

TOO'GHA INCORPORATED

CITY OF TANANA, ALASKA

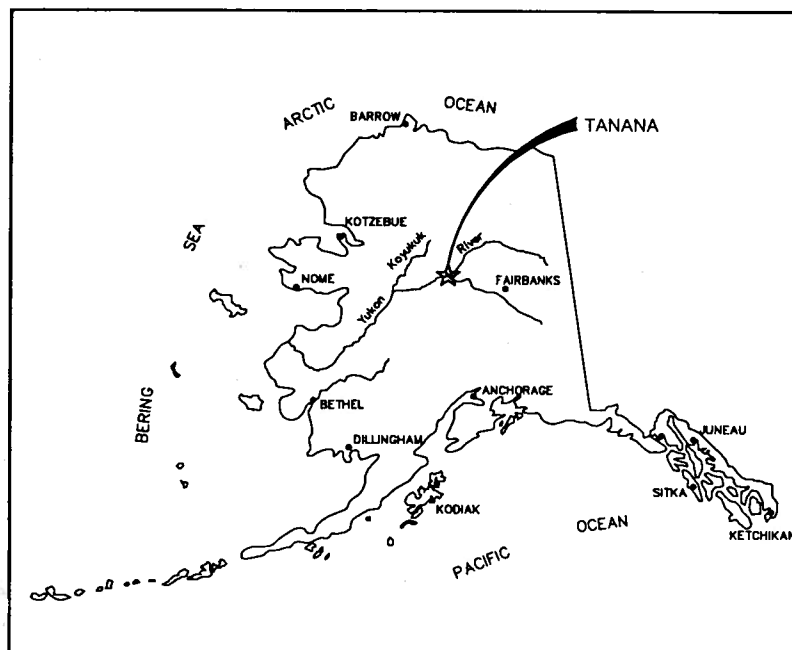
2007 RAW WATER TRANSMISSION LINE REPAIR

- REPAIR 2,000 LF OF 2" HDPE WATER TRANSMISSION MAIN

In Cooperation with the State of Alaska
Department of Environmental Conservation
Village Safe Water Program



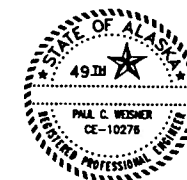
ISSUED FOR AGENCY APPROVAL



LOCATION MAP



RECORD DRAWING CERTIFICATE



THESE DRAWINGS REFLECT RECORDED
INFORMATION OBTAINED DURING
CONSTRUCTION.
INFORMATION PROVIDED HEREIN IS
ACCURATE TO THE BEST OF MY
KNOWLEDGE.

NAME

DATE

SHEET INDEX

No.	Title
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M1	GLYCOL LOOP WTP PIPING DIAGRAM
M2	DEMOLITION OF RAW WATER CIRCULATION PIPING

PROJECT OVERVIEW

THE EXISTING COMMUNITY WATER SUPPLY WELL IS LOCATED ON THE NORTH BANK OF THE YUKON RIVER ALONG THE FIRST AVENUE RIGHT-OF-WAY, APPROXIMATELY 100 FEET EAST OF GARDEN STREET. RAW WATER IS PUMPED FROM THE WELL AND TRANSMITTED TO THE WTP THROUGH A RECIRCULATED RAW WATER LOOP. THE RAW WATER TRANSMISSION LINE IS INSTALLED ALONG FIRST AVENUE TO MILL STREET AND ON MILL STREET TO AIRPORT ROAD TO THE WATER TREATMENT PLANT (WTP), A DISTANCE OF APPROXIMATELY 2,000 FEET. THE LOOP CONSISTS OF A 2" HDPE SDR 11 SUPPLY PIPE AND A 1 1/2" HDPE SDR 11 RETURN PIPE. THESE ARE ENCASED IN AN 8" X 15" ARCTIC PIPE CARRIER DUCT INCLUDING AN ELECTRICAL HEAT TRACE. THIS REPAIR WILL REMOVE THE CIRCULATED WATER LOOP AND ADD A CIRCULATED 1 1/2" GLYCOL HEAT TRACE LOOP.

