

Dear Lin & Emma!

Our first flight is just in the

**WASHETERIA SEWER SYSTEM UPGRADES
ISSUED FOR CONSTRUCTION**

PROJECT NUMBER (CONSULTANT) B18D01.00 (VSW) 11-VSW-WTL-005-01

VSW PROJECT ENGINEER EMILY KLOC

CONSTRUCTION FOREMAN _____

FINAL DESIGN (DATE) 09/14/11

ADEC APPROVAL (DATE) XX/XX/11

CONSTRUCTION PERIOD (FROM) _____ (To) _____



AS-BUILTS (DATE) _____

CRW
ENGINEERING GROUP, LLC
3545 ARCTIC BLVD., SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907)343-3332 FAX: (907)341-2273

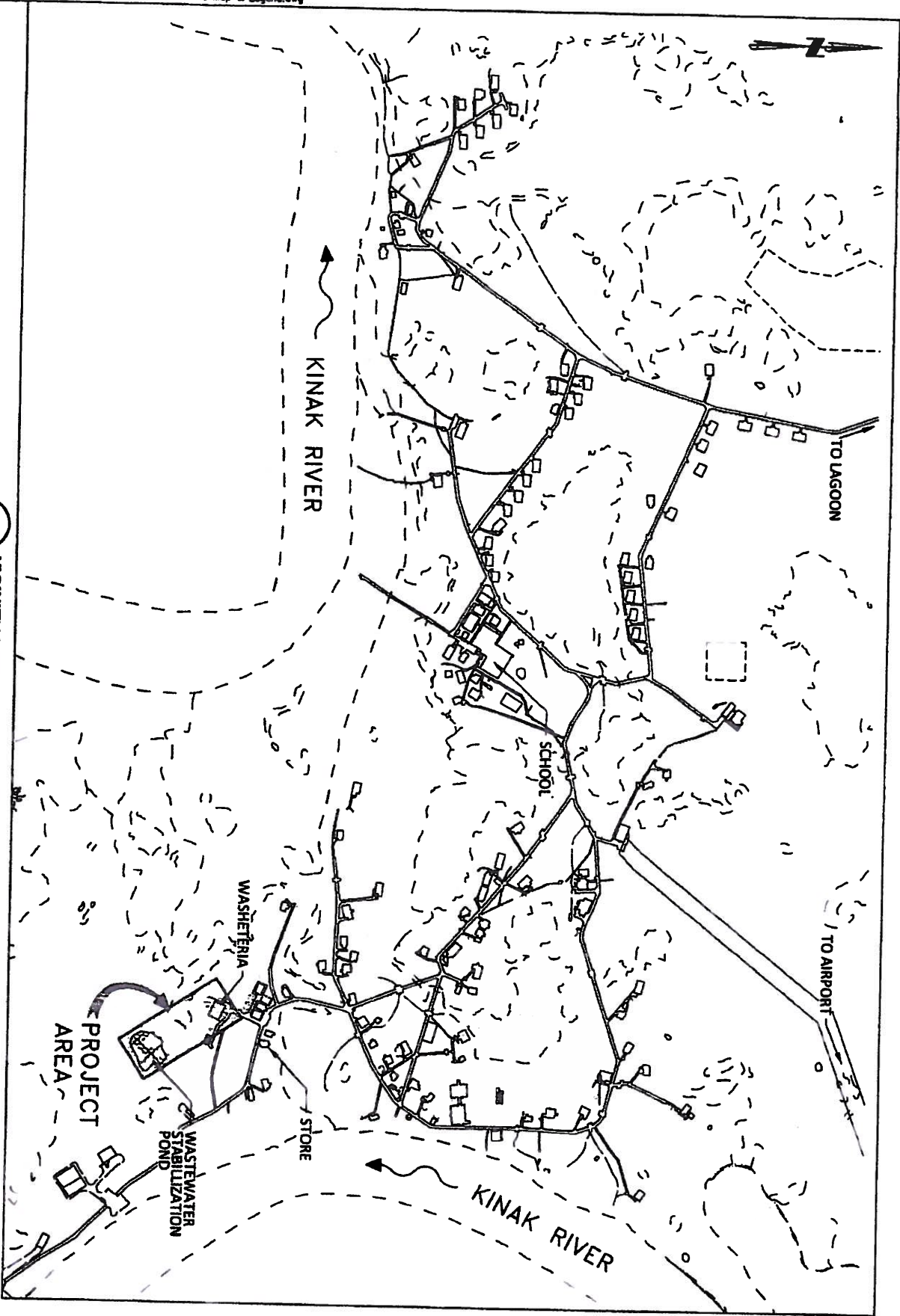


PROJECT STATUS

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99	99	99
100	100	100

 REVISED OCTOBER 2011
 REVISED NOVEMBER 2011

707



1 VICINITY MAP - TUNTUTULIAK
Scale: 1" = 250'

GENERAL SCOPE OF WORK

THIS PROJECT WILL PROVIDE UPGRADES TO THE EXISTING WASTEWATER SEWER SYSTEM INCLUDING:

- INSTALLATION OF NEW BLACKWATER HOLDING TANK
- REPLACEMENT OF EXISTING PIPING & SUPPORTS BETWEEN WASTEWATER & WASTEWATER STABILIZATION POND
- NEW FENCING AROUND POND
- NEW GREYWATER SLUMP & SETTLING TANK
- BOILER UPGRADES
- BATHROOM/SHOWER UPGRADES

COMMUNITY DATA

POPULATION	408
TUNTUTULIAK RESIDENT (2010 U.S. CENSUS)	
DESIGN LIFE	20 YEARS (2031)
DESIGN POPULATION (2031)	750 PEOPLE
ESTIMATED WASTEWATER GENERATION TUNTUTULIAK WASTEWATER	2,060 GPD
(COMBINED GREYWATER & BLACKWATER)	

GENERAL NOTES

1. THESE DRAWINGS HAVE BEEN DEVELOPED FOR CONSTRUCTION BY LOCAL FORCE ACCOUNT METHODS. AS SUCH, THE DRAWINGS STAND ALONE AND INCLUDE ALL NECESSARY CONSTRUCTION AND MATERIALS SPECIFICATIONS TO ENSURE THE PROJECT AS CONSTRUCTED MEETS THE DESIGN INTENT. ANY CHANGES TO CONSTRUCTION METHODS OR MATERIALS SHALL BE APPROVED IN ADVANCE BY THE ENGINEER.
2. THESE DRAWINGS ARE DIAGRAMATIC AND DO NOT NECESSARILY REFLECT ALL FEATURES OF THE REQUIRED WORK. EXISTING FIELD CONDITIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION. CONTACT THE ENGINEER IMMEDIATELY FOR CLARIFICATION OF QUESTIONS AND RESOLUTION OF APPARENT CONFLICTS.
3. ALL WORK SHALL BE COORDINATED WITH EXISTING OPERATORS AND TRIBAL COUNCIL. ANY DISRUPTIONS IN USE OF THE FACILITY BY THE COMMUNITY MUST BE PRECEDED BY A MINIMUM OF 7 DAYS NOTICE POSTED ON THE WASTEWATER DOOR. NO CLOSURES SHALL BE PERMITTED UNLESS APPROVED BY THE ENGINEER.
4. SATISFACTORY MEANS OF EXIT FOR PERSONS USING THE FACILITY SHALL BE MAINTAINED AT ALL TIMES.

QUALITY CONTROL

1. MANUFACTURER'S INSTRUCTIONS SHALL BE FULLY COMPLIED WITH, INCLUDING EACH STEP IN SEQUENCE. SHOULD MANUFACTURER'S INSTRUCTIONS CONFLICT WITH PROJECT DRAWINGS, REQUEST CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING.
2. COMPLY WITH PROJECT DRAWINGS AS A MINIMUM QUALITY FOR THE WORK EXCEPT WHEN MORE STRINGENT TOLERANCES, CODES OR OTHER REQUIREMENTS INDICATE HIGHER STANDARDS OR MORE PRECISE WORKMANSHIP.
3. ALL MATERIALS, SUPPLIES AND EQUIPMENT INCORPORATED INTO THE PROJECT SHALL BE NEW.

AS-BUILT DRAWINGS

1. THE PROJECT SUPERINTENDENT SHALL MAINTAIN A CLEAN SET OF AS-BUILT RECORD DRAWINGS SHOWING THE LOCATIONS, SWING TIES AND DIMENSIONS TO ALL FACILITIES CONSTRUCTED OR FOUND DURING THE COURSE OF THIS WORK. ALL ELEVATIONS SHALL BE MARKED ASB (AS-BUILT) WITH THE CORRECT VALUE INSERTED. DRAWINGS SHALL BE KEPT CURRENT IN RED PENCIL ON A DAILY BASIS IN A NEAT, LEGIBLE FASHION. A COPY OF THE AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER UPON COMPLETION OF CONSTRUCTION.

PRODUCTS OPTIONS/SUBSTITUTIONS

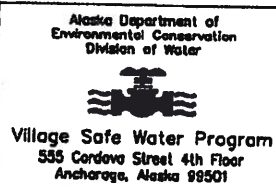
1. "OR APPROVED EQUAL" IS ALWAYS IMPLIED AFTER A BRAND NAME, PATENTED PROCESS OR CATALOG NUMBER. ANY BRAND OR PROCESS APPROVED BY THE ENGINEER MAY BE SUBSTITUTED THE ONLY EXCEPTION IS WHERE NO SUBSTITUTION IS SPECIFIED.

ASSOCIATED PROJECTS

1. THIS PLAN SET INCLUDES PROPOSED UPGRADES TO THE TUNTUTULIAK WASTEWATER/STP FACILITY. PROPOSED WTP UPGRADES ARE INCLUDED IN A SEPARATE PLAN SET ISSUED FOR CONSTRUCTION ON 7/29/11.

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2"=SCALE ACCORDINGLY)

TUNTUTULIAK, ALASKA
WASTEWATER SEWER SYSTEM UPGRADES
GENERAL NOTES AND VICINITY MAP



Plot Date	9/14/11
Designed	MCE
Drawn	CFP
Approved	
Sheet No.	C002
SHEET	2 OF 26

CIVIL LEGEND


PROPOSED (P)	EXISTING (E)	PLAN
		BREAKER
		ABOVE FINISH FLOOR ELEV
		AIR
		AIR RELEASE VALVE
		ASSY - ASSEMBLY
		BACK FLOW PREVENTOR
		BOP - BOTTOM OF PIPE
		BP - BY-PASS
		EDGE OF BOARDWALK
		EDGE OF WATER
		TOP OF EMBANKMENT
		CONTOUR LINE
		WELL
		PROJECT BASELINE STATION
		UTILITY POLE
		GUY WIRE
		FENCE
		TREE OR BRUSH LINE
		OVERHEAD ELECTRIC LINE
		AT-GRADE FUEL LINE
		SAINTARY SEWER LINE
		WATER LINE
		GREY WATER LINE (AT-GRADE)
		BACKWASH LINE (ELEVATED)
		SUMP DISCHARGE (ELEVATED)
		BACKWASH DRAIN (AT-GRADE)
		CLARIFIED EFFLUENT

PROPOSED (P)	EXISTING (E)	PROFILE
		DESCRIPTION
		EXISTING GRADE BELOW PIPE
		HELICAL PIER


COMMON ABBREVIATIONS

AVG - ATMOSPHERIC VACUUM	EORT - EQUIPMENT	MP - METERING PUMP
AFF - ABOVE FINISH FLOOR ELEV	FCV - FLOW CONTROL VALVE	MY - MECHANICAL VALVE
AR - AIR	FD - FLOW ORAIN	MKR - MECHANICAL MIXER
ARV - AIR RELEASE VALVE	FON - FOUNDATION	NC - NORMALLY CLOSED
ASSY - ASSEMBLY	FE - FIRE EXTINGUISHER	NO - NORMALLY OPEN
BACK FLOW PREVENTOR	FF - FINISH FLOOR	NT - NOT IN CONTRACT
BOP - BOTTOM OF PIPE	FL - FLUORIDE	NT - NOT TO SCALE
BP - BY-PASS	FM - FLOW METER	OC - ON CENTER
BW - BACKWASH	FR - FIBERGLASS REINFORCED	OC - ON CENTER
BWS - BACKWASH SUPPLY	FT - FEET	OC - ON CENTER
BW - BACKWASH WASTE	FW - FILTERED WATER	OC - ON CENTER
CANV - COMBINATION AIR VACUUM/	GA - GAUGE	OC - ON CENTER
C/C - CENTER TO CENTER	GALV - GALVANIZED	OC - ON CENTER
CFM - CUBIC FEET PER MINUTE	GPD - GALLONS PER DAY	OC - ON CENTER
CFR - CONSTANT FLOW REGULATOR	GPM - GALLONS PER MINUTE	OC - ON CENTER
CHEM - CHEM	GV - GATE VALVE	OC - ON CENTER
CI - CAST IRON	GR - GLYCOL RETURN	OC - ON CENTER
CIRC - CIRCULATING	GS - GREENSAND FILTER	OC - ON CENTER
CKV - CHECK VALVE	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CL - CHLORINE/CENTERLINE	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CLR - CLEAR	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CNR - CONCRETE	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CONN - CONNECTION	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CONSTR - CONSTRUCT OR CONSTRUCTION	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CP - CIRCULATION PUMP	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CPLG - COUPLING	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CTR - CENTER	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CU - COPPER	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
CW - COLD WATER	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
D - DRAIN	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
DIA - DIAMETER	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
DIM - DIMENSION	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
DIP - DUCTILE IRON PIPE	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
DP - DIFFERENTIAL PRESSURE	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
EA - EACH	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
EFL - EFFLUENT	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
ELEV - ELEVATION	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
ELEC - ELECTRIC OR ELECTRICAL	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
EQ - EQUAL	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER
EQ SP - EQUAL SPACING	HS - HIGH SOLIDS COMBINATION AIR	OC - ON CENTER


REFERENCE




NORTH ARROW




GRAPHIC SCALE
SCALE IN FEET



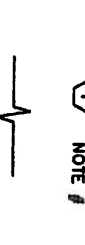
DRAWING TITLE




CALL OUT BUBBLE




SECTION MARK



BREAK LINE



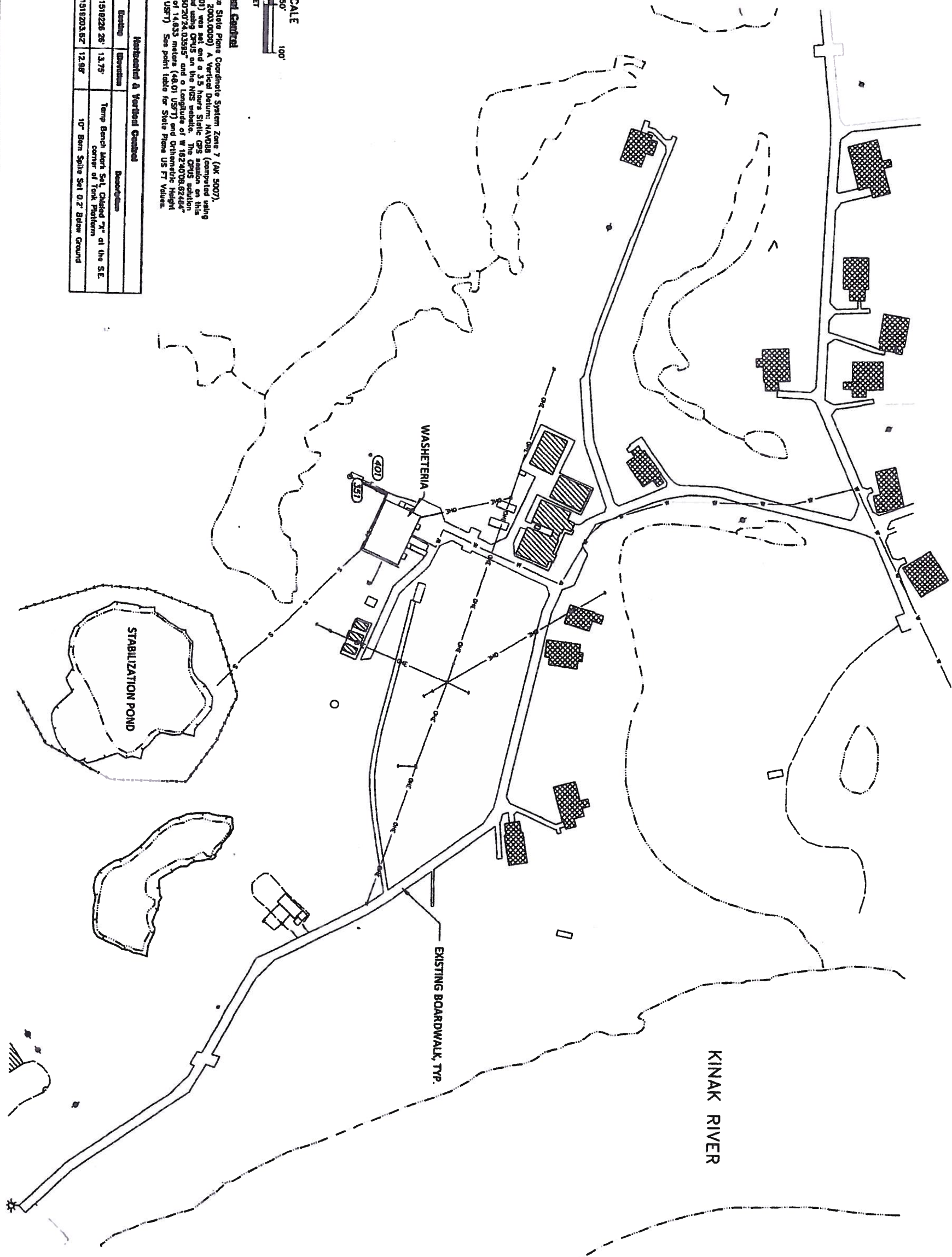
REFERS TO NOTE LOCATED ON SAME SHEET



NOT IN CONTRACT

Horizontal & Vertical Control			
Point No.	Easting	Northing	Description
351	2316754.68'	1918226.26'	Temp Bench Mark Set, Chisled "T" at the SE corner of Tank Platform
401	2316778.68'	1918203.62'	10" Bench Spike Set 0.2' Below Ground

Horizontal & Vertical Control
Horizontal Datum: Alaska State Plane Coordinate System Zone 7 (NAD 83)
Vertical Datum: NAVD83 (computed using GSD1989). A spike (401) was set and a 3.5 hour static GPS session was taken at this point was then processed using GPS on the NGS website. The GPS solution returned a latitude of N 60°20'24.0358" and a longitude of W 152°40'28.6244" with an Elevation Height of 14.835 meters (48.67 USFT) and Orthometric Height of 3.955 meters (12.98 USFT). See point table for State Plane US FT Values.



