLED FROM THE WCP. THE RECEPTACLES ARE ENERGIZED ONLY IF A WELL PUMP IS RUNNING AND FLOW IS DETECTED. CONFIRM OPERATION AND CORRECT IF NECESSARY. ADD AN ADDITIONAL SWITCHED RECEPTACLE FOR THE NEW FEED PUMP IF AN EXISTING ONE IS NOT AVAILABLE.

1

NOTES (CONTINUED)

26. 1/2"C, 3#12 (H,N,G). ROUTE TO AVAILABLE CIRCUIT IN PANEL 'C'. PROVIDE 15A, SINGLE POLE CIRCUIT BREAKER IF SPARE IS UNAVAILABLE.
27. 120V, SINGLE POLE, MANUAL MOTOR STARTER. SQUARE D #FG5.
28. RE-CONNECT NEW BOILERS TO EXISTING BOILER CIRCUITS.
29. 1/2"C, 4#12 (3H,G). ROUTE TO PANEL 'C' IN MECHANICAL ROOM. PROVIDE 15A, THREE POLE CIRCUIT BREAKER IN PANEL FOR THIS CIRCUIT.
30. 208V, 3-PHASE, SIZE 0, COMBINATION MOTOR STARTER W/NON-FUSIBLE DISCONNECT, HOA SWITCH AND RUN LIGHT. SQUARE D #SBA21V02S. SEE SHEET E4 OF HAUL GARAGE DWGS FOR ELEMENTARY DIAGRAM.
31. 1/2"C, 3#12 (2 SIG,G). ROUTE TO THE GARAGE. SEE NOTE 5, SHEET E3 OF HAUL GARAGE SHEETS.

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VILLAGE SAFE WATER

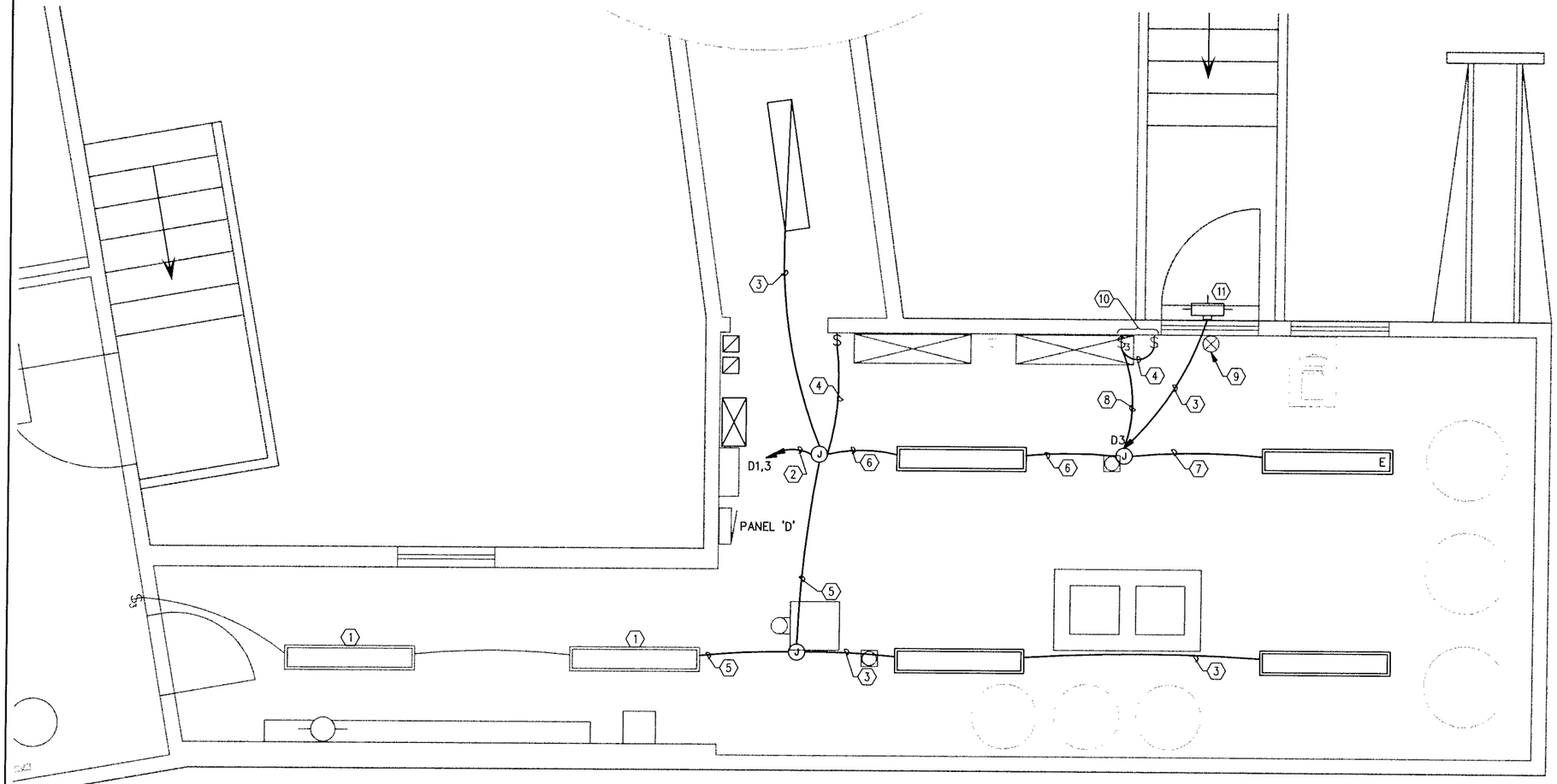
CITY OF BEAVER, ALASKA
Water & Sewer System Improvements