G:\ACAD\TANANA\2007 Raw Water Transmission Line Repair\G-1.0 GEN NOTES AND LEGEND.dwg, 9/4/2007 8:38:29 AM, dramstad, \\BGGIG\5100 PCL6

GENERAL NOTES

A GENERAL

- THE PROJECT SUPERINTENDENT SHALL MAINTAIN A CLEAN SET OF "AS BUILT" RECORD DRAWINGS SHOWING THE LOCATIONS AND SWING TIES TO ALL APPURTENANCES. 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. COPIES OF THE AS BUILT DRAWINGS SHALL BE SUBMITTED TO THE CITY OF MT. VILLAGE AND VSW UPON COMPLETION OF CONSTRUCTION.
- EXISTING UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS TO THE BEST KNOWLEDGE OF THE ENGINEER AT THE TIME OF DESIGN. RECORDS MAY NOT BE COMPLETELY ACCURATE. THE PROJECT SUPERINTENDENT SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES WITHIN EACH CONSTRUCTION REACH PRIOR TO BEGINNING WORK. WATERMAIN JOINTS SHALL BE NINE (9) FEET MINIMUM FROM ANY SEWER JOINT OR CROSSING WITH ANOTHER UTILITY.

B ARCTIC PIPE

ALL WATERLINE MATERIALS SHALL COMPLY WITH NSF 61. ALL PIPING AND FITTINGS SHALL BE NSF-61 COMPLIANT WHERE SUCH PIPING AND FITTINGS ARE IN CONTACT WITH RAW OR POTABLE WATER IN THE WATER TREATMENT OR DISTRIBUTION PROCESS. ALL PIPING SHALL BE LEAD FREE. ALL PLUMBING USING SOLDERED JOINTS SHALL USE A SOLDER CERTIFIED TO NOT TO CONTAIN LEAD (BRIDGET OR EQUAL).

1 CARRIER PIPE:

SHALL MEET ANTHC-VSW ARCTIC PIPE STANDARDS EXCEPT WHERE NOTED. RAW WATER TRANSMISSION MAIN: 2" HDPE, SDR 11. GLYCOL TRACE PIPING: 1-1/2" HDPE, SDR 9. ALL HDPE PIPING SHALL BE LISTED BY THE PPI WITH A DESIGNATION OF PE3408 AND A CELL CLASSIFICATION OF 345434C OR BETTER AS PER ASTM D3350.

2 INSULATION:

ARCTIC PIPE INSULATION SHALL BE CLOSED CELL (ASTM D2341 CELL CLASSIFICATION 550674970034) URETHANE FOAM WITH A MAXIMUM K FACTOR OF 0.155 BTU-IN/HR-SF-DEG F. THE INSULATION CORE DENSITY SHALL BE BETWEEN 3.0 AND 4.0 LBS/CF. VOIDS GREATER THAN 0.05 CUBIC INCHES BEYOND 24 INCHES OF EITHER END OF THE PIPE SECTION WILL BE CAUSE FOR REJECTION OF THE PIPE. SEE TECHNICAL SPECIFICATION FOR FURTHER REQUIREMENTS.

3 OUTER JACKET MATERIAL:

THE OUTER JACKET MATERIAL FOR ALL ARCTIC PIPE AND FITTINGS SHALL BE 16 GAUGE HELICAL CORRUGATED ALUMINUM PIPE WITH SEAMS THAT WILL WITHSTAND A HYDROSTATIC PRESSURE OF 5 FEET OF WATER WITH NO LEAKAGE.