NO.	REVISION		BY	DATE
	ISSUED FOR CONSTRUCTION			
1			TRT	9/2011

Plot Date	9/14/11
Designed	
Drawn	
Approved	

Sheet No.	V001
SHEET	4 OF 25

TUNTUTULIAK, ALASKA

WASHETERIA SEWER SYSTEM UPGRADES

SURVEY CONTROL SHEET

CRW

ENGINEERING GROUP LLC

3040 AUTUMN BLVD. SUITE 300

ANCHORAGE, ALASKA 99503

PHONE: (907) 562-3232

FAX: (907) 561-2273

STATE OF ALASKA

49.3M

Michael L. Jankin

NO. LS 70330

09/14/11

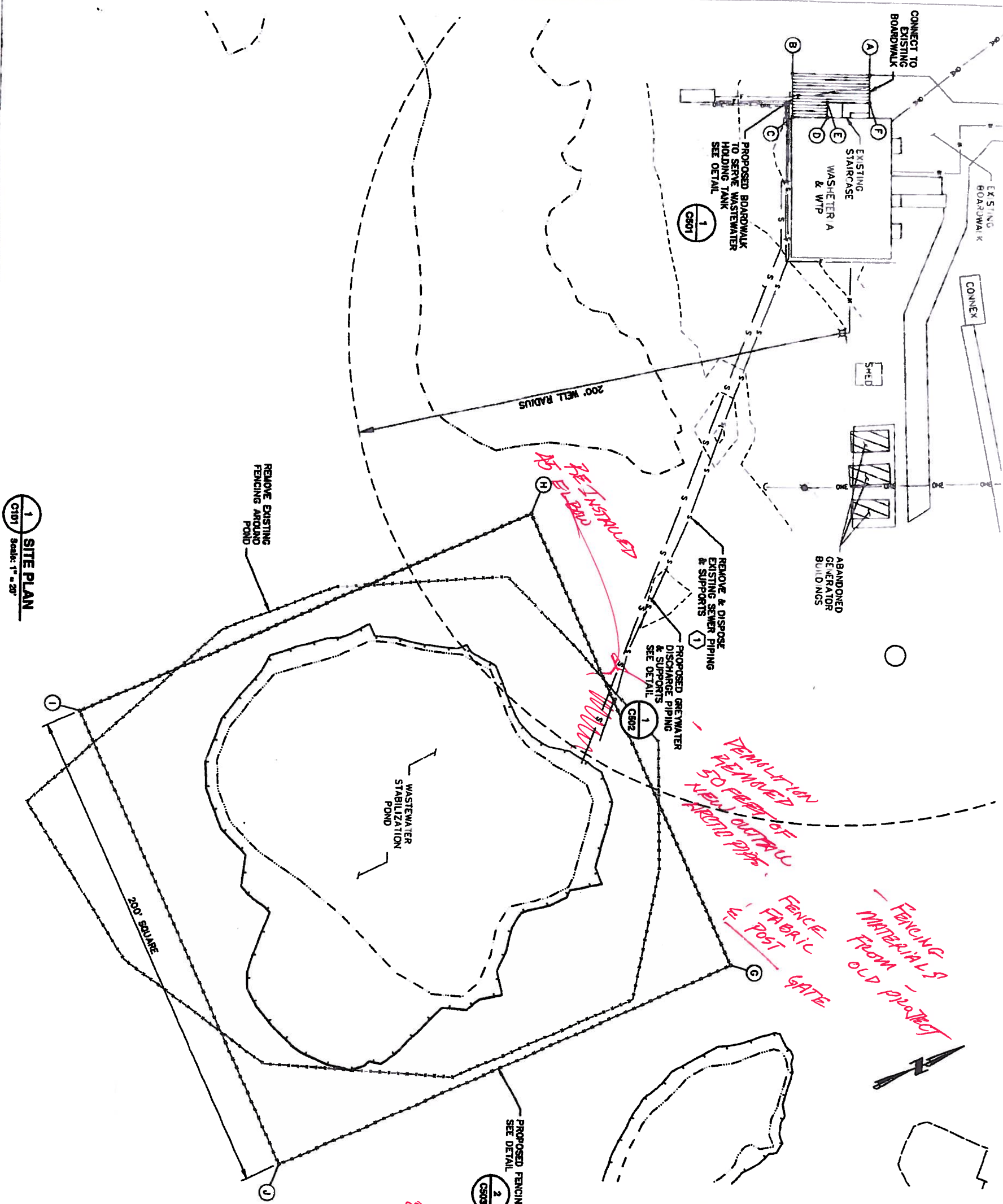
PROFESSIONAL LAND SURVEYOR

Alaska Department of
Environmental Conservation
Division of Water

Village Safe Water Program

555 Cordova Street 4th Floor

Anchorage, Alaska 99501



BOARDWALK POINT TABLE		
POINT	BOARDWALK	LASTED
A	CNR BOARDWALK	231632.81
B	CNR BOARDWALK	1519247.43
C	CNR BOARDWALK	1519234.19
D	CNR BOARDWALK	1519248.98
E	CNR BOARDWALK	1519255.84
F	CNR BOARDWALK	1519250.59
	CNR BOARDWALK	231882.28
		1519237.40

NOTE:

1. HAUL EXISTING PIPE & SUPPORTS TO COMMUNITY LANDFILL. SUPPORTS THAT CANNOT BE REMOVED SHALL BE CUT OFF 6" BELOW GRADE.

PENDE POINT TABLE			
POINT	DESCRIPTION	NORTHING	EASTING
G	CHR FENCE	231665.92	1519554.17
H	CHR FENCE	231663.52	1519354.17
I	CHR FENCE	231663.52	1519354.17
J	CHR FENCE	2316435.92	1519554.17

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)


SHEET 5 OF 26	Sheet No. C101	Plot Date 9/14/11	NO. 1	REVISION	BY	DATE
		Designed MCE	ISSUED FOR CONSTRUCTION		TRT	9/2011
		Drawn CFP/CMK				
		Approved				

TUNTUTULIAK, ALASKA
WASHETERIA SEWER SYSTEM UPGRADES

SITE PLAN



Alaska Department of
Environmental Conservation
Division of Water



Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

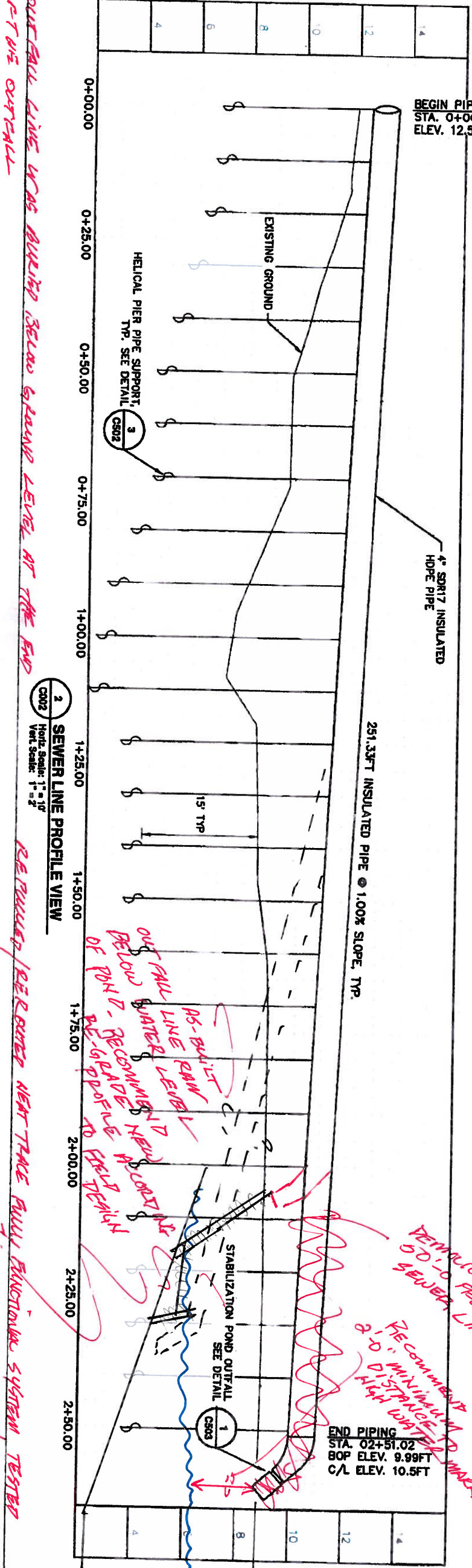
OUT FALL LINE WAS BUILDING BELOW GRADE LEVEL AT THE END OF THE OUTFALL

RE-PAVING / RE-PAVING NEAR TAKE AWAY FUNCTIONALITY SYSTEM TESTED

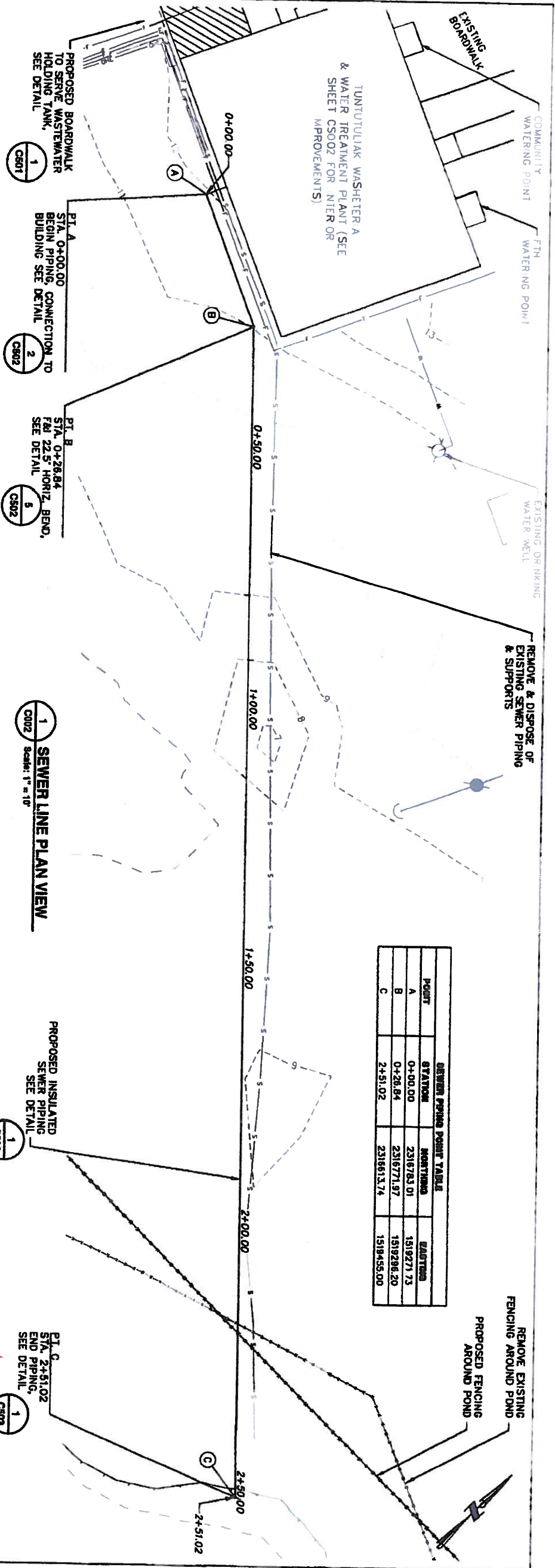
NO.	REVISION	BY	DATE
1	ISSUED FOR CONSTRUCTION	TJT	9/2011

Plot Date	9/14/11
Designed	MCE
Drawn	CFP
Approved	

Sheet No. **C102**
SHEET 6 OF 26



LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" SCALE ACCORDINGLY)



POINT	STATION	NORTHING	EASTING
A	0+00.00	2316783.01	1519271.73
B	0+28.84	2316771.97	1519296.20
C	2+51.02	2316613.74	1519455.00

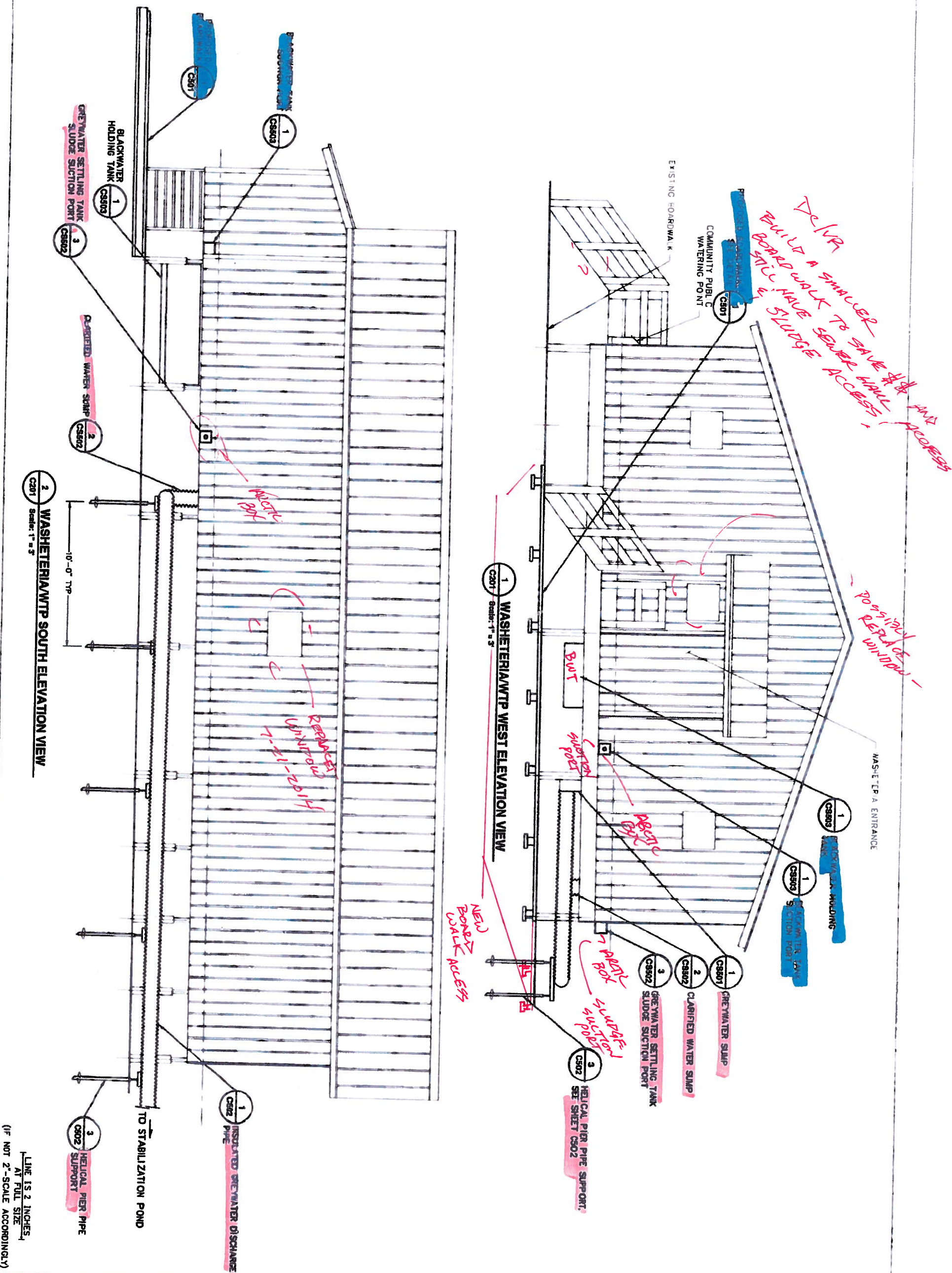
TUNTUTULIAK, ALASKA
WASHETERIA SEWER SYSTEM UPGRADES
PLAN & PROFILE

CRW
ENGINEERING GROUP, LLC
3540 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 882-3332
FAX: (907) 881-2273

STATE OF ALASKA
4931
MATTHEW C. EDGE
CE 11035
09/14/11
REGISTERED PROFESSIONAL ENGINEER

Alaska Department of
Environmental Conservation
Division of Water
Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

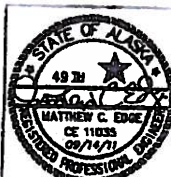
EDGE OF
POND
MARK IN
STABILIZATION
POND
HIGH WATER



Sheet No. C201 of 25	Plot No. 9/14/11 Date	NO. 1 REVISION ISSUED FOR CONSTRUCTION	BY TRT DATE 9/2011
	Designed MCE		
	Drawn CFP		
	Approved		

TUNTUTULIAK, ALASKA
WASHETERIA SEWER SYSTEM UPGRADES
WASHETERIA/WTP
BUILDING ELEVATIONS

CRW
ENGINEERING GROUP, LLC
3040 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE (907) 363-3252
FAX (907) 561-2273

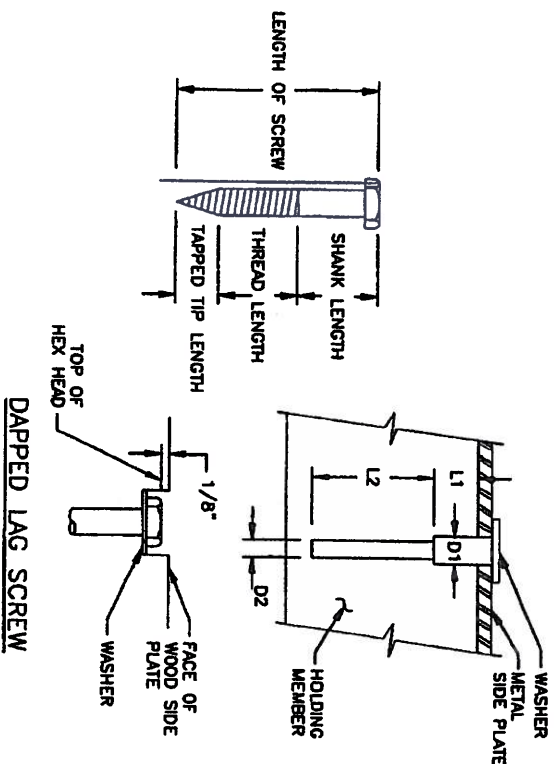
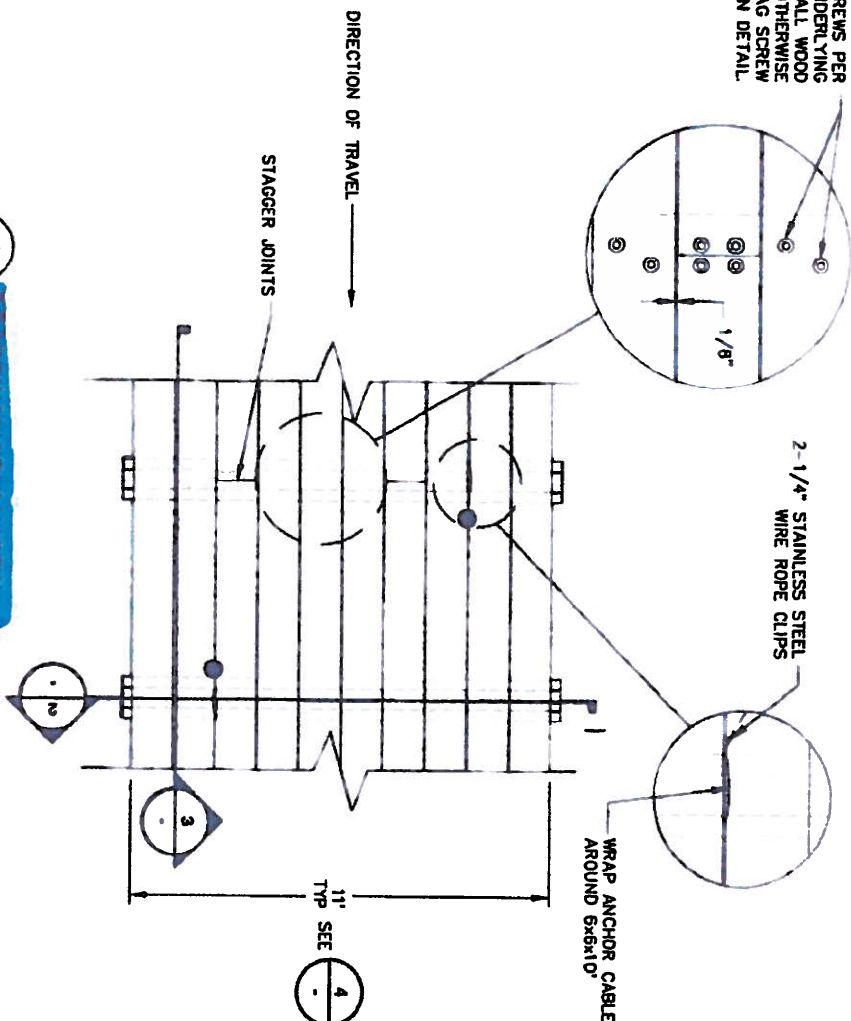