ELECTRICAL
POWER PLAN

REVISION	BY	DATE
ISSUED FOR CONSTRUCTION	JHF	10/02
1 ADDED PUMPS	JHF	2/05

Project No. CRWBVR
Date OCT 2002
Designed JHF
Drawn AYN
Approved DY

Sheet No. E3
SHEET 19 OF 21



LIGHTING PLAN

0 2' 4'

FIXTURE SCHEDULE			
SYMBOL	LAMP SIZE	MOUNTING	TYPE
	(2) 32W T8, FLUOR	SURFACE CEILING	120V, FLUORESCENT, 2–LAMP, DAMP LOCATION, LITHONIA #DM232 120 OR EQUAL.
E	(3) 32W T8, FLUOR	SURFACE CEILING	120V, FLUORESCENT, 3–LAMP, DAMP LOCATION, LITHONIA #DM332 120 OR EQUAL.
⊗	LED	WALL MOUNT ABOVE DOOR	EXISTING SELF–LUMINOUS EXIT SIGN
	1–70W HPS	WALL MOUNT ABOVE DOOR	120V, HIGH PRESSURE SODIUM, WALL PAK W/PHOTO ELECTRIC CONTROL. LITHONIA #TWL70S 120 PE OR EQUAL.
E = FIXTURE TO BE PROVIDED WITH EMERGENCY BALLAST			

NOTES

1. EXISTING FIXTURE TO BE RE–SERVED AS SHOWN
2. 1/2"C, 5#12 (2H,2N,G)
3. 1/2"C, 3#12 (SWITCHLEG,N,G)
4. 1/2"C, 3#12 (H,SWITCHLEG,G)
5. 1/2"C, 5#12 (2TRAVELERS,SWITCHLEG,N,G)
6. 3/4"C, 8#12 (2H,2TRAVELERS,SWITCHLEG,2N,G)
7. 1/2"C, 4#12 (H,SWITCHLEG,N,G)
8. 3/4"C, 6#12 (2H,2TRAVELERS,SWITCHLEG,G)
9. EXISTING EXIT SIGN RELOCATED AS SHOWN.
10. EXISTING TWO–GANG BOX AND SWITCHES RELOCATED AS SHOWN.
11. LIGHT CONTROLLED BY INTERIOR WALL SWITCH AND PHOTOCELL.