D EARTHWORK

- SIDE WALLS OF EXCAVATIONS SHALL BE SLOPED OR SUFFICIENTLY BRACED IN CONFORMANCE WITH SECTION 05.160 OF THE STATE OF ALASKA DEPARTMENT OF LABOR STANDARDS AND THE LATEST FEDERAL OSHA EXCAVATION AND TRENCHING STANDARDS. IF IT IS NECESSARY TO LEAVE AN OPEN EXCAVATION UNATTENDED, THE OPEN EXCAVATION SHALL BE ADEQUATELY SIGNED AND BARRICADED TO WARN RESIDENTS OF THE HAZARD.
- COMPACTION SHALL TYPICALLY BE ACCOMPLISHED USING A MECHANICAL DEVICE SUCH AS A VIBRATORY PLATE OR VIBRATORY DRUM COMPACTOR. EMBANKMENT FILL SHALL BE COMPACTED IN MAXIMUM 12" LIFTS PRIOR TO SUBSEQUENT PLACEMENT OF FILL.
- WHERE EXCAVATIONS ENCOUNTER GROUNDWATER, DEWATERING SHALL BE IMPLEMENTED AND TEMPORARY SHORING MAY BE REQUIRED TO STABILIZE THE WALLS WHILE EXCESS WATER IS ALLOWED TO DRAIN OR PUMPED OUT OF THE EXCAVATION.

E WATERMAIN TESTING

- ALL TESTS SHALL BE WITNESSED BY A REPRESENTATIVE DESIGNATED BY THE OWNER (TOOGAH, INC.). UPON SUCCESSFUL COMPLETION OF A TEST THE RESULTS OF THE TEST SHALL BE DOCUMENTED ON A TEST FORM AND ACKNOWLEDGED BY SIGNATURE OF THE OWNER'S REPRESENTATIVE WITNESSING THE TEST AND BY THE CONTRACTOR. THE CONTRACTOR'S RED LINED AS-BUILT DRAWINGS SHALL ALSO NOTE, FOR EACH SEGMENT OF THE SYSTEM TESTED, THE TIME AND DATE OF THE TEST AND THE NAME OF THE OWNER'S WITNESS.
- WATERMAIN TESTING - PERFORM HYDROSTATIC TESTING OF WATERMAINS. HYDROSTATIC TESTS SHALL BE PERFORMED AFTER OPEN BORE FLUSHING AND BEFORE DISINFECTION (SEE ITEM 3 BELOW). FILL THE LINE WITH WATER AND REMOVE AIR PRIOR TO STARTING THE TEST. PRESSURIZE TO 1.5 X OPERATING PRESSURE (80 PSI) = 120 PSI AND LEAVE FOR A MINIMUM OF 1-HOUR. AFTER THIS INITIAL PERIOD, ADD WATER TO BRING THE PRESSURE UP TO 120 PSI AND BEGIN A 1-HOUR TEST. FOR THE WATERLINE TO BE ACCEPTED THE MAKE-UP WATER REQUIRED TO RETURN THE PRESSURE TO 120 PSI AT THE END OF THE TEST PERIOD SHALL NOT BE GREATER THAN 0.4 GALLONS PER 100 FEET OF 6" WATERMAIN PLUS 0.1 GALLONS PER 80 FEET OF CIRCULATING WATER SERVICE LINE.
- DISINFECTION PROCEDURES: WATER LINE DISINFECTING - ALL WATER DISTRIBUTION LINES SHALL BE DISINFECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST EDITION OF AWWA C651-92. THE METHOD OF CHLORINATION SHALL BE WITH THE SLUG METHOD, AS DESCRIBED IN SECTION 5.3 OF THE STANDARD. AFTER DISINFECTION, THE WATER DISTRIBUTION LINES SHALL BE FLUSHED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 6. HEAVILY CHLORINATED WATER SHALL BE NEUTRALIZED WITH A SOLUTION OF SODIUM BISULFITE OR SODIUM SULFITE AT A RATE TABULATED IN APPENDIX B OF THE STANDARD. THE SUPERINTENDENT IN CHARGE OF THE DISINFECTION AND FLUSHING OF THE LINES SHALL HAVE A COPY OF AWWA C651 ON SITE FOR READY REFERENCE.