Alaska Department of
Environmental Conservation
Division of Water



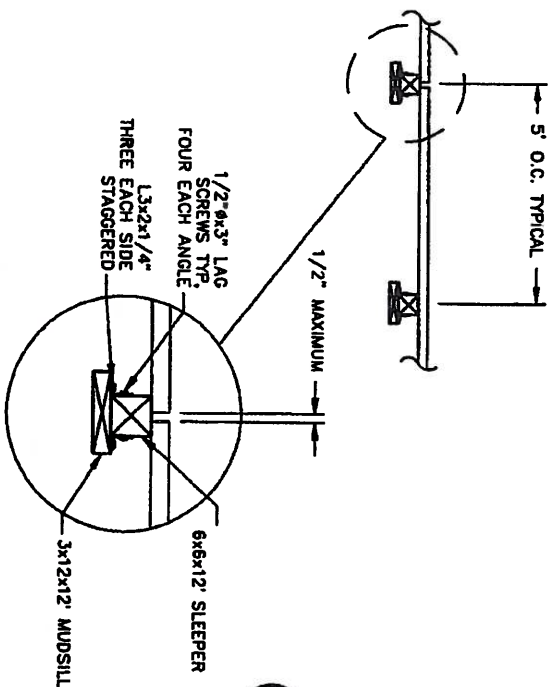
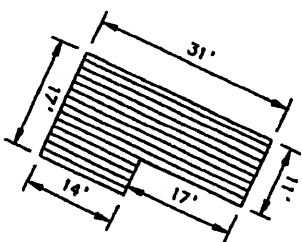
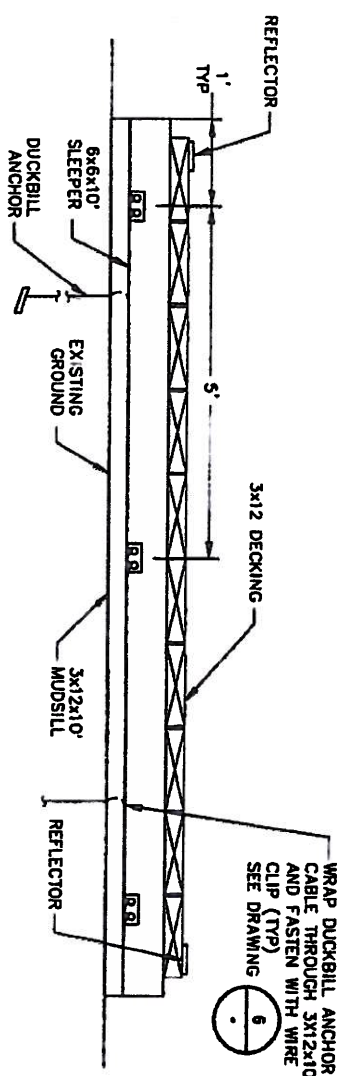
Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 98501

TWO 3/8" X 5" LAG SCREWS PER CONTACT POINT WITH UNDERLIEING SUPPORT (TYPICAL FOR ALL WOOD ATTACHMENTS UNLESS OTHERWISE SPECIFIED). SEE LAG SCREW INSTALLATION DETAIL.



L1=LEAD HOLE:
D1=SHANK DIAMETER
D2=SHANK LENGTH
D3=THREAD LENGTH
D4=0.75 D1 (GROUP I SPECIES-HOLDING MEMBER)
D5=0.67 D1 (GROUP II SPECIES-HOLDING MEMBER)
D6=0.55 D1 (GROUP III & IV SPECIES-HOLDING MEMBER)

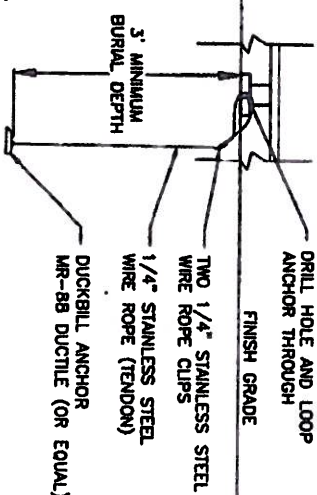
- NOTES:
- SPECIES GROUPINGS ARE AS DEFINED IN NATIONAL DESIGN SPECIFICATION, LATEST EDITION.
 - FOR THIS PROJECT, WOOD HOLDING MEMBERS SHALL BE CONSIDERED GROUP III.
 - LAG SCREWS SHALL CONFORM TO ASTM A307, "LOW-CARBON STEEL EXTERNALLY AND INTERNALLY THREADED FASTENERS," DIMENSIONS SHALL CONFORM TO ANSI/ASME B18.2.1.
 - THE THREADED PORTION OF THE SCREW SHALL BE INSERTED IN ITS LEAD HOLE BY TURNING WITH A WRENCH, AND NOT DRIVING WITH A HAMMER.
 - SOAP OR OTHER LUBRICANT MAY BE USED ON THE SCREWS OR IN THE LEAD HOLE TO FACILITATE INSERTION AND PREVENT DAMAGE TO THE SCREW.
 - LAG SCREWS SHALL BE DAPPED IN DECKING UNITS AND OTHER WEARING SURFACES AS SHOWN.



4
Scale: NTS

BOARDWALK DIMENSIONS

- NOTES:
- ANCHOR SHALL BE EMBEDDED NO LESS THAN 3' BELOW GROUND SURFACE.
 - PROVIDE 6" OF SLACK IN CABLE TO ALLOW FOR FREEZE/THAW MOVEMENT.
 - OPPOSING ANCHORS, AS SHOWN ABOVE, INSTALLED EVERY 10FT ON AT-GRADE SECTION
- INSTALLATION:
- DRIVE ANCHOR TO A DEPTH NO LESS THAN 3' BELOW GROUND SURFACE.
 - APPLY TENSILE LOAD TO ANCHOR TENDON TO LOCK ANCHOR.
 - VERIFY ANCHOR LOCK BY APPLYING ADDITIONAL LOAD.
 - LOOP TENDON THROUGH SLEEPER AND MUDSILL.
 - SECURE EXCESS TENDON USING WIRE ROPE CLIPS SADDLE OF WIRE ROPE CLIP MUST BE INSTALLED ON LIVE SIDE OF TENDON.



NO.	REVISION	BY	DATE
1	ISSUED FOR CONSTRUCTION	TRT	9/2011

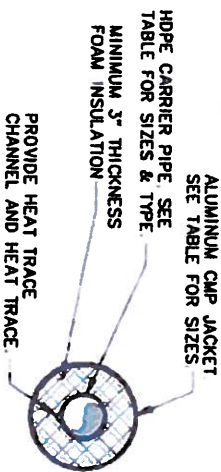
Plot Date: 9/14/11
Designed: MCE
Drawn: CFP
Approved: _____

TUNTUTULIAK, ALASKA
WASHETERIA SEWER SYSTEM UPGRADES
BOARDWALK DETAILS

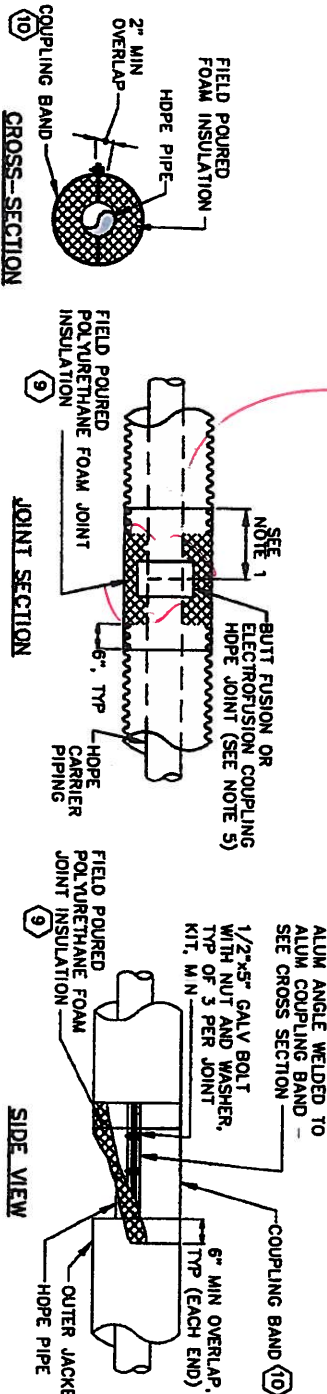


Alaska Department of
Environmental Conservation
Division of Water
Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

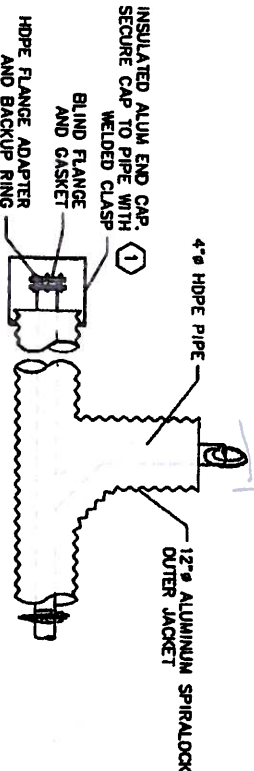
HOPE CARRIER PIPE TABLE FOR SIZES & TYPE	
MINIMUM 3" THICKNESS FOAM INSULATION	
PROVIDE HEAT TRACE CHANNEL AND HEAT TRACE:	
HOPE CARRIER PIPE PIPE NOMINAL Ø	CMP JACKET Ø
4" SDR17	12"



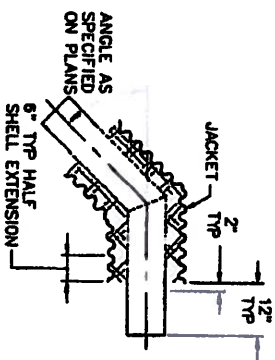
1 TYPICAL INSULATED PIPE DETAIL
Scale: NTS



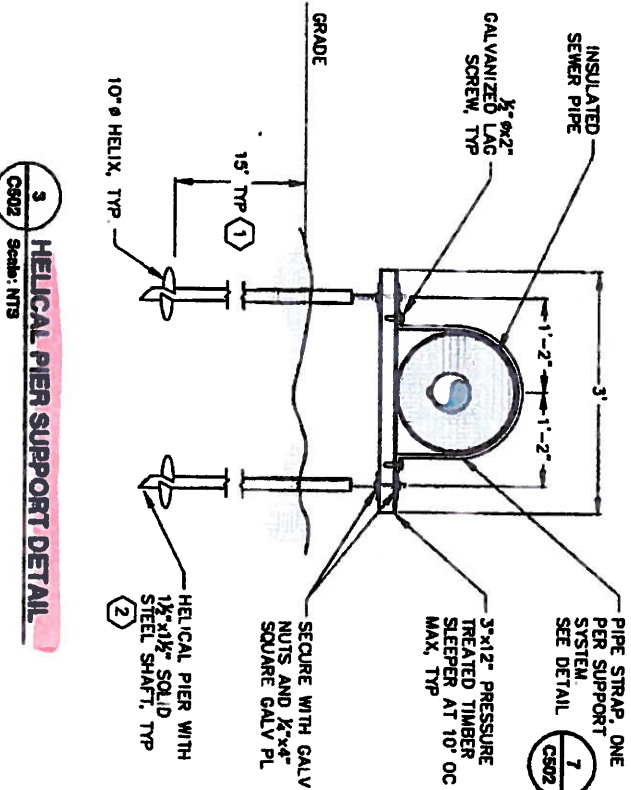
2 TYPICAL INSULATED JOINT KIT
Scale: NTS



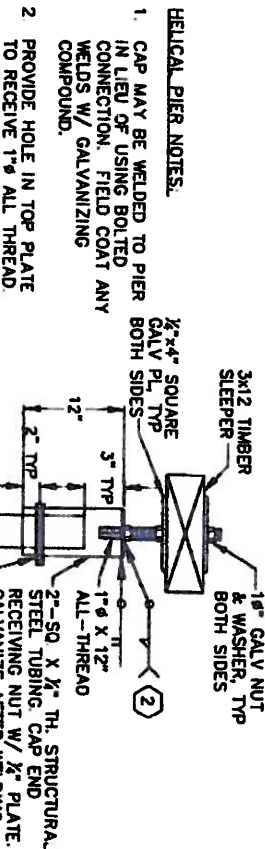
4 TYPICAL WYE DETAIL
Scale: NTS



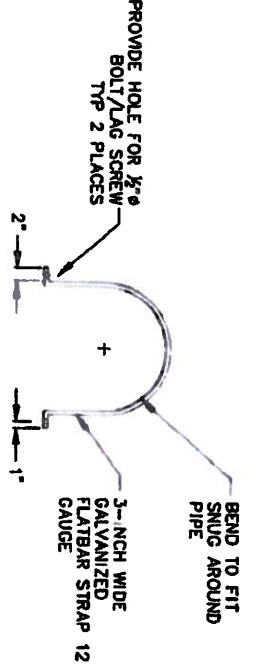
5 TYPICAL FITTING DETAIL
Scale: NTS



3 HELICAL PIER SUPPORT DETAIL
Scale: NTS



6 HELICAL PIER CAP DETAIL
Scale: NTS



7 PIPE STRAP DETAIL
Scale: NTS

INSULATED PIPE NOTES

- A MINIMUM OF 3 INCHES OF URETHANE FOAM THICKNESS SHALL BE PROVIDED BETWEEN THE HOPE CARRIER PIPE AND OUTER JACKET. ENTIRE LENGTH OF CARRIER PIPE SHALL BE CENTERED WITHIN PRE-INSULATED PIPE CROSS SECTION. URETHANE FOAM INSULATION SHALL HAVE THE FOLLOWING CHARACTERISTICS:
 - MAXIMUM K-FACTOR (ASTM C177): 0.135 BTU-in/hr-ft²-F
 - CORE DENSITY RANGE (ASTM D1622): MIN 2.5 TO MAX 4 lbs/ft³
 - MINIMUM COMPRESSIVE STRENGTH (ASTM D1621): 35 PSI (FOAM SAMPLE TESTED PARALLEL AND PERPENDICULAR TO AXIS OF PIPE)
 - MINIMUM CLOSED CELL CONTENT (ASTM D1621): 90% POROSITY
 - MAXIMUM WATER ABSORPTION (ASTM D2824): 0.05 lbs/ft³
 - MAXIMUM WATER VAPOR PERMEABILITY (ASTM C3550): 5.0 lbs/ft²
 - DIMENSIONAL STABILITY (ASTM D2126): 1% AT -20°F, AND 3% AT +100°F (MAXIMUM LINEAR CHANGE)
 - MAXIMUM VOID SIZE: 0.25 IN MEASURED RADIALLY.
- HIGH DENSITY POLYETHYLENE (HDPE) PIPE SHALL HAVE A CELL CLASSIFICATION OF 345444C IN ACCORDANCE WITH ASTM D 3350.
- LENGTHS OF MANUFACTURED PIPE SEGMENTS SHALL BE MAXIMIZED TO THE EXTENT POSSIBLE TO MINIMIZE THE NUMBER OF JOINTS IN EACH INSTALLED PIPELINE.
- TO ENSURE WATER TIGHTNESS, ALL HOPE PIPELINES ASSEMBLIES SHALL BE SUCCESSFULLY HYDROSTATICALLY TESTED. SUBMIT A TESTING PLAN FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. HYDROSTATICALLY TESTED PIPES SHALL BE TESTED TO 100 PSI AND SHALL HOLD TEST PRESSURE FOR A MINIMUM OF 3 HOURS. MAKE-UP WATER SHALL NOT BE ALLOWED. ALL TESTING SHALL BE DONE IN ACCORDANCE WITH RECOMMENDED STANDARDS OF THE PLASTIC PIPE INSTITUTE.
- ALL BUTT-FUSING AND ELECTRO-FUSING SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO THE PROPER AMBIENT ENVIRONMENT BY QUALIFIED, EXPERIENCED PERSONNEL. BUTT FUSING SHALL BE PROVIDED TO THE MAXIMUM EXTENT PRACTICAL.
- ELECTRO-FUSION COUPLINGS: COUPLINGS SHALL BE ONE-PIECE CONSTRUCTION, TUBULAR, AND OF THE SAME MATERIAL AS THE ADJACENT HOPE PIPE. COUPLINGS SHALL HAVE ATTACHED AROUND THE CIRCUMFERENCE OF EACH END A FUSION WIRE WHICH WHEN ENERGIZED SHALL PROVIDE A COMPLETE WATERTIGHT FUSION WELD. COUPLINGS SHALL BE CAPABLE OF SUSTAINING PIPELINE PRESSURE WITHOUT DAMAGE. AT ALL TIMES, PROTECT THE FUSION SITE FROM INCIDENT WEATHER AND RECORD RECOMMENDED AMBIENT TEMPERATURES FOR PROPER ELECTRO-FUSION.
- PIPE JACKETING SHALL BE CLASS 5052-H32 MARINE GRADE ALUMINUM METAL WITH 16-GAUGE (0.60-INCH) WALL THICKNESS WITH SPIRAL LOCKSEAM. THE PIPE SHALL BE FACTORY-JACKETED WITH MINIMUM 16 GAUGE ALUMINUM SPIRAL LOCK OR APPROVED EQUAL.
- PROVIDE 12" MINIMUM HOPE PIPE EXTENSION BEYOND EACH INSULATED PIPE SECTION FOR JOINT, TYPICAL EACH END OF ARCTIC PIPE SECTION. EXTEND PIPE EXTENSION AS NECESSARY FOR OPERATION OF BUTT FUSION EQUIPMENT.
- JOINT KIT INSULATION SHALL BE PROVIDED IN TWO-PART LIQUID FORM SUCH THAT IT CAN BE COMBINED AND POURED IN THE FIELD AFTER HOPE PIPE JOINT FUSION. POUR-FOAMING SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS IN THE PROPER AMBIENT CONDITIONS BY QUALIFIED, EXPERIENCED PERSONNEL.
- JOINTS SHALL BE PROVIDED WITH 16 GA ALUMINUM COUPLING BANDS AS SHOWN.

- NOTES:
- DEPTH IS MEASURED TO UPPER HELIX.
 - MINIMUM TORQUE OF 1,500 FT-LBS DESIRED. CONTACT ENGINEER IF TORQUE IS NOT ACHIEVED AT STANDARD DEPTH.