VILLAGE SAFE WATER

10/4/02

STATE OF ALASKA — 49TH — REGISTERED PROFESSIONAL ENGINEER — John J. Trachsel — 8236

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CITY OF BEAVER, ALASKA
Water & Sewer System Improvements

ELECTRICAL
LIGHTING PLAN

REVISION	BY	DATE
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Project No. CRWBVR
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Drawn AYN
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Sheet No. E4

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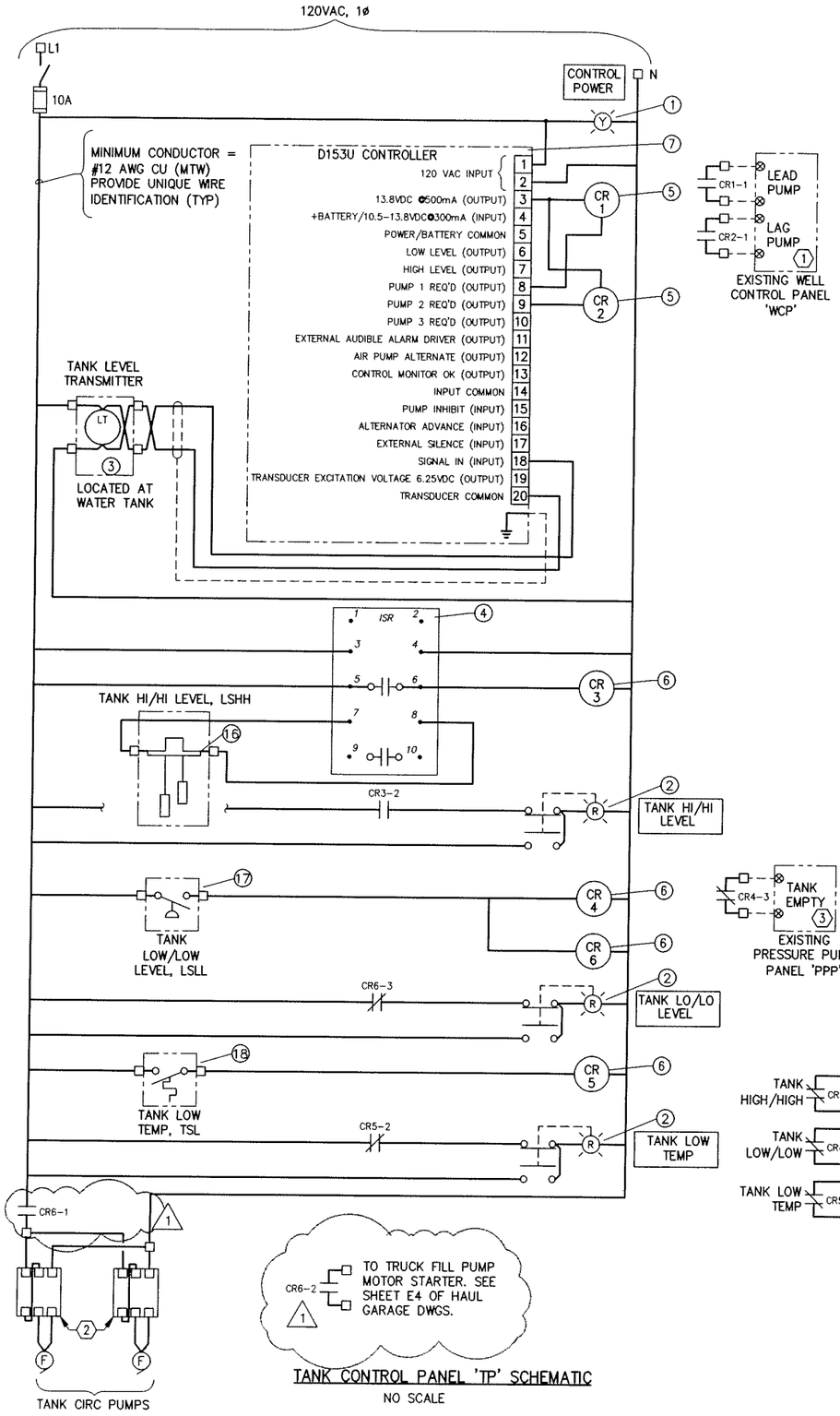