REVEGETATION SPECIFICATION

THE ENTIRE AREA DISTURBED BY CONSTRUCTION SHALL BE REVEGETATED AS QUICKLY AS GOOD CONSTRUCTION PRACTICE ALLOWS. AREAS TO BE REVEGETATED SHALL FIRST BE COVERED WITH A MINIMUM 6-INCH LAYER OF FRIABLE, LOOSELY PLACED TOPSOIL, FREE OF DEBRIS. THE FOLLOWING SEED MIXTURE AND FERTILIZER APPLICATION RATES SHALL BE APPLIED.

SEED	NAME/TYPE	RATE	METHOD
Red Fescue	Arctic Red	14 lbs/acre	Broadcast
Bering Hairgrass	Norcoast	16 lbs/acre	Broadcast
Alsike Clover	Aurora	2 lbs/acre	Broadcast
FERTILIZER	20-20-20	180 lbs/acre	Broadcast

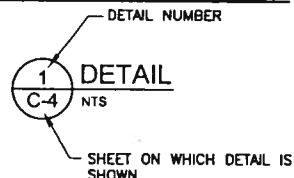
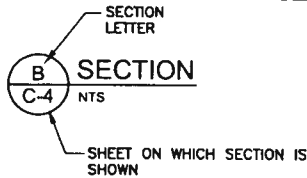
WORK SUMMARY

- EXPOSE THE 90-DEGREE FUSED BENDS IN THE EXISTING LOOP AND PREPARE TO REPLACE WITH LONG SWEEP BENDS (SEWER CLEANOUT PIPING) OR TWO 45-DEGREE BENDS IF LONG SWEEP BENDS ARE NOT IN INVENTORY.
- PREPARE TO REMOVE THE EXISTING PIPING BUNDLE FROM THE DUCT.
- PREPARE A NEW PIPING BUNDLE CONSISTING OF A 2" HDPE SDR 11 WATER SUPPLY LINE AND 2 EACH 1-1/2" HDPE SDR 9 GLYCOL LOOP PIPES AND A NEW ELECTRIC HEAT TRACE.
- ATTACH THE NEW BUNDLE (PROPERLY LUBRICATED USING IDEAL AQUA-GEL II, 28°F RATED, OR EQUAL) TO THE OLD BUNDLE AT THE WELL CONNECTION AND PULL OUT THE OLD BUNDLE FOLLOWED BY THE NEW BUNDLE.
- THE PULL CAN BE MONITORED FROM AN OPENING IN THE DUCT (CURRENTLY EXCAVATED) JUST NORTH OF SECOND AVENUE ON MILL STREET AND IF NECESSARY PULLED IN TWO SEGMENTS WITH ELECTROFUSION COUPLINGS AT THIS POINT.
- CIRCULATOR PUMPS IN THE WTP WILL BE REPLACED WITH SPECIFIED PUMPS FOR THE GLYCOL LOOP.
- PIPING IN THE WTP WILL BE MODIFIED FOR THE GLYCOL LOOP INCLUDING PRESSURE AND TEMPERATURE GAGES FOR MONITORING.
- THE LOOP WILL BE PRESSURE TESTED, CHARGED AND PLACED IN SERVICE.
- A NEW WELL PUMP WILL NEED TO BE PROCURED WITH ONE RAW WATER LEVEL CONTROL FOR THE PRIMARY WELL TO ELIMINATE "DRY" PUMPING AT LOW WATER LEVELS.