TUNTUTULIAK, ALASKA

WASHETERIA SEWER SYSTEM UPGRADES

INSULATED PIPE DETAILS



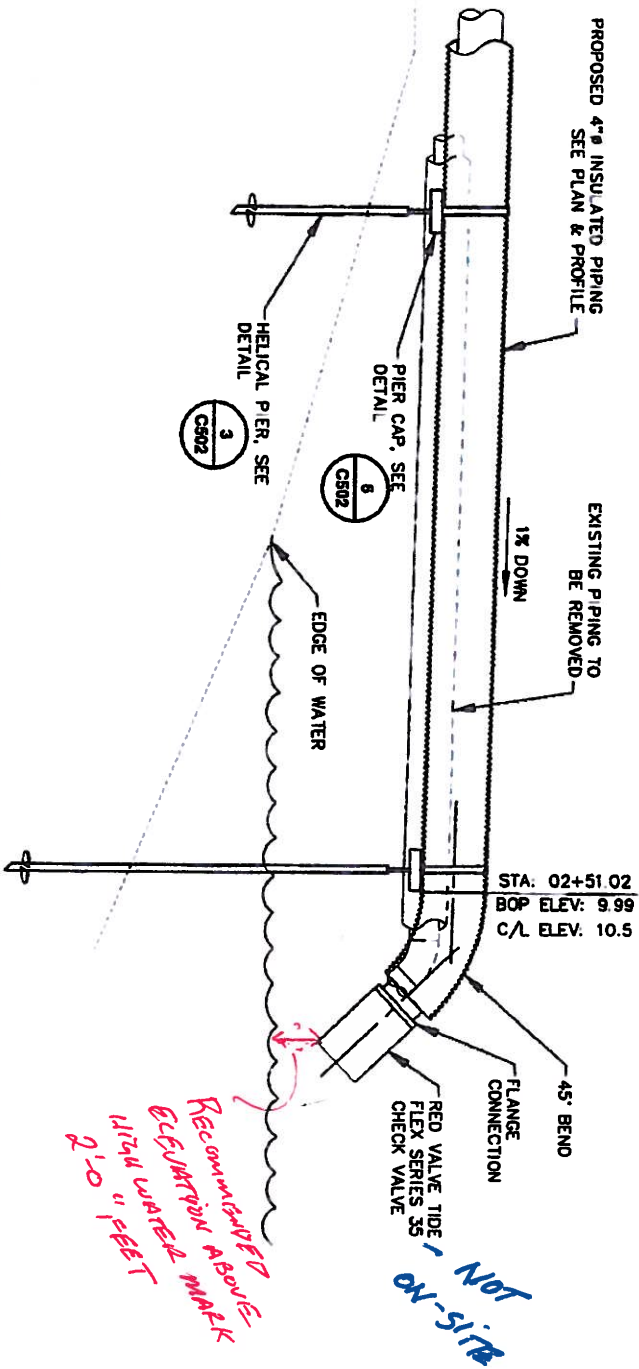
Alaska Department of
Environmental Conservation
Division of Water

Village Safe Water Program
555 Cordova Street 4th Floor
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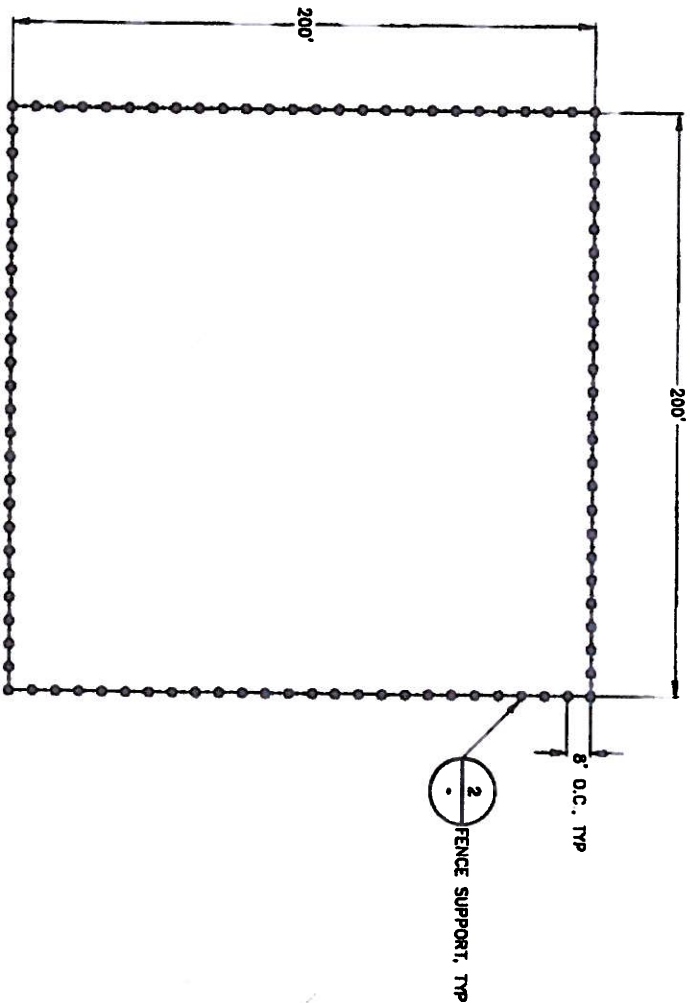
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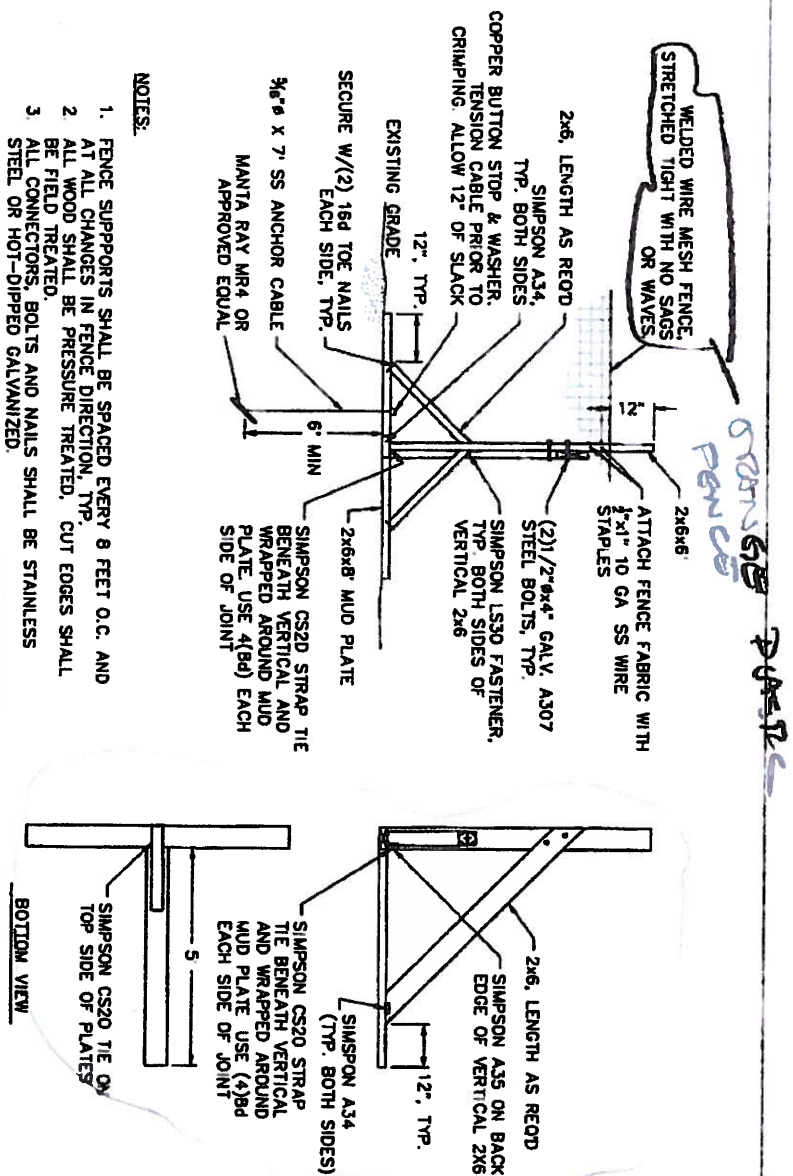
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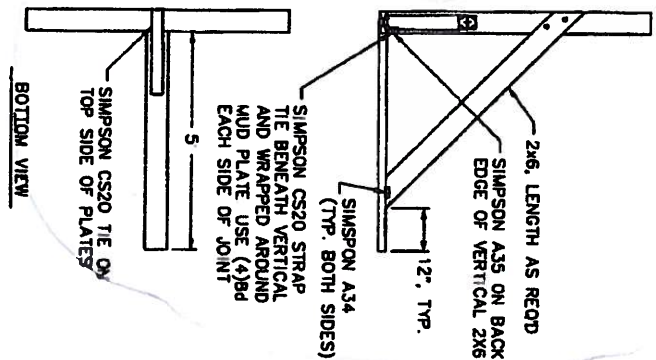
1 STABILIZATION POND OUTFALL DETAIL
CS03 Scale: NTS



3 STABILIZATION POND FENCE PLAN
CS03 Scale: NTS



2 STABILIZATION POND FENCE SUPPORT
CS03 Scale: NTS



- NOTES:
- FENCE SUPPORTS SHALL BE SPACED EVERY 8 FEET O.C. AND AT ALL CHANGES IN FENCE DIRECTION, TYP.
 - ALL WOOD SHALL BE PRESSURE TREATED, CUT EDGES SHALL BE FIELD TREATED.
 - ALL CONNECTORS, BOLTS AND NAILS SHALL BE STAINLESS STEEL OR HOT-DIPPED GALVANIZED.

Fencing Notes:

- USE TENS ORANGE FENCE
- LOOKING AT DIFFERENT SUPPORTS TO SAVE \$

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Sheet No	CS03
Sheet	10 of 26

TUNTUTULIAK, ALASKA
WASHETERIA SEWER SYSTEM UPGRADES
OUTFALL & FENCING
DETAILS



Alaska Department of Environmental Conservation
Division of Water
Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

GENERAL

- 1. INSTALL PIPING TO MEET REQUIREMENTS OF LOCAL AND STATE CODES; EXERCISE 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 SCHEDULE 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. POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS: PVC COMPOUND FOR PIPE AND FITTINGS SHALL BE TYPE 1, GRADE 1 PER ASTM D1784, NSF CERTIFIED FOR POTABLE WATER USE. MINIMUM PRESSURE RATING SHALL CONFORM TO ASTM D1785, SCHEDULE 80. PIPE SHALL BE MARKED WITH ASTM D1785 TO INDICATE MANUFACTURER'S TRADEMARK, MATERIALS DESIGNATION, NSF MARK, SCHEDULE, SIZE AND ASTM DESIGNATION. FITTING JOINTS FOR PRESSURIZED PIPE SHALL BE SOLVENT-WELDED OR, IF OPERATING TEMPERATURES WILL NOT EXCEED 100° F, GASKETED. FLANGED JOINTS MAY BE USED.
- 2. SCHEDULE 80 PVC FITTINGS: PHYSICAL DIMENSIONS AND TOLERANCES FOR SOCKET FITTINGS SHALL CONFORM TO ASTM D2464 AND TO ASTM D2467 FOR THREADED FITTINGS. THREADED FITTINGS SHALL HAVE TAPERED PIPE THREADS CONFORMING TO ANSI/ASME B1.20.1. FITTINGS SHALL BE MARKED IN ACCORDANCE WITH ASTM D2464 AND D2467 TO INDICATE MANUFACTURER'S TRADEMARK, MATERIALS DESIGNATION, NSF MARK, SCHEDULE, SIZE AND ASTM DESIGNATION. FITTING JOINTS FOR PRESSURIZED PIPE SHALL BE SOLVENT-WELDED OR, IF OPERATING TEMPERATURES WILL NOT EXCEED 100° F, GASKETED. FLANGED JOINTS MAY BE USED.
- 3. UNLESS OTHERWISE SHOWN OR SPECIFIED, ALL PROCESS PIPING AND FITTINGS SHALL BE COMPRISED OF SCHEDULE 80 PVC. PVC PIPE AND FITTINGS SHALL NOT BE USED FOR PRESSURIZED AIR SYSTEMS. FILTER FACE PIPING AND SUBMERGED PROCESS PIPING SHALL BE COMPRISED OF SCHEDULE 40 TYPE 304 STAINLESS STEEL PER ASTM A312, BUTT-WELDED FLANGED JOINTS. STAINLESS STEEL PIPING SHALL JOIN TO PRESSURE VESSELS AND PVC PIPE USING GASKETED, 150-LB ANSI B16.5 FLANGED JOINTS. AIR PIPING SHALL BE COMPRISED OF PAINTED ASTM A106 SEAMLESS BLACK STEEL, WITH 150-LB ANSI B16.3 MALLEABLE IRON THREADED FITTINGS.
- 4. 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 SCREENED 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.
- 5. PIPE DRAINAGE: ALL LINES SHALL BE INSTALLED SO AS TO BE DRAINED; DRAINAGE CAN BE ACCOMPLISHED BY USING DRAIN BIBBS WHERE SHOWN AND BY PLUGGED OR CAPPED FITTINGS; 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 SCREENED BRASS PLUGS.
- 6. DIELECTRIC UNIONS SHALL BE INSTALLED BETWEEN FERROUS AND NON-FERROUS METALLIC PIPE AND AT CONNECTIONS TO WATER HEATERS PARTITIONS.
- 7. PIPES PASSING THROUGH WALLS SHALL BE PROVIDED WITH SCHEDULE 80 PVC PIPE SLEEVES, WITH PROTRUSION BEYOND WALL ALLOWING PLACEMENT OF ESCUTCHEONS.
- 8. ESCUTCHEONS SHALL BE PROVIDED AT ALL FINISHED SURFACES WHERE EXPOSED PIPING, BARE OR INSULATED, PASSES THROUGH FLOORS, WALLS, OR CEILINGS, TO BE FASTENED SECURELY 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.
- 9. SWING JOINTS, OFFSETS, EXPANSION JOINTS, AND THE LIKE, SHALL BE PROVIDED WHERE NECESSARY TO ACCOMMODATE EXPANSION OF PIPING, WHICH WILL BE APPROXIMATELY 4 INCHES PER 100 FEET OF PVC WATER PIPING PER 100° F TEMPERATURE INCREASE.

PIPE INSTALLATION

- 1. SOLVENT-WELDED PVC JOINTS: PROVIDE SOLVENT-WELDED JOINTS IN ACCORDANCE WITH PIPE MANUFACTURER'S INSTRUCTIONS. JOINING SURFACES MUST BE SOFTENED AND MADE SEMI-FLUID PRIOR TO AND DURING ASSEMBLY OF PIPE. SUFFICIENT CEMENT SHALL BE APPLIED TO COMPLETELY FILL GAP BETWEEN PIPE AND FITTINGS. USE A WITER BOX TO PROVIDE SQUARE SAW CUTS FOR MAXIMUM BONDING AREA. BRAG PIPE ENDS TO ANGLE OF 10 TO 15 DEGREES PRIOR TO APPLICATION OF SOLVENT CEMENT. USE APPROPRIATELY-SIZED APPLICATION FOR THE SIZE OF PIPE AND FITTINGS BEING JOINED.
- 2. FLANGED PVC JOINTS: PROVIDE FLANGED JOINTS IN ACCORDANCE WITH PIPE MANUFACTURER'S INSTRUCTIONS. IN BETWEEN FLANGE FACES, PROVIDE FULL-FACED, CHEMICALLY-RESISTANT ELASTOMERIC GASKETS HAVING A DURAMETER ¼" THICKNESS OF 50 TO 70. ENSURE THAT BOLT HOLES ARE PROPERLY ALIGNED AND THAT FLANGING FLANGES ARE NOT SEPARATED BY EXCESSIVE DISTANCE PRIOR TO INSERTING BOLTS. TIGHTEN BOLTS IN DIAMETERICALLY-OPPOSITE FASHION USING A TORQUE WRENCH. DO NOT EXCEED MANUFACTURER'S RECOMMENDED TORQUES, CAUSING CRACKING AND JOINT WEAKENING.
- 3. THREADED PVC JOINTS: PROVIDE THREADED JOINTS IN ACCORDANCE WITH PIPE MANUFACTURER'S INSTRUCTIONS. PROTECT PIPE WALLS FROM USE JAMS USING THICK CAWMS OR RUBBER WARP. 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 TAP). DO NOT USE A STILLSON WRENCH TO ASSEMBLE PVC THREADED JOINTS. AVOID OVER-TIGHTENING; DO NOT APPLY SOLVENT CEMENT TO CONTACT THREADED PIPE AND FITTINGS. AVOID SCREWING METALLIC MALE THREADS INTO PLASTIC FEMALE THREADS, EXCEPT THOSE THAT HAVE METAL REINFORCEMENTS.
- 4. PRESSURE-TESTING: HYDROSTATICALLY TEST ALL PROCESS PIPING TO 150% OF MAXIMUM OPERATING PRESSURE. PERFORM TESTING IN ACCORDANCE WITH PIPE MANUFACTURER'S INSTRUCTIONS.

PIPE HANGERS AND SUPPORTS

- 1. SEISMIC BRACING: BRACE ALL PIPING 2½-INCH INSIDE DIAMETER AND LARGER FOR SEISMIC ZONE 29 FORCES IN ACCORDANCE WITH THE LATEST EDITION OF THE UNIFORM BUILDING CODE. LATERAL SUPPORTS FOR SEISMIC LOADS SHALL BE PROVIDED AT ALL CHANGES IN PIPE DIRECTION.
- 2. STANDARD HANGERS AND SUPPORTS: MSS SP-58 OR FS WH-H-171, TYPE AS REQUIRED FOR CONDITIONS OR AS INDICATED: HANGER ROOS CARBON STEEL, ASTM A575; CONCRETE INSERTS MSS SP-58 OR FS WH-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, B-LINE 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 H25 OR APPROVED EQUIVALENT, SHWET-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 1½-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 00-2-325 OR CADMIUM PLATED
- 6. CONCRETE AND FABRICATED HANGERS AND SUPPORTS: COMPLETE INSTALLATION TO PRESENT NEAT ORDERLY APPEARANCE; DO NOT BLOCK OPENINGS OR PASSAGWAYS 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 MANUFACTURER'S RECOMMENDATIONS NOR AS LISTED BELOW:

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

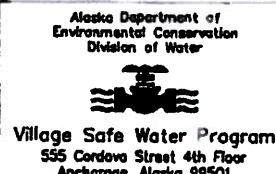
VALVES

- 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. PVC VALVES - GENERAL: USE PVC BALL VALVES FOR ALL LIQUID CHEMICAL AND PROCESS WATER SERVICE.
- 4. PVC BALL VALVES: RATING 150 PSI; PVC BODY AND TRIM; SCREWED UNION ENDS; VALVE CAN BE REMOVED FROM THE LINE WITHOUT INSTALLING ADDITIONAL UNIONS; TIE SEATS; VITON O-RING STEM SEALS; LEVER HANDLE OPERATOR WITH OPEN/CLOSED STOPS.
- 5. 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.
- 6. 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.
- 7. SWING CHECK VALVES (3-INCHES AND LARGER)-FULL OPENING, WITH OUTSIDE LEVER WITH ADJUSTABLE WEIGHTS; ANMA C 508, IRON BODY, BRONZE MOUNTED, FLANGED ENDS; BRONZE DISC FACING; STAINLESS STEEL WING 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.
- 8. ACCESSORIES: PROVIDE ALL ACCESSORIES NECESSARY FOR PROPER VALVE OPERATION AS SPECIFIED OR REQUIRED FOR THE APPLICATION.
- 9. 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; OPERATIONS 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.
- 10. PLUMBING VALVES: ISOLATION VALVES SHALL BE BALL VALVES UNLESS OTHERWISE SPECIFIED OR INDICATED; VALVES SHALL BE PVC WITH SOLVENT WELD ENDS FOR PVC PIPING.
- 11. 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, INDICATING TYPE OF DISC INSTALLED; ALL VALVES MUST BE FULLY IDENTIFIED BY THE MANUFACTURER INCLUDING SIZE, MANUFACTURER'S NAME, AND PRESSURE RATING.
- 12. ADJUSTMENTS: CHECK AND ADJUST VALVES AND ACCESSORIES FOR SMOOTH OPERATION; LUBRICATE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 13. TESTING: TEST ALONG WITH PIPING AS DESCRIBED ABOVE.
- 14. AIR RELEASE VALVES SHALL BE LOCATED AT HIGH POINTS AS REQUIRED AND SHOWN ON THE DRAWINGS.

TUNTUTULIAK, ALASKA

WASHETERIA SEWER SYSTEM UPGRADES

PIPING NOTES



Plot Date	9/14/11
Designed	MCE
Drawn	CFP
Approved	



Sheet No.	CS001
SHEET	11 OF 25

NO.	REVISION	BY	DATE
1	ISSUED FOR CONSTRUCTION	TRT	9/2011

WATER FROM THE SHOWERS, SINKS, AND WASHING MACHINES, FLOWS INTO A GREYWATER SUMP. A SLUDGE PUMP TRANSFERS SLUDGE FROM THE PRETREATMENT TANK TO THE GREYWATER SUMP. FILTER BACKWASH FLOWS INTO A BACKWASH DETENTION TANK THAT DRAINS INTO THE GREYWATER SUMP. SUMP PUMPS TRANSFER THE WATER TO A GREYWATER SETTLING TANK. SLUDGE CONTAINED IN THE GREYWATER SETTLES OUT AND THE SUPERNATANT FLOWS TO THE WASTEWATER STABILIZATION POND. THE SLUDGE IS MANUALLY PUMPED FROM THE SETTLING TANK AND HAULED TO THE COMMUNITY SEWAGE LAGOON.