TANK CONTROL PANEL 'TP' SCHEMATIC

NO SCALE

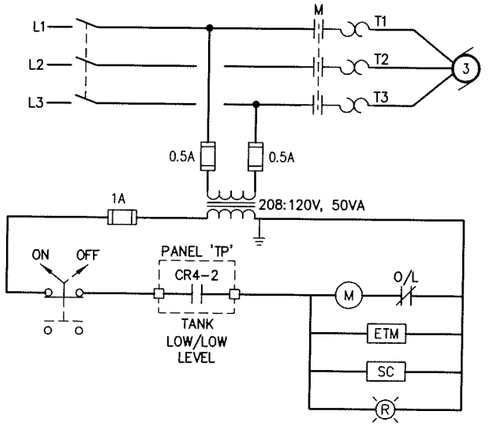
COMPONENT SCHEDULE	
#	ITEM
1	PILOT LIGHT, 120V, 30.5mm, NEMA 4, LED, SQUARE D CLASS 9001, TYPE KP38L*. * ADD (R=RR31, G=GG31, Y=YY31) FOR THE LENS TINT LETTER SHOWN.
2	PILOT LIGHT, PUSH TO TEST, 120V, 30.5mm, NEMA 4, LED, SQUARE D CLASS 9001, TYPE KT38L*. * ADD (R=RR31, G=GG31, Y=YY31) FOR LENS TINT LETTER SHOWN.
3	LEVEL-SENSING TRANSDUCER. 120VAC POWERED, 4 WIRE, 4-20mA OUTPUT. 0-15 PSI RANGE. US FILTER MODEL A300 221GCI, PART#60139-14.
4	INDUCTION RELAY, 120V PRIMARY, 24V SECONDARY, 1 N.O. & 1 N.C. CONTACT, B/W CONTROLS #1500-D-L1-S2-OC.
5	RELAY, 3PDT, 10A, 12VDC, 11-PIN SOCKET MOUNT W/ MECHANICAL INDICATING FLAG, ALLEN BRADLEY #700-HA33Z12.
6	RELAY, 3PDT, 120V, 10A, 11-PIN SOCKET MOUNT W/ MECHANICAL INDICATING FLAG, ALLEN BRADLEY #700-HA33A1.
7	LEVEL CONTROLLER W/ AUTO-ALTERNATOR PUMP CONTROL, 120V, 4-20mA INPUT SIGNAL, HIGH & LOW LEVEL ALARM SETPOINTS, 0-40' RANGE. US FILTER #D153U-601394-40, PUMP UP CONFIGURATION.
8-15	NOT USED
16	TANK HI/HI LEVEL SWITCH (N.O.), SEE DWG E1
17	TANK LO/LO LEVEL SWITCH (N.C.) 120V, SPDT, NEMA 4X, 2.5"-50" OF WATER RANGE. UNITED ELECTRIC MODEL #H100-524.
18	TEMPERATURE SWITCH, HONEYWELL # T6031C1025 INCLUDE THERMAL WELL FOR TANK TEMPERATURE SWITCH
	COMPONENTS MAY BE SUBSITUTED IF APPROVED BY THE ENGINEER