LEGEND

EXISTING		PROPOSED		DESCRIPTION
PLAN VIEW	PROFILE VIEW	PLAN VIEW	PROFILE VIEW	
				GROUND SURFACE
				DRAINAGE/WATER FEATURE
				SEWER FORCE MAIN, LIFT STATION, REDUCER, AND DOUBLE WYE CLEANOUT
				WATERMAIN, GATE VALVE, HYDRANT (HYDRANT NOT SHOWN IN PROFILE VIEW)
				CULVERT
				BURIED ELECTRICAL LINE
				BURIED FUEL OIL LINE
				BURIED TELEPHONE LINE
				OVERHEAD ELECTRIC
				EASEMENT
				UTILITY POLE
				FENCE
				ROADS AND TRAVELED WAYS
				CONTOUR LINE
				R.O.W. (RIGHT-OF-WAY)
				SHORELINE
				TREES AND/OR BRUSH
				STRUCTURE
				GROUND PROFILE
				DIRECTION OF DRAINAGE
				PROPERTY LINE
				SECTION LINE
				BLM BRASS CAPPED MONUMENT
				BENCHMARK
				SPOT ELEVATION
				REBAR - ABILITY SURVEY POINT NO
				SURVEY MONUMENT
				TRACT NUMBER
				LOT NUMBER
				HEAT TRACE POWER SUPPLY

SECTION AND DETAIL DESIGNATIONS

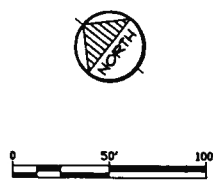
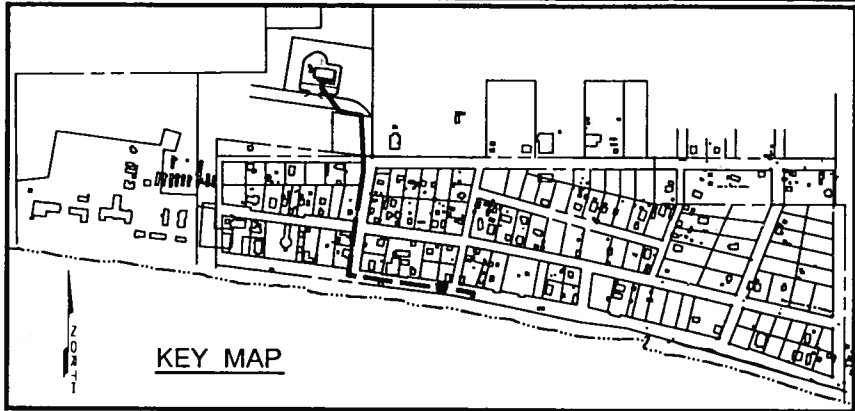
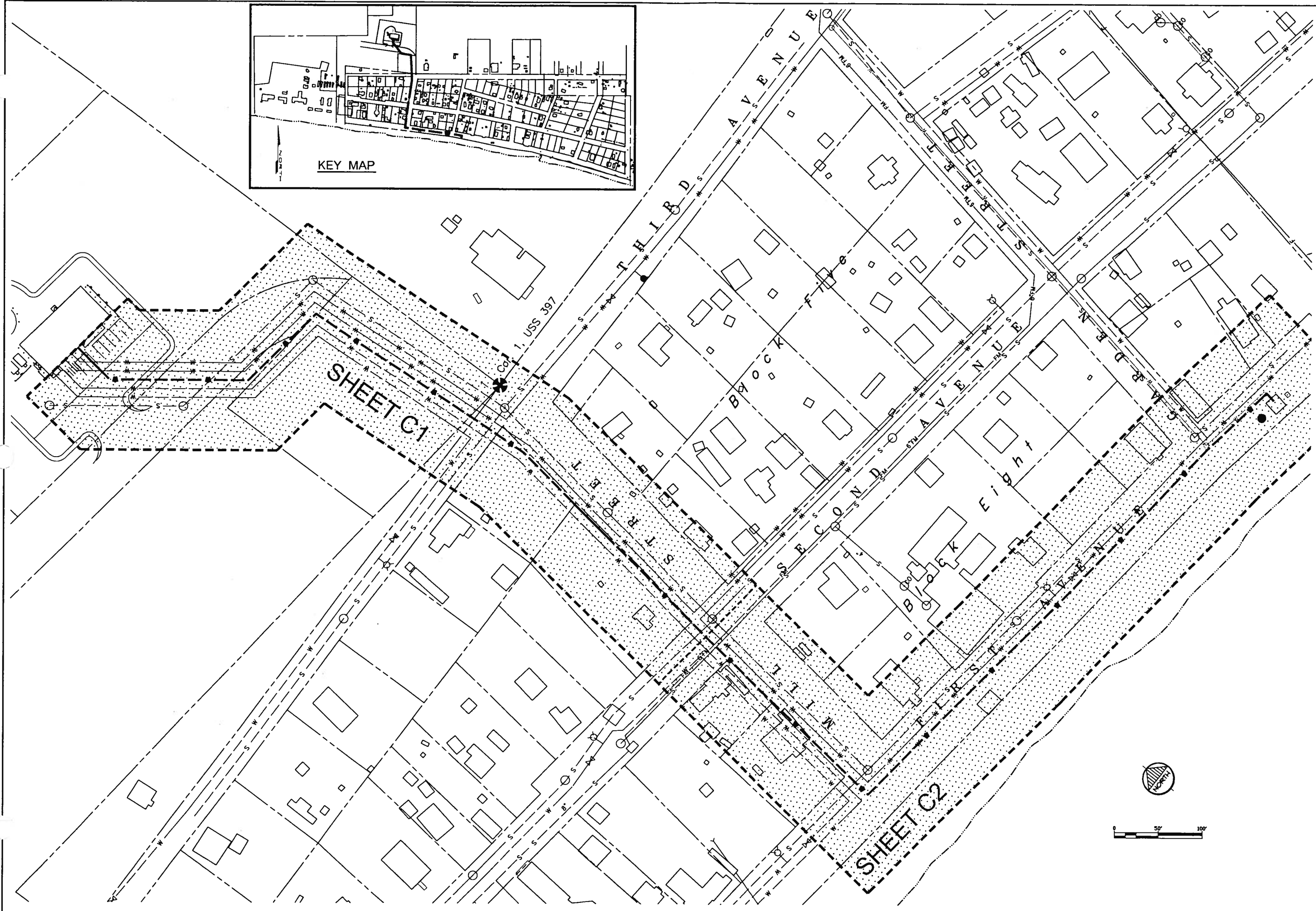