BLACKWATER FROM THE TOILETS FLOWS TO A SEWER TANK THAT IS MANUALLY PUMPED AND HAULED TO THE COMMUNITY SEWAGE LAGOON

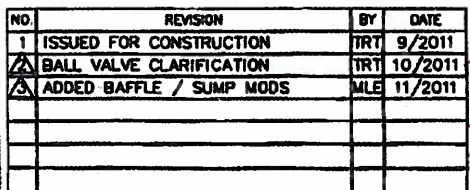


SHEET 12 OF 26	Sheet No. CS101	Plot Date 11/17/11	NO. 1	REVISION ISSUED FOR CONSTRUCTION	BY TRT	DATE 9/2011
	Designed MCE	 REMOVE FLOOR DRAINS	TRT	10/2011		
	Drawn CFP	 ADD ADDITIONAL CALLOUTS	NDM	11/2011		
	Approved _____					

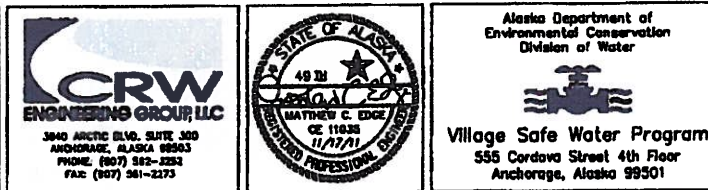
Alaska Department of
Environmental Conservation
Division of Water

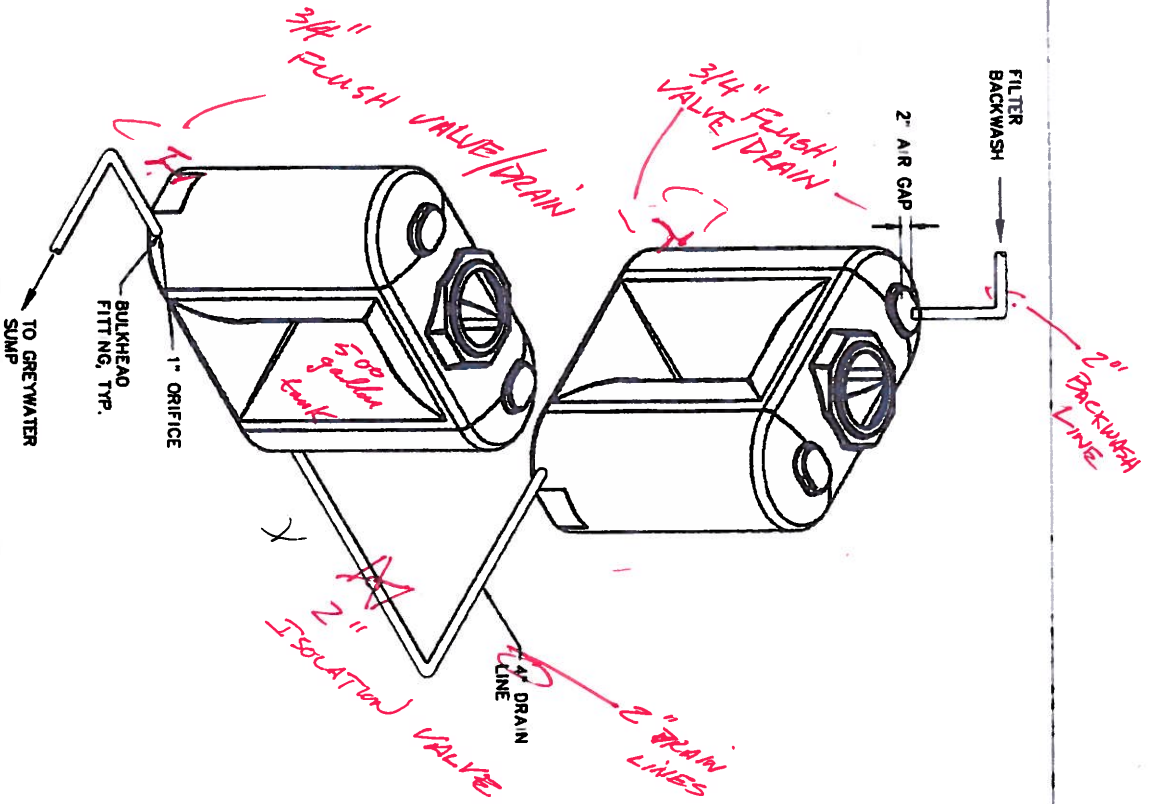


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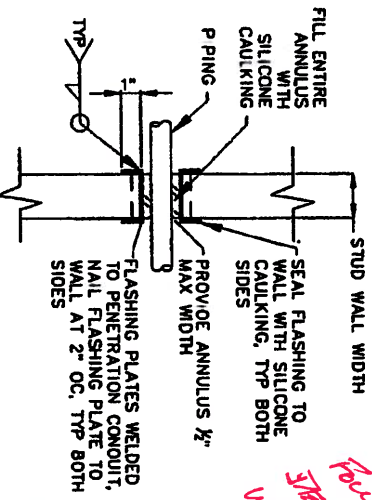


**TUNTUTULIAK, ALASKA
WASHETERIA SEWER SYSTEM UPGRADES
SETTLING TANK & CLARIFIED
WATER SUMP DETAILS**





1 BACKWASH DETENTION TANK
Scale: NTS

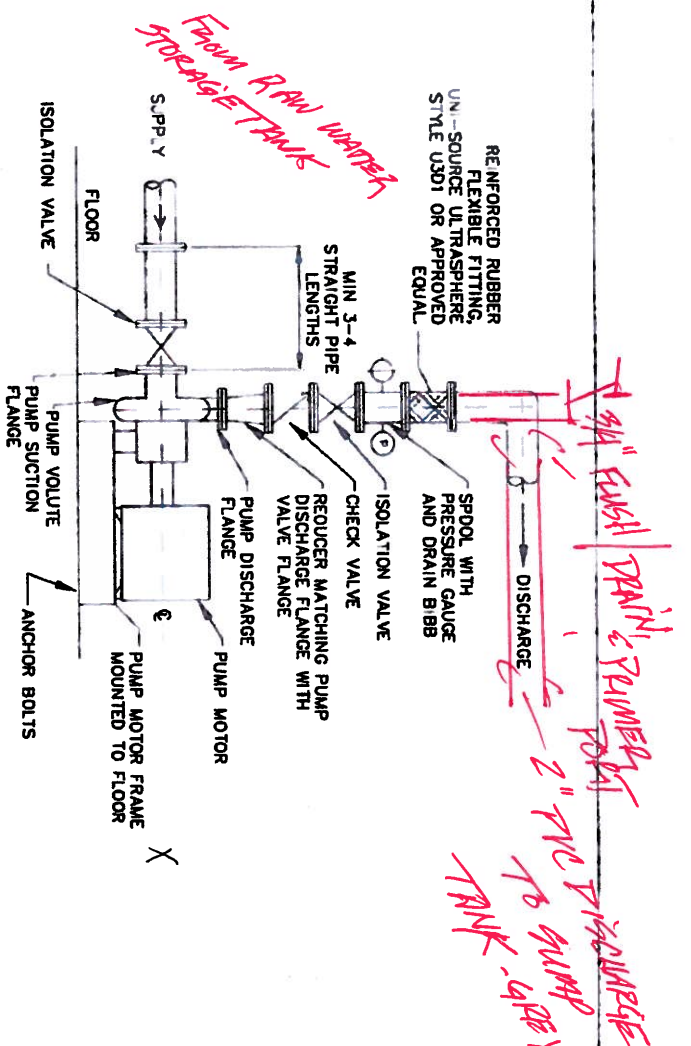


3 WALL PENETRATION DETAIL
Scale: NTS

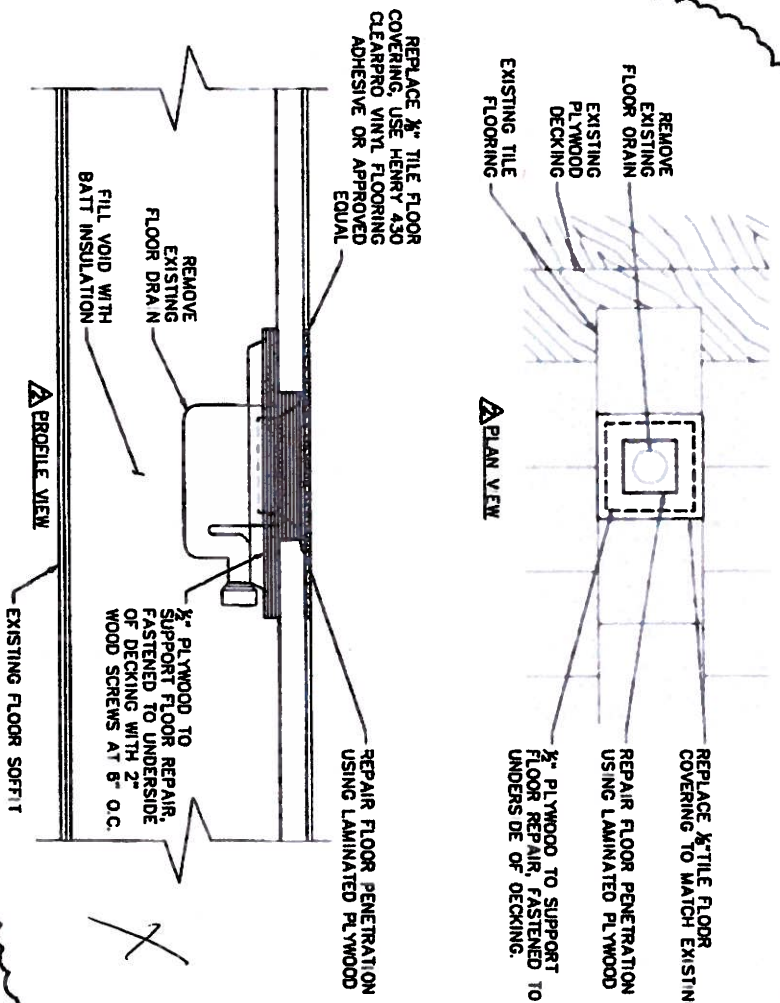
NOTE:
PPE PENETRATION SHALL NOT PENETRATE WALL STUD.

Followed Detail for WALL PENETRATIONS
SEALED ROOF PENETRATIONS
AT SEVERAL ABANDONED
HEATER VENT STACKS

- NOTES:
1. ALIGN PUMP SUCTION CENTERLINE WITH SUPPLY HEADER PIPE CENTERLINE LEAVING NO HIGH POINTS IN BETWEEN.
 2. IF INSTALLING A REDUCER ON PUMP SUCTION LINE, REDUCER SHALL BE ECCENTRIC AND INSTALLED SO AS NOT TO CREATE POTENTIAL FOR AIR POCKETS.



2 SLUDGE TRANSFER PUMP INSTALLATION DETAIL
Scale: NTS



4 FLOOR DRAIN REMOVAL DETAIL
Scale: NTS

NO.	REVISION	BY	DATE
1	ISSUED FOR CONSTRUCTION	TRT	9/2011
2	REMOVE FLOOR DRAINS	TRT	10/2011

Plot Date: 10/25/11	Designed: MCE	Drawn: CFP	Approved: _____
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Sheet No. CS504
SHEET 16 OF 26

TUNTUTULIAK, ALASKA
WASHETERIA SEWER SYSTEM UPGRADES

BACKWASH DETENTION TANK
& MISC. DETAILS

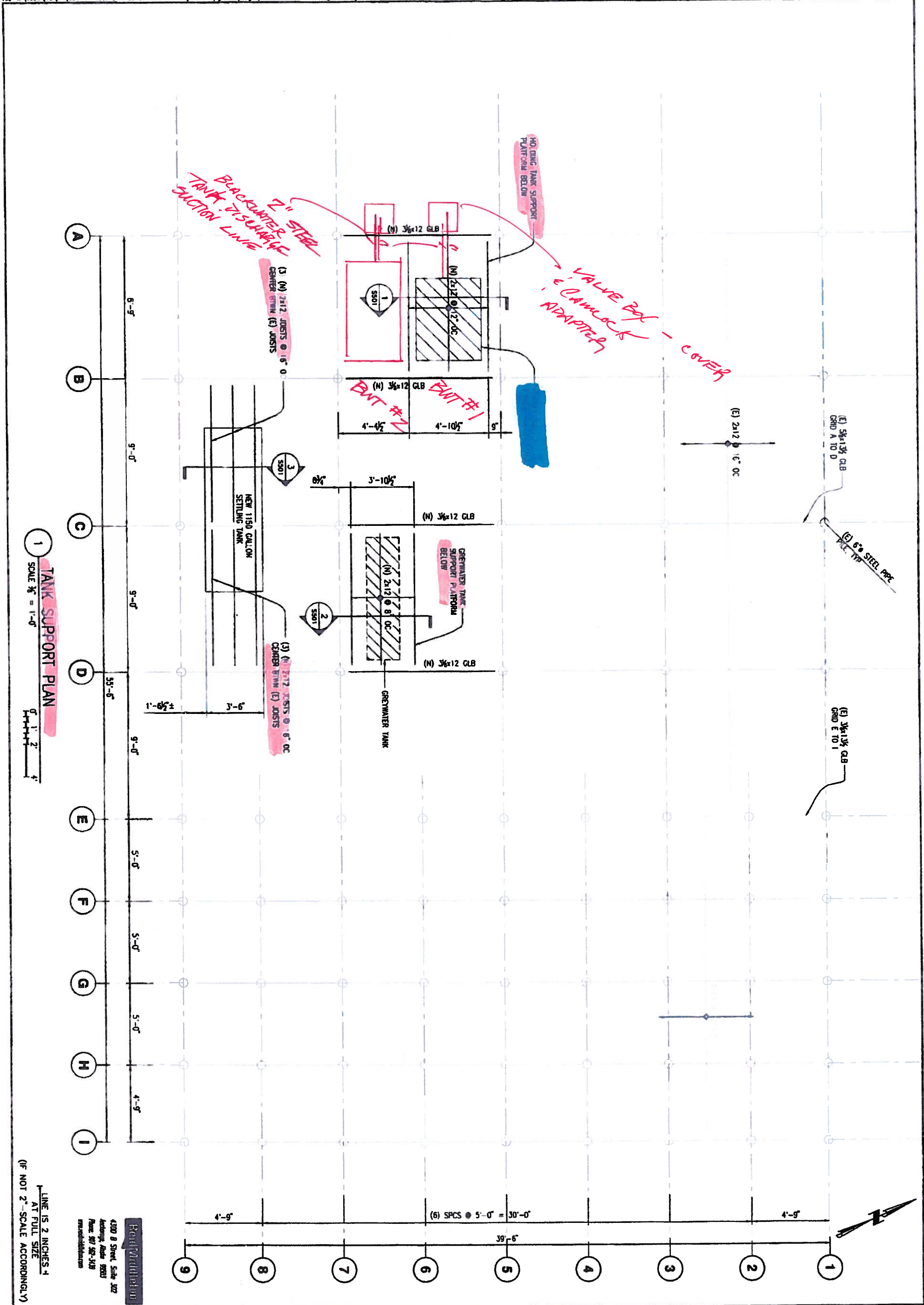
CRW
ENGINEERING GROUP, LLC

3640 ARCTIC BLVD. SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 565-1553
FAX: (907) 561-2273

STATE OF ALASKA
MATTHEW C. ENGE
CS 1163
10/25/11
REGISTERED PROFESSIONAL ENGINEER

Alaska Department of
Environmental Conservation
Division of Water

Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501



NO	REVISION	BY	DATE
1	ISSUED FOR CONSTRUCTION		SEPT 2011

Plot Date	9/12/11
Designed	KA
Drawn	CSB
Approved	KA

TUNTUTULIAK, ALASKA
WASHETERIA - SEWER SYSTEM UPGRADES
FLOOR FRAMING PLAN

CRW
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STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
9/12/11

Alaska Department of
Environmental Conservation
Division of Water
Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

GENERAL STRUCTURAL NOTES

THE CONTRACTOR SHALL VERIFY AND CORROBORATE ALL DIMENSIONS AMONG THE DRAWINGS BEFORE STARTING ANY WORK OR FABRICATING ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, SITE CONDITIONS, SPECIFICATIONS AND THESE NOTES SHALL BE REPORTED TO THE ENGINEER AT ONCE.

ALL CONSTRUCTION SHALL COMPLY WITH THE INTERNATIONAL BUILDING CODE 2006

SAFETY - THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL FEDERAL, STATE AND LOCAL SAFETY STANDARDS. THE CONTRACTOR IS IN CHARGE OF ALL SAFETY MATTERS ON AND AROUND THE JOB SITE.

STRUCTURAL DESIGN DATA

STRUCTURAL DESIGN IS IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE 2006

STRUCTURES HAVE BEEN DESIGNED FOR THE FOLLOWING OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. CONSTRUCTION IS RESPONSIBLE FOR TEMPORARY SHORING AND BRACING DURING CONSTRUCTION.

USE LOADS:

SNOW 30 PSF BASIC + ONIT $S_s = 1.1$

LIVE LOADS 25 PSF UNLESS INDICATED MECHANICAL EQUIPMENT COVERS

WIND LOADS BASIC WIND SPEED (1-SECOND GUST) = 75 MPH EXPOSURE B, $K_z = 1.15$

SEISMIC LOADS SITE CLASS E, $S_s = 0.15$, $S_1 = 0.10$, $I = 1.25$ BASIC FORCE RESISTING SYSTEM = BEARING WALL SYSTEM W/ LIGHT FRAMED WOOD SHEAR WALLS RATED FOR SHEAR RESISTANCE. ANALYSIS PROCEDURE = LINEAR STATIC.

LATERAL FORCES ARE TRANSFERRED TO THE SHEAR WALLS BY FLEXIBLE DIAPHRAGMS. LATERAL FORCES IN THE WALLS ARE CALCULATED BY THE TRIANGULAR AREA METHOD

STRUCTURAL STEEL

MATERIALS

CHANNELS, ANGLES, & PLATES

BOLTS

WELD FILLER METAL

MINIMUM TENSILE STRENGTH 70 KSI 58 KSI 70 FT-LBS @ -20°F AND 40 FT-LBS @ 50°F

MINIMUM YIELD STRENGTH 60 KSI 50 KSI 72.5 MINIMUM

ELONGATION

STRUCTURAL TIMBER NOTES

MATERIALS

A. SAWN LUMBER AND TIMBER

SPICES

B. GLUE LAMINATED TIMBER

SPICES

GRADE

C. 1/4-INCH PLYWOOD SHEATHING

SPICES

D. 1/4-INCH PLYWOOD SHEATHING

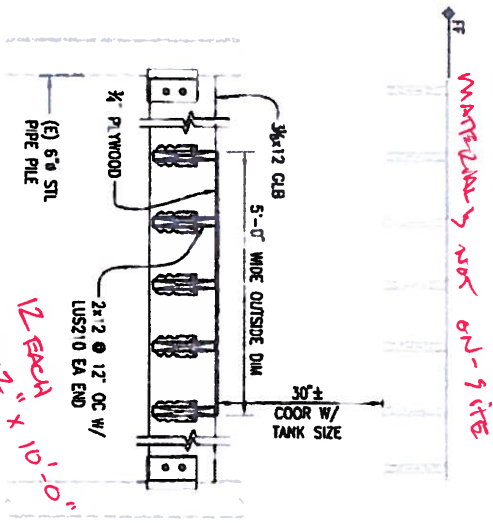
SPICES

E. METAL HANGERS

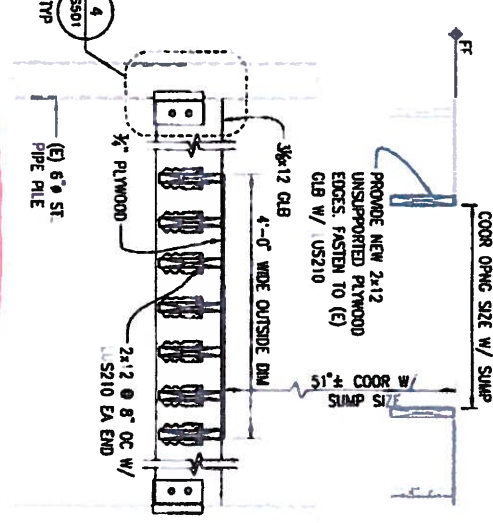
METAL HANGERS SHALL BE AS MANUFACTURED BY SAMPSON STRONG-TIE OR APPROVED EQUAL.