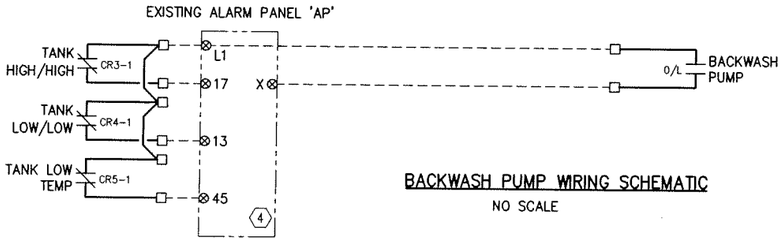
LEGEND

⊗ TERMINAL IN EXISTING CONTROL PANEL

□ TERMINAL IN PANEL 'TP'

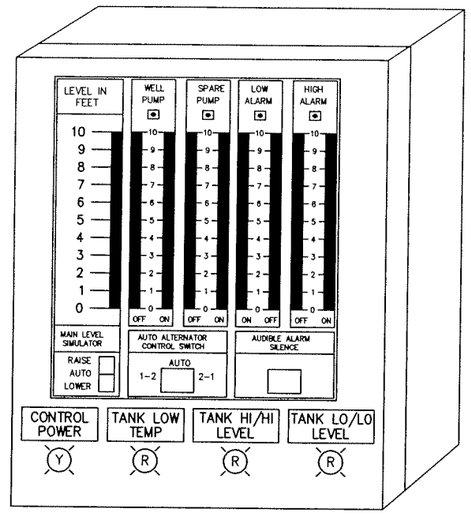
FIELD DEVICE





BACKWASH PUMP WIRING SCHEMATIC

NO SCALE



FUNCTIONAL NARRATIVE

The Tank Control Panel, 'TP' displays the current level of the water in the storage tank. It provides start/stop signals to the Well Control Panel, 'WCP' to maintain the level in the tank. It also provides an interlock signal to the Pressure Pumps (via the Pressure Pump Panel 'PPP'), backwash pump starter, truck fill pump starter and tank circulation pump starters to disable all these motors in the event of a Tank Low/Low level condition. The panel displays tank high and low level conditions. It also transmits 'Low/Low Level', 'High/High Level' and 'Low Tank Temperature' alarms to the existing alarm panel.

The panel has the following inputs:
120Vac, 1 phase, supply power
Tank level switch, LSHH, N.O. contact
Tank level switch, LSLL, N.C. contact
Tank level signal (4-20mA)from level transducer
Tank temperature switch, TSL, N.C. contact

The panel has the following outputs:
120Vac, 1 phase, supply power to the tank circulation pumps 'Lead Start/Stop' and 'Lag Start/Stop' signals to the Well Control Panel
1 'Tank Low/Low Level' shutdown signals to Pressure Pump Panel, backwash pump, truck fill pump and tank circulation pumps 'Low/Low Level', 'High/High Level' and 'Low Tank Temperature' alarm signals to the existing alarm panel.

NOTES

1. TERMINATE RELAY OUTPUTS ON THE 'LEAD ON' AND 'LAG ON' INPUT TERMINALS IN THE WELL PUMP PANEL.
2. TANK CIRC PUMP MANUAL MOTOR STARTERS
3. TERMINATE RELAY OUTPUT ON THE 'TANK EMPTY' INPUT TERMINALS IN THE PRESSURE PUMP PANEL.
4. TERMINATE RELAY OUTPUTS ON THE TERMINALS IN THE ALARM PANEL AS SHOWN. FIELD IDENTIFY A SPARE INPUT FOR THE TERMINAL MARKED 'X'. PROVIDE NEW "TANK LOW TEMP" LABEL FOR THE EXISTING SPARE INDICATING LIGHT ON THE ALARM PANEL. ADD AN ADDITIONAL LIGHT FOR THE BACKWASH PUMP OVERLOAD ALARM.

VILLAGE SAFE WATER

2/19/02

STATE OF ALASKA * 10191 * REGISTERED PROFESSIONAL ENGINEER John F. Fondahn

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CITY OF BEAVER, ALASKA
Water & Sewer System Improvements

ELECTRICAL
TANK CONTROL PANEL

REVISION	BY	DATE
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ADDED PUMPS	JHF	2/05

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SHEET 21 OF 21