ABBREVIATIONS

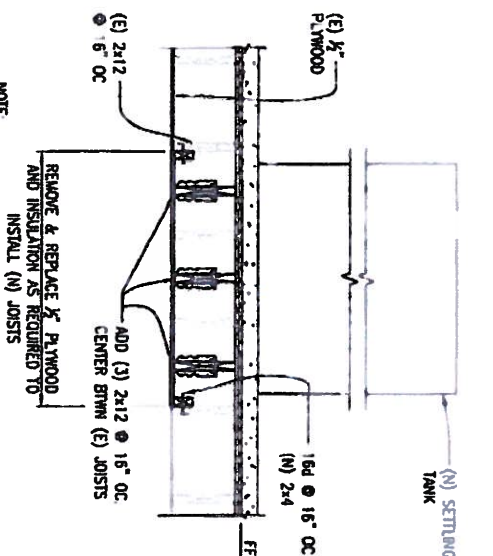
C EXISTING
N NEW
BETW BETWEEN
COOR COORDINATE
DIM DIMENSION
FIN FINISH
CLB CLUSTER
PSF POUNDS PER SQUARE FOOT
W/ WITH



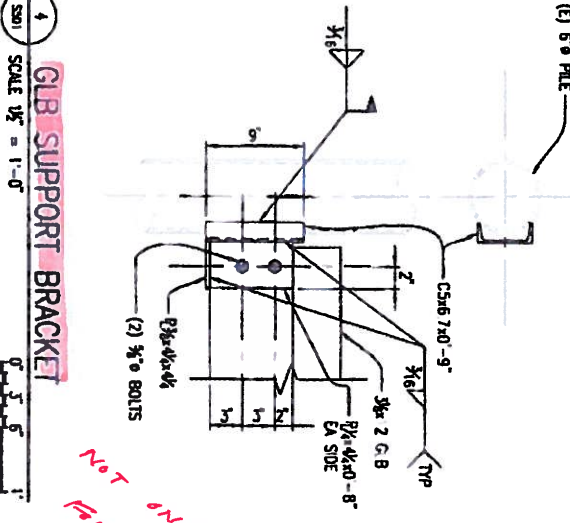
1 HOLDING TANK FRAMING
SCALE 3/4\"/>



2 GREYWATER SUMP PLATFORM FRAMING
SCALE 3/4\"/>



3 SETTLING TANK
SCALE 3/4\"/>

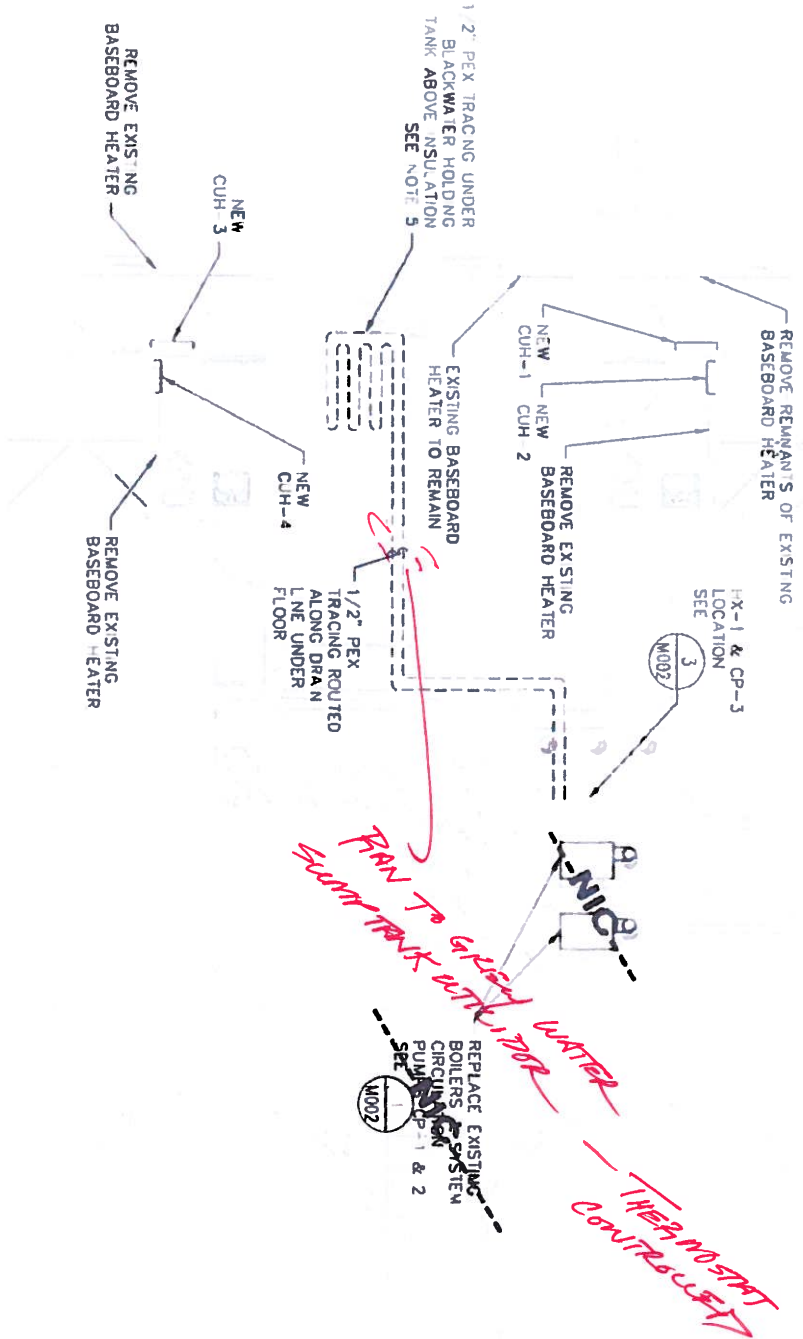


4 GLB SUPPORT BRACKET
SCALE 1/2\"/>

NOT ON SITE
FOR HOLDING
TANK
BLACK WATER

1300 8 Street, Suite 202
Anchorage, Alaska 99501
Phone: (907) 562-3252
www.crw-engineering.com

LINE IS 2 INCHES 1
AT FULL SIZE
(IF NOT 2\"/>



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

BOILERS													
TAG	MAKE & MODEL NO	FUEL RATE GAL/HR	OUTPUT MBH	BURNER	ACCESSORIES								
BP-1 & 2	WELLS-WILCOX 41W03-0	2.55	285	BECK	NMO	BECK ESSEX HIGH LIMIT CONTROL							
PUMPS													
TAG	SERVICE	FLOW GPM	HEAD FEET	MOTOR HP	VOLTAGE /PHASE	MANUFACTURER/MODEL/REMARKS							
BP-1 & 2	BOILER CIRCULATION	40	8	1/2	NMO	GRUNDFOS UPS60-40/40 PHOSPHOR BRN 4 GAL 800 LBS							
BP-1 & 2	SYSTEM CIRCULATION	60	20	3/4	NMO	GRUNDFOS UPS60-80/20 MAIN & SHADBY							
CP-3	HOLDING TANK HEAT	1	4	1/25	120/1	GRUNDFOS UM15-1087							
HEAT EXCHANGERS													
TAG	SERVICE	CAPACITY BTUH	HOT SIDE				COLD SIDE				MANUFACTURER/MODEL /COMMENTS		
			FLUID	T IN	T OUT	FLOW	DELTA P	FLUID	T IN	T OUT		FLOW	DELTA P
HX-1	BLACKWATER TANK TRACING	1350	WATER	180F	160 F	0.5 GPM	0.2 PSI	50K PG	80F	83F	1 GPM	0.5 PSI	GRAYHAM MODEL GB30-10, BRAZED SS PLATE HEAT EXCHANGER, SS MOUNT CONNECTIONS

- GENERAL NOTES
- CONNECT NEW HEATING TERMINAL UNITS TO EXISTING PIPING ABOVE MEZZANINE LEVEL. INSULATE NEW PIPING WITH 1" FIBERGLASS/ALL SERVICE JACKET.
 - REPLACE EXISTING BOILERS WITH NEW BOILERS AND REVERSE NEAR BOILER PIPING AS SHOWN.
 - FIELD LOCATE HX-1 AND CP-3 NEAR BOILERS.
 - ROUTE 1/2" OXYGEN BARRIER PEX TRACING TUBING UNDER FLOOR, PARALLEL WITH DRAIN PIPING. IF NECESSARY TO RUN TRACING TUBING EXPOSED BELOW BUILDING INSULATE WITH TWO-INCH THICKNESS 3.75 LB/FT³ POLYURETHANE CLOSED CELL FOAM INSULATION AND ALUMINUM JACKET.
 - INSTALL TRACING TUBING ON BOTTOM OF BLACKWATER HOLDING TANK AS SHOWN WITH 6" SPACING. INSTALL SO TUBING IS IN DIRECT CONTACT WITH TANK BOTTOM. SEE DRAWING CS503 FOR TANK DETAIL S.
 - INSULATE NEW PIPING WITH 1" FIBERGLASS/ALL SERVICE JACKET.

UNIT HEATERS											
TAG	SERVICE	AIRFLOW CFM	CAPACITY BTU/HR	EQT F	GLYCOL GPM	MOTOR POWER	VOLTAGE /PHASE	MANUFACTURER/MODEL/REMARKS			
CUH-1	MEN'S SHOWER	130	12,000	190	1	66.8W	120/1	BEACON/MORRIS TWIN-FLO III, F120 SURFACE MOUNT			
CUH-2	MEN'S TOILET	95	9,180	190	1	30.7W	120/1	BEACON/MORRIS TWIN-FLO III, F84 SURFACE MOUNT			
CUH-3	WOMEN'S SHOWER	130	12,000	190	1	66.8W	120/1	BEACON/MORRIS TWIN-FLO III, F120 SURFACE MOUNT			
CUH-4	WOMEN'S TOILET	95	9,180	190	1	30.7W	120/1	BEACON/MORRIS TWIN-FLO III, F84 SURFACE MOUNT			

MISCELLANEOUS EQUIPMENT

AR SEPARATORS - 45-1 SPROVENT GENCO 2-1/2" MODEL 16250, AS-2 SPROVENT JUNIOR 3/4" MODEL V4075FT

EXPANSION TANKS - 45-1 SPROVENT GENCO 2-1/2" MODEL 16250, AS-2 SPROVENT JUNIOR 3/4" MODEL V4075FT

BLACKWATER TANK TRACING, ET-2 BLADDER TYPE, 0.9 GAL. ACCEPTANCE, AMTROL EXTROL 15 OR EQUAL

GLYCOL FILL SYSTEM - AXIOM MODEL MF200 W/PRESSURE SWITCH & GAUGE

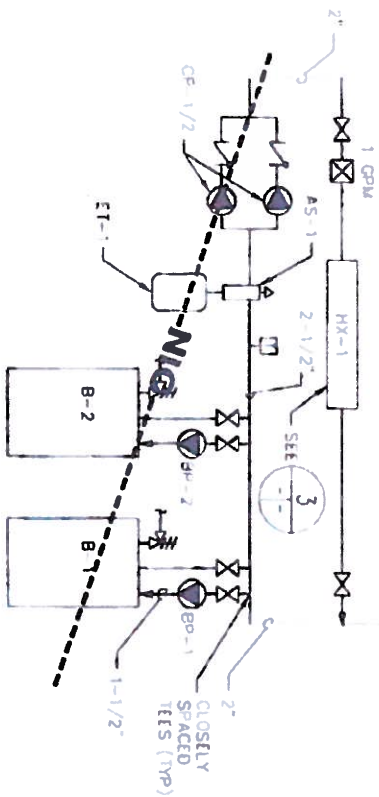
BOILER CONTROLLER - NMO-2 BOILER CONTROLLER-262

TEMPERATURE CONTROL TC-1 - TERNAR MIXING CONTROL 360

CONTROL VALVE FOR HX-1 - 2-WAY BALL VALVE WITH 24V FLOATING ACTION ACTUATOR, BELIMO BZ1SH1029+TF24-3 US OR EQUAL

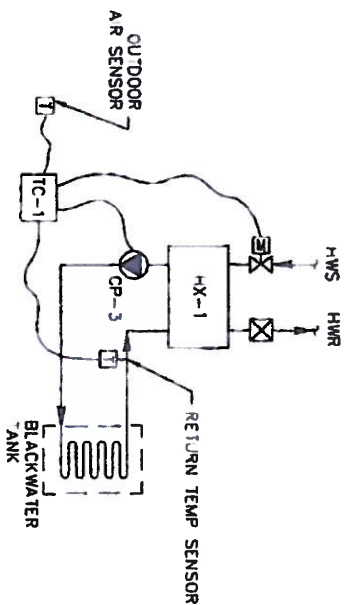
BOLTER CONTROL SEQUENCE
BOLTER CONTROL MONITORS OUTSIDE AND SUPPLY TEMP SENSORS AND FIRES B-1 AND B-2 IN SEQUENCE TO MAINTAIN HEATING WATER SUPPLY TEMP PER THE FOLLOWING OUTDOOR RESET SCHEDULE: 180F AT MINUS 30F OUTSIDE, 140F AT 60F OUTSIDE. PROVIDE A POWERED SIGNAL TO THE DHW CONTACTS ON THE BOLTER CONTROLLER WHEN JMW GENERATOR PUMP RUNS TO OVERRIDE OUTDOOR RESET AND SET SYSTEM SUPPLY TEMP TO 180F. PROVIDE A POWERED SIGNAL TO THE SETPOINT CONTACTS WHEN THE WATER PUMP RUNS TO OVERRIDE OUTDOOR RESET AND SET THE SYSTEM SUPPLY TEMP AT 190F. WARM WEATHER SHUTDOWN STOPS CP-1 OR 2 (AS SELECTED BY MANUAL SWITCH) ABOVE 65F OUTSIDE.

1 BOLTER SCHEMATIC
SCALE: NONE

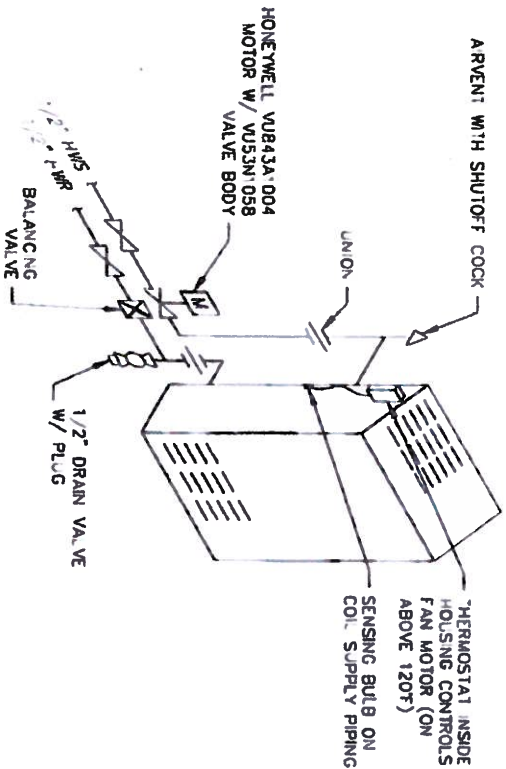
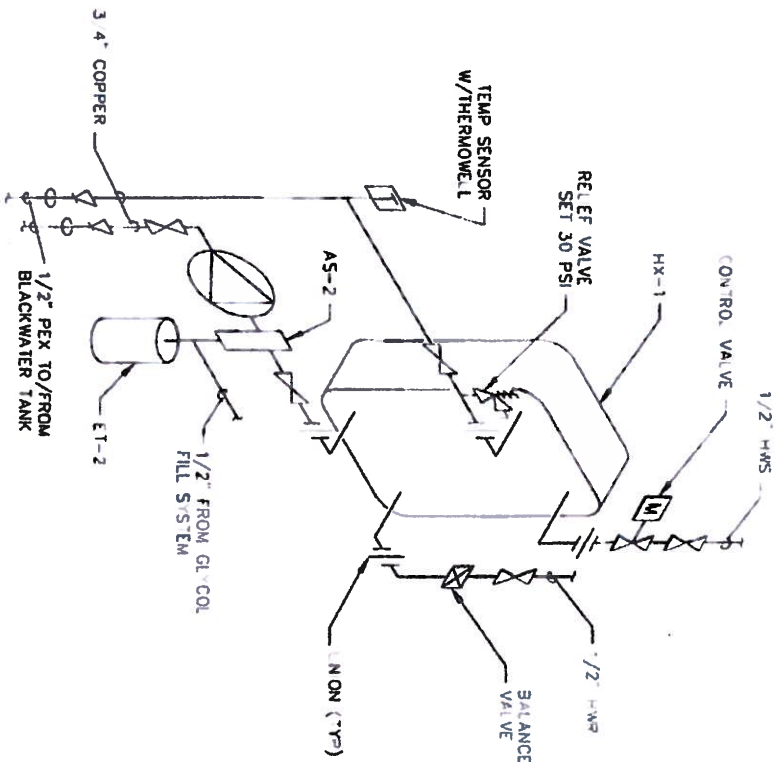


HX-1 CONTROL SEQUENCE
TC-1 MONITORS RETURN AND OUTSIDE TEMP SENSORS AND MODULATES CONTROL VALVE TO MAINTAIN RETURN TEMPERATURE PER THE FOLLOWING OUTDOOR RESET SCHEDULE: 80F AT MINUS 30F OUTSIDE, 50F AT 40F OUTSIDE. CP-3 RUNS BELOW 40F OUTSIDE TO CIRCULATE GLYCOL TO BLACKWATER TANK.

2 SCALE: NONE



3 SCALE: NONE



4 SCALE: NONE

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" SCALE ACCORDINGLY)

NO.	REVISION	BY	DATE
1	ISSUED FOR CONSTRUCTION	KLH	9/2011

Plot Date	9/12/11
Designed	KLH
Drawn	ZB
Approved	

Sheet No
M002
20 of 26

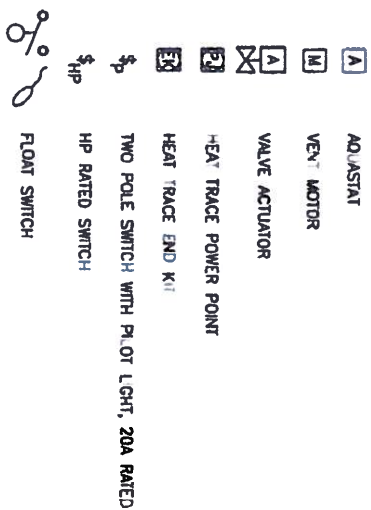
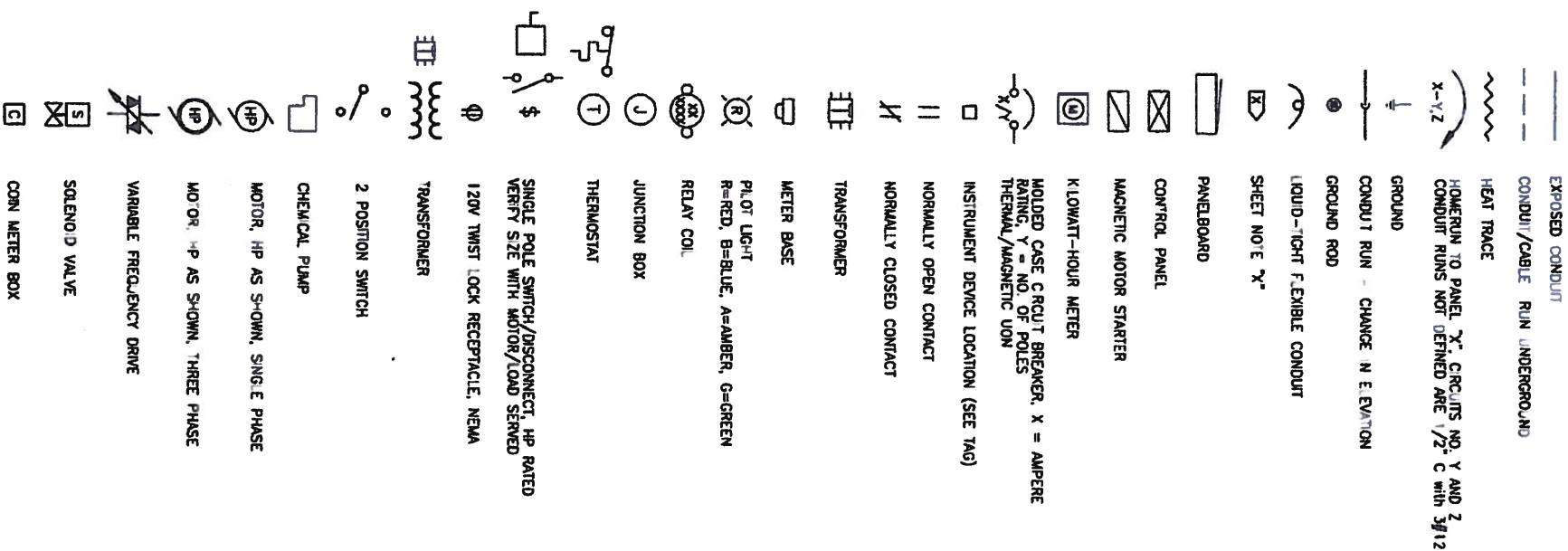
TUNTUTULIAK, ALASKA
WASHETERIA - SEWER SYSTEM UPGRADES
MECHANICAL DETAILS

CRW
ENGINEERING GROUP, LLC
3840 ARCADE BLVD. SUITE 300
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PHONE (907) 562-3252
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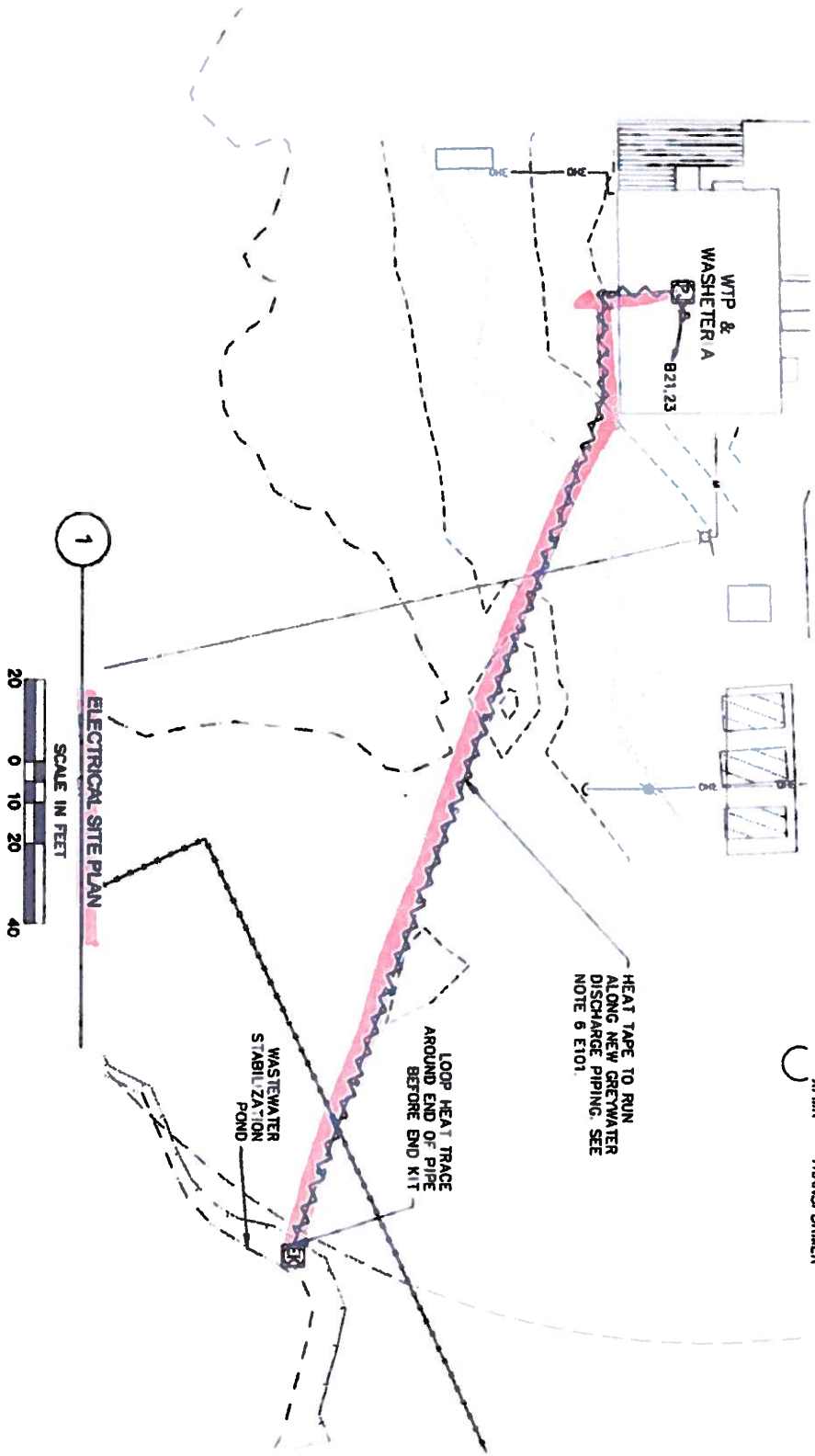
Alaska Department of
Environmental Conservation
Division of Water
Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

LEGEND



ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISH FLOOR
AIF	AMPERES INTERRUPTING CAPACITY
AIS	AUTOMATIC TRANSFER SWITCH
AWC	AMERICAN WIRE GAGE
BCP	BOILER CONTROL PANEL
BCU+	BARE COPPER
BILDG	BUILDING
CIRC	CIRCULATION
C	CONDUCTOR
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
DCP	DRYER CONTROL PANEL
DWG	DRAWING
EAT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NON-METALLIC TUBING
EOL	END OF LINE RESISTOR
FOP	FOP
G	GROUND CONDUCTOR
GFI	GROUND FAULT INTERRUPTER
H	HOT CONDUCTOR
HID	HIGH INTENSITY DISCHARGE
HQA	HAND-OFF-AUTO
HP	HORSE POWER
HWG	HOT WATER GENERATOR
IMC	INTERMEDIATE METAL CONDUIT
KVA	KILO-VOLT-AMPERES
KW	KILOWATT
LITMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
LITNC	LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT
MCM	THOUSAND CIRCULAR MILLS
MCP	MAGNETIC ONLY CIRCUIT PROTECTOR
N	NEUTRAL CONDUCTOR
NEMA	NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
NMC	NON METALLIC CABLE
P	POLE
RCP	RECEPTACLE
RMC	RIGID METAL CONDUIT, GALVANIZED
SCD	STREAMING CURRENT DETECTOR
SL	SWITCH LEG
TWSH	TWISTED/SHIELDED
TYP	TYPICAL
U/G	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLTS
X/FMR	TRANSFORMER



Sheet No. **E001**
SHEET 21 OF 26

Plot Date: 9/14/11
Designed: TRK
Drawn: TRK
Approved: WMM

NO.	REVISION	BY	DATE
1	ISSUED FOR CONSTRUCTION	TRK	9/2011

TUNTUTULIAK, ALASKA
WASHETERIA - SEWER SYSTEM UPGRADES
ELECTRICAL LEGEND, SITE PLAN & ABBREVIATIONS

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STATE OF ALASKA
JULIAN H. WATKINS
Professional Engineer
09/14/2011

Alaska Department of
Environmental Conservation
Division of Water

Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501

ELECTRICAL SPECIFICATIONS

SCOPE OF WORK: Furnish and install all material and equipment as required for the installation as specified here and as shown on the drawings.

STANDARDS, CODES AND REGULATIONS: Contractor shall comply with the latest adopted edition of the National Electrical Code (NEC), International Building Code (IBC), and International Fire Code (IFC) including all state and local amendments to these codes.

DRAWINGS: The drawings are diagrammatic, not necessarily showing all offsets or exact locations of fixtures, equipment, etc., unless specifically dimensioned. Review the drawings and specifications for equipment furnished by other crafts but installed in accordance with this section. Bring questionable or obscure items, apparent conflicts between plans, specifications, governing codes and/or utilities regulations to the attention of the Engineer. Codes, ordinances, regulations, manufacturer's instructions or standards take precedence when they are more stringent or conflict with the drawings and specifications.

RECORD DRAWINGS: Mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all electrical work that will become permanently concealed. Show routing of work in permanently concealed blind spaces within buildings and structures. Show complete routing and sizing of any significant revisions to the systems shown.

WORKMANSHIP: Installation of all work shall be made so that its several component parts shall function as a workable system compatible with all accessories necessary for its operation. All material and equipment shall be installed in accordance with the manufacturer's recommendations, instructions and/or installation drawings and in accordance with NECA standards. Materials and equipment shall be new and shall conform to applicable industry standards, NEMA standards and Underwriters Laboratories (UL) standards.

OPERATION AND MAINTENANCE MANUALS: Provide operation and maintenance manuals for training of the owner's personnel. Describe in the manuals the procedures necessary to operate the system including start-up, operation, emergency operation and shutdown. Provide instructions and a schedule of preventive maintenance in tabular form for all routine cleaning, inspection and lubrication with recommended lubricants. Provide instructions for minor repair or adjustments required for preventive maintenance routines. Provide manufacturer's descriptive literature including approved shop drawings covering devices used in any contractor-provided equipment or systems with illustration, exploded views, etc. Provide a non-password protected PDF file of each manual in its entirety on a CD in addition to the required hard copies.

REFERENCE SYMBOLS: The Electrical "LEGEND" on the drawings is a standardized version, and all symbols shown may not be used. Use the "LEGEND" as a reference for the symbols used on the drawings.

IDENTIFICATION: Provide engraved three-layer laminated plastic nameplates with black letters on a white background to identify all electrical distribution and control equipment, loads served and as noted on the drawings. Letter heights shall be 1/8 inch for individual switches, motor starters and loads served and 1/4 inch on panelboards. Secure nameplates to equipment fronts using screws, rivets or adhesives.

CONDUITS: Mark all conduits entering or leaving panelboards/control panels with an indelible black marker with the circuit numbers of the circuits contained inside.

JUNCTION BOXES: Mark all circuit numbers of wiring on all junction boxes with sheet steel covers. Mark with indelible black marker. Mark all other special system junction boxes with sheet steel covers.

CONDUIT: In General, all wiring below 8' AFT shall be installed in galvanized rigid steel or intermediate metal raceway with cast boxes and gasketed covers. EMT and pressed steel shall be permitted at or above 8' unless otherwise noted (See WIRING METHODS at the end of the specifications). All metallic fittings, connectors, boxes, etc., shall be approved for use as a grounding means. Utilize short extensions (36 inches maximum) of flexible, low temperature, liquidtight flexible metallic conduit for connection of all motors and other equipment subject to vibration and where metallic transition between structures or on risers from below grade. Paint all exposed raceways to match the surface to which it is attached or crosses. Otherwise paint industrial gray. Completely and thoroughly swab raceway system before installing conductors. An equipment ground wire is required in all conduits whether shown or not.

CONDUCTORS: Conductors shall be copper, solid or stranded, with type XHHW-2, 90° insulation. Minimum branch circuit conductor size shall be #12 AWG. Minimum control circuit conductor size for field wiring shall be #14 AWG unless noted otherwise on drawings. Pull all conductors into the raceway at the same time. Use UL listed wire-pulling lubricant for pulling #4 AWG and larger wires. Color code conductors as follows: 480V systems: brown (A), orange (B), yellow (C). NOTE: The 480V Neutral is not used and is terminated at the ATS. 208Y/120 volt systems: black (A), red (B), blue (C), white (N) and green or bare (G). 240/120 volt systems: black (A), red (B), green or bare (G). Use properly sized insulated spring wire connectors with plastic caps for all conductors #8 AWG and smaller. Terminate #6 AWG and larger conductors with crimp or compression type connectors installed with tool recommended by connection manufacturer and insulated with properly sized 600-volt rated heat shrink tubing.

CIRCUIT BREAKERS: Molded case circuit breakers shall be bolt-on with common trip handle for all poles. Thermal magnetic trip type unless specifically shown as magnetic only (MCP).

LIGHTING EQUIPMENT: Provide all lighting equipment or approved equal as shown on the drawings and described in the "Fixture schedule". Provide lighting equipment complete, wired, assembled, with proper flanges, mounting supports, hardware, etc. Provide high power factor, regulating or constant wattage type ballasts for HID fixtures.

EQUIPMENT CONNECTIONS: Provide wiring and connection to equipment requiring electrical power but specified under other divisions of the specifications. Equipment shall include but is not limited to motors, pumps, dispensing equipment, etc. Review equipment submitted from the other trades prior to installation and electrical rough-in. Verify location, size, type of connections, and that equipment is ready for electrical connection. Make wiring connections in control panel or in wiring compartment of pre-wired equipment in accordance with the manufacturer's instructions. Provide interconnecting wiring and disconnects where required.

DISCONNECT SWITCHES: Provide 600V and 250V heavy duty non-fusible quick-make, quick break, load interrupter, enclosed knife switches with externally operable handle interlocked to prevent opening front cover with switch in on position, handle lockable in off position. For motors under 1HP, specification grade snap switched rated for HP duty may be used. Where locking is required, provide suitable cover plate with locking feature.

POWER CONTACTORS: Provide full voltage HP rated contactors, NEMA rated, AC general-purpose, class A, with coil voltage as shown. Provide with NEMA 12 rated enclosure, pilot devices as shown on drawings.

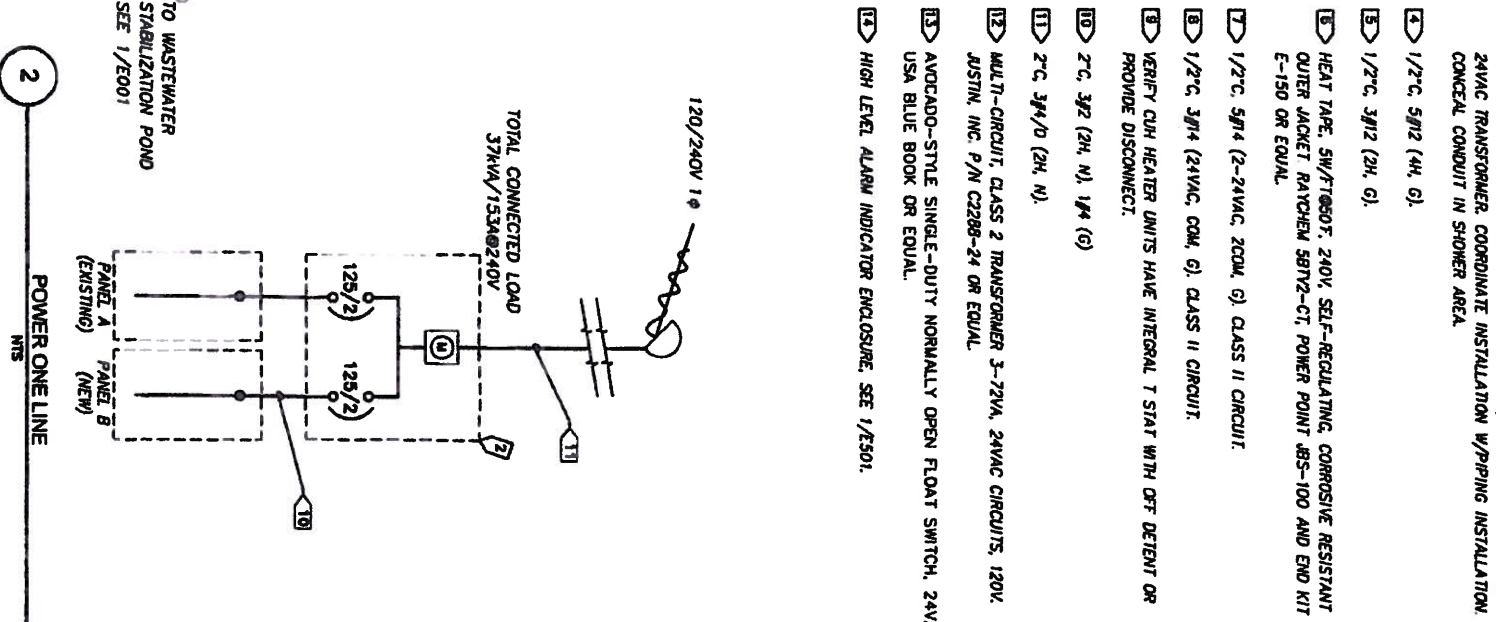
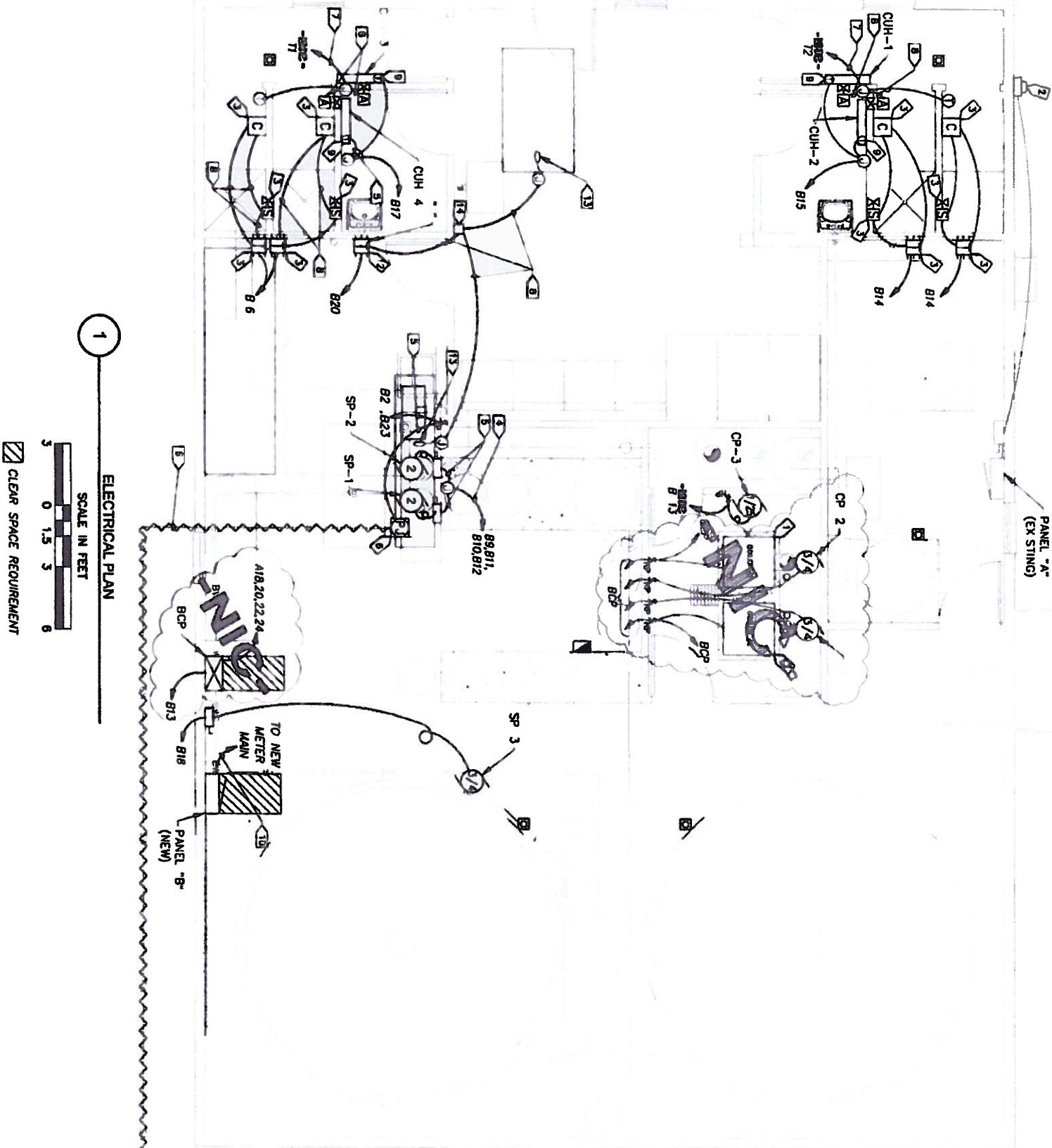
EQUIPMENT MOUNTING: Provide all bracing as required to securely mount enclosures, fixtures and devices. Unless otherwise noted use galvanized hardware and galvanized formed steel components such as Unistrut or equal. When bolting to structure, verify that the original structural and performance (i.e. water tight) characteristics are maintained.

WIRING METHODS: Unless noted otherwise, enclosures, junction boxes and other equipment shall be installed in accordance with the following schedule:

Exterior - Cast weatherproof device boxes with gasketed covers, RMC or LTM/C. NEMA 4X enclosure rating. NOTE: Receptacles shall retain their weatherproof rating while in use.

W/P/Mechanical Area - Surface mounted EMT, LTM/C. Cast device boxes, NEMA 12 enclosure ratings.

Laundry/Restroom/Shower - Flush mounted pressed steel device and junction boxes with brushed stainless steel covers, concealed wiring EMT, ENT or non-metallic cable (NMC).

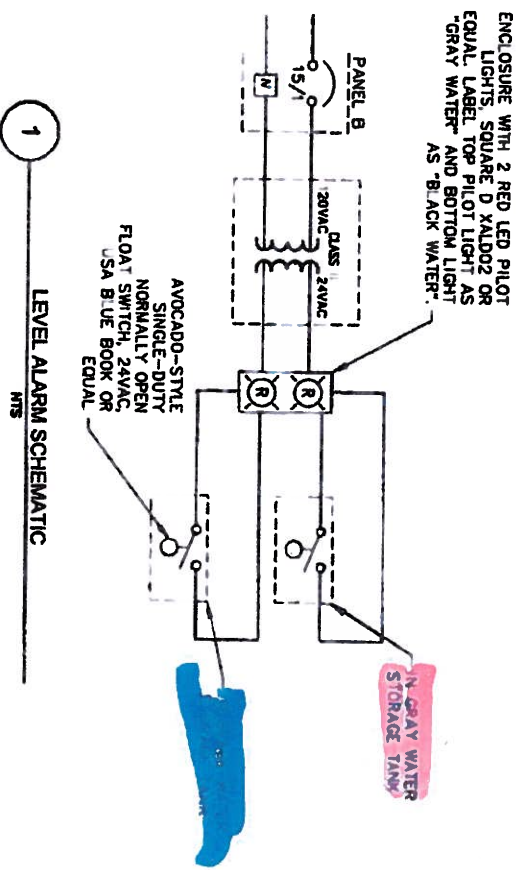


NOTES

1. NEW BOILERS, IF IN GOOD CONDITION, USE EXISTING CONDUIT, CONDUCTORS AND SWITCHES FOR THE BOILERS AND CP-1,2. IF NOT, REPLACE HOMERUN CONDUCTORS TO BCP AS SHOWN ON NEW BOILER CONTROL SCHEMATIC 1/E503.
2. NEW METER MAIN COMBO WITH 2-125A MAINS WILBANK OR EQUAL.
3. REPLACE COIN-OPS AND SOLENOID VALVES IN SHOWERS. MONARCH HMG SERIES COIN OPERATED METER WITH HVG TIMER, SHOWER SOLENOID AND 24VAC TRANSFORMER. COORDINATE INSTALLATION W/P/PIPING INSTALLATION. CONCEAL CONDUIT IN SHOWER AREA.
4. 1/2" C, 5M12 (4H, G).
5. 1/2" C, 3M12 (2H, G).
6. HEAT TAPE, SN/FT0607, 240V, SELF-REGULATING, CORROSIVE RESISTANT OUTER JACKET RAYCHEM 581V2-CT, POWER POINT 485-100 AND END KIT E-150 OR EQUAL.
7. 1/2" C, 5M14 (2-24VAC, 2COM, G) CLASS II CIRCUIT.
8. 1/2" C, 3M14 (24VAC, COM, G) CLASS II CIRCUIT.
9. VERIFY CUH HEATER UNITS HAVE INTEGRAL T STAT WITH DEF DETENT OR PROVIDE DISCONNECT.
10. 2" C, 3M2 (2H, N), 1M4 (G).
11. 2" C, 3M4/D (2H, N).
12. MULTI-CIRCUIT, CLASS 2 TRANSFORMER 3-72VA, 24VAC CIRCUITS, 120V, JUSTIN, INC. P/N C2288-24 OR EQUAL.
13. AVOCADO-STYLE SINGLE-DUTY NORMALLY OPEN FLOAT SWITCH, 24VAC, USA BLUE BOOK OR EQUAL.
14. HIGH LEVEL ALARM INDICATOR ENCLOSURE, SEE 1/E501.

PANEL "A" SCHEDULE (EXISTING)									
Location:		Electrical Room		125A Main		Surface Mounted		10000 AIC	
Served from	Transfer Switch	LOAD	POLE	240/120V	POLE	LOAD	AMP	POLE	NEMA 1
POLE	TRIP	DESCRIPTION	kVA	L1	L2	DESCRIPTION	TRIP	POLE	
1		Lighting Laundry	0.4	0.4			2		
3		Lighting Men's Showers	0.4		0.4		4		
5		Dry Tank	0.2	0.7		Backwash Pump	6		
7		Lighting Treatment Area	0.4		0.9		8		
9		Lighting Boiler Room, Loft	0.4	1.4		Pressure Pump #1	10		
11		Receptacles	0.3		1.3		12		
13		Receptacles	0.3	1.3		Pressure Pump #2	14		
15		Flow Switches, FP 220	0.2		1.0		16		
17		Air Compressor	0.9	1.8		Boiler #1	15/1	18	
19			0.9		1.8	Boiler #1	15/1	20	
21		Washer #1	0.8	2		CP-1	30/1	22	
23		Washer #2	0.8		2	CP-2	30/1	24	
25		Washer #3	0.8	2		HMG Circ Pump	28		
27		Washer #4	0.8		1.2	Dryer Circ Pump, Dampers	30		
29		Dryer #1	0.4	1.6		Transfer Pump	32		
31			0.4		0.4		34		
33		Dryer #2	0.4	0.4			36		
35			0.4		0.6	Stratotherm Watering Point	38		
37		Dryer #3	0.4	0.6		Alarm Panel	40		
39			0.4		0.8	Fuel Transfer Pump	42		
41		Intermediate Fuel Control Panel	0.2	0.4		Glycol Circ Pump, Well Heat Tape			
* = Class B GFCI			12.6	10.6	0.2				
			Total kVA = 23.2 kVA		Total Amps @ 240V = 96.7 A				

PANEL "B" SCHEDULE									
Location:		Treatment Area		125A Main		Surface Mounted		10000 AIC	
Served from	Meter Main Combo	LOAD	POLE	240/120V	POLE	LOAD	AMP	POLE	NEMA 1
POLE	TRIP	DESCRIPTION	kVA	L1	L2	DESCRIPTION	TRIP	POLE	
1			0.0	0			2		
3			0.0	0	0.0		4		
5			0.0	0			6		
7			0.0	0	0.0		8		
9	30/2	SP-1	1.2	2.4		Transformer 1	15/1	10	
11			1.2	2.4	1.2	SP-2	30/2	12	
13	15/1	CP-3	0.2	0.4		Mens Showers Coin-op	15/1	14	
15	15/1	CUH-1.2	0.5		0.7	Womens Showers Coin-op	15/1	16	
17	15/1	CHU-3.4	0.5	1.8		Sludge Pump (SP-3)	30/1	18	
19			0.5		0.5		20		
21	20/2	Heat Tape	2.7	2.7			22		
23			2.7		2.7		24		
25			0.0	0			26		
27			0.0		0		28		
29			0.0	0			30		
31			0.0	0	0.0		32		
* = Class B GFCI			7.3	6.5	0.0				
			Total kVA = 13.8 kVA		Total Amps @ 240V = 57.5 A				



REVISION		DATE	BY
NO.	1	9/14/11	TRK
ISSUED FOR CONSTRUCTION			
DESIGNED TRK			
DRAWN TRK			
APPROVED WMM			

Plot Date 9/14/11

Sheet No E501

Sheet 24 of 26

TUNTUTULIAK, ALASKA

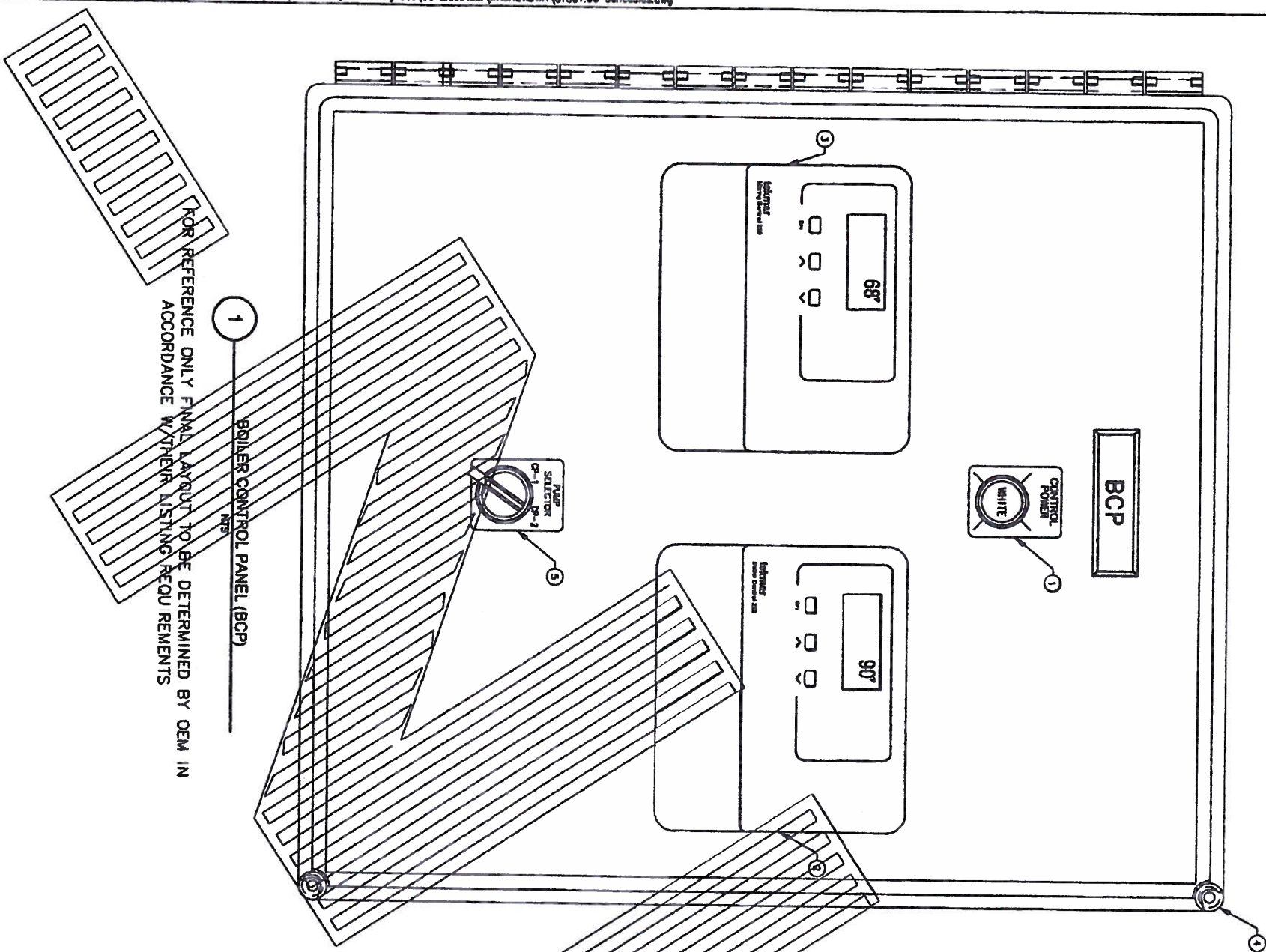
WASHETERIA - SEWER SYSTEM UPGRADES

PANEL SCHEDULES & ALARM SCHEMATIC



Alaska Department of Environmental Conservation
Division of Water

Village Safe Water Program
555 Cordova Street 4th Floor
Anchorage, Alaska 99501



No Boiler Control Panel Installed
RECOMMEND

FUNCTIONAL NARRATIVE

The Boiler Control Panel (BCP) controls the Holding Tank heat loop, and depends from Men's Bathroom heat loop, Women's Bathroom heat loop, UH-1 Heat Loop, Hot Water Generator (HWG) loop, the Dryer heat loop and controls the Boiler. A Tekmar 262 receives demand signals from the Tekmar 360, the HWG loop and CP-2 (only one pump runs at a time).

The Holding Tank heat loop is controlled by a Tekmar 360. When the outside temperature goes below the set point, the Tekmar 360 starts pump CP-1 and sends a demand signal to the Tekmar 262.

The HWG and Men's Bathroom loops are both on thermostats that control circulation valves. When a thermostat goes below the set point, the valves controlled by the thermostat open and a demand signal is sent to the Tekmar 360 which sends a demand signal to the Tekmar 262.

The UH-1 heat loop is on a thermostat that controls a solenoid valve. When the temperature goes below the set point a demand signal is sent to the Tekmar 360 which sends a demand signal to the Tekmar 262.

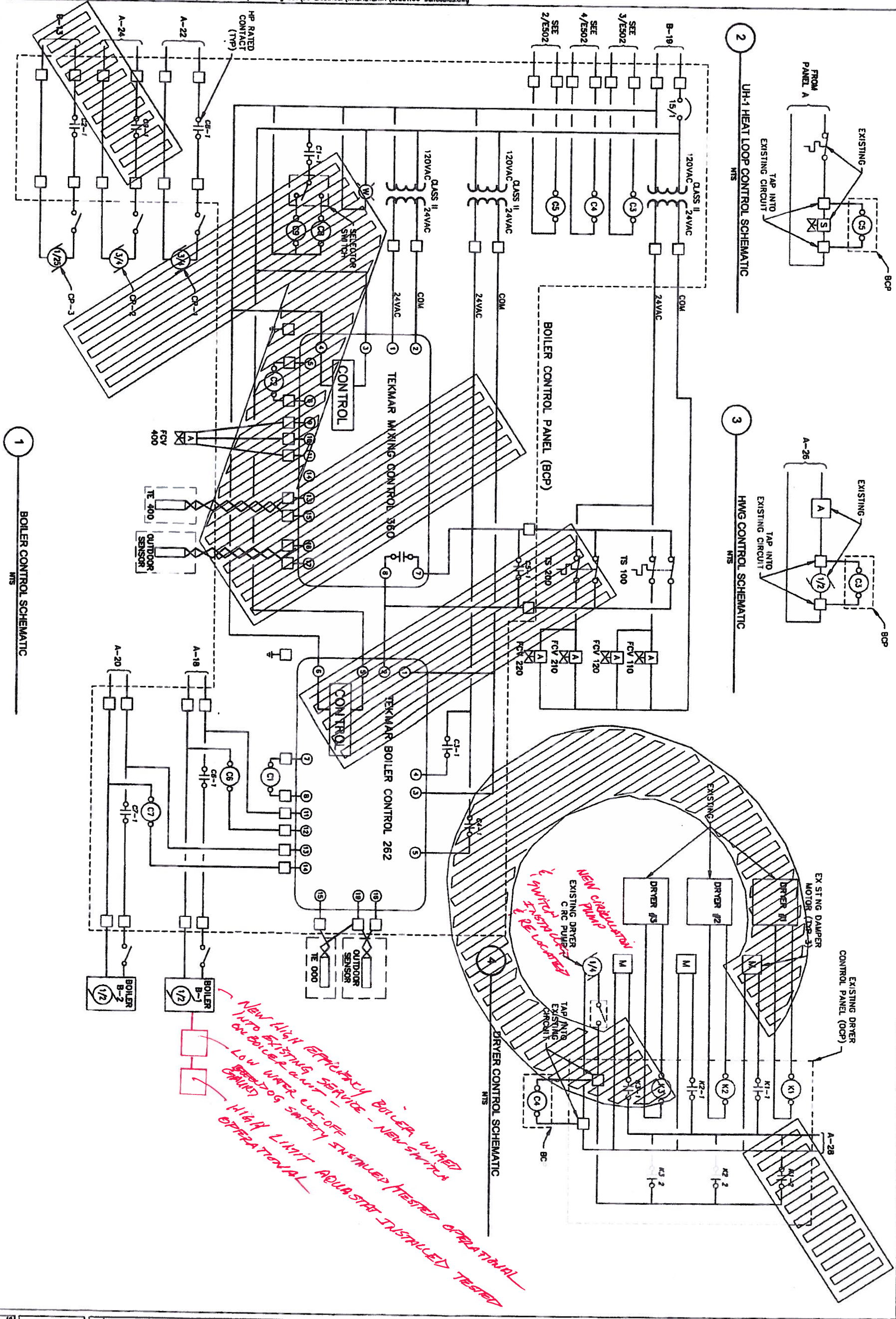
The HWG loop is on an aquastat that controls a circulating pump. When the water temperature goes below the set point the circulating pump starts and a demand signal is sent to the Tekmar 262.

The Dryer Heat loop is controlled by the Dryer Control Panel (DCP). When a dryer starts, the DCP starts a circulating pump and a demand signal is sent to the Tekmar 262.

COMPONENT SCHEDULE		
ITEM #	DESCRIPTION	MANUFACTURER
1	Pilot Light, 120V, LED, NEMA 4X,	Allen Bradley CAT.#B00HC-GRH10, where "x" refers to as shown
2	Boiler Control	Tekmar 262
3	Alarm Control	Tekmar 360
4	NEMA 4X NONMETALLIC Enclosure	Hoffman or equal
5	Position Selector Switch, 120V, NEMA 4X provide Call and Contact as required	Allen Bradley or equal
6	Multi-Circuit Class 2 Transformer 3-72VA, 24VAC circuits, 120V,	Justin, Inc. P/N C2288-24 or equal
		QTY

2 UH-1 HEAT LOOP CONTROL SCHEMATIC

3 HWG CONTROL SCHEMATIC



New High Efficiency Boiler wired into existing service - New switch added
Low water cut-off added
High Limit Aqua Star installed tested
Operational