ABBREVIATIONS

A.P.	ANGLE POINT (HORIZONTAL)
CMP	CORRUGATED METAL PIPE
C.O.E.	CORPS OF ENGINEERS
CULV.	CULVERT
FF	FINISHED FLOOR ELEVATION
G.B.	GRADE BREAK (VERTICAL)
G.V.	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HL.S	HELICAL LOCK SEAM
INV.	INVERT
IPS	IRON PIPE SIZE (INDUSTRY STANDARD OUTSIDE PIPE DIAMETER)
LF	LINEAR FEET
MFR	MANUFACTURER
MH	MANHOLE
SDR	SIDE DIMENSION RATIO
SHT.	SHEET
SS	STAINLESS STEEL
STA.	STATION
TOJ	TOP OF PIPE JACKET
V.B.	VALVE BOX
WS	WATER SURFACE

RECORD DRAWING CERTIFICATE		THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.		NAME	DATE
SCALE:	AS SHOWN	DATE OF DESIGN: 08/01/07		DATE OF CONSTRUCTION: 08/01/07	
VILLAGE SAFE WATER					
2007 RAW WATER TRANSMISSION LINE REPAIR					
GENERAL NOTES, LEGEND AND DESIGN CRITERIA					
TANANA, ALASKA					
Project No.	Date	Designed	Drawn	Approved	
	AUG 2007	JK	DW	PCW	
Sheet No. G-1.0					

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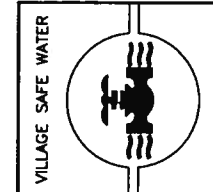
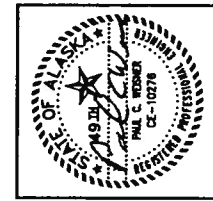
Project No. _____ Date _____ AUG 2007 Designed _____ Drawn _____ Approved _____ PCW	REVISION	BY	DATE

Sheet No. _____ <div>G-2.0</div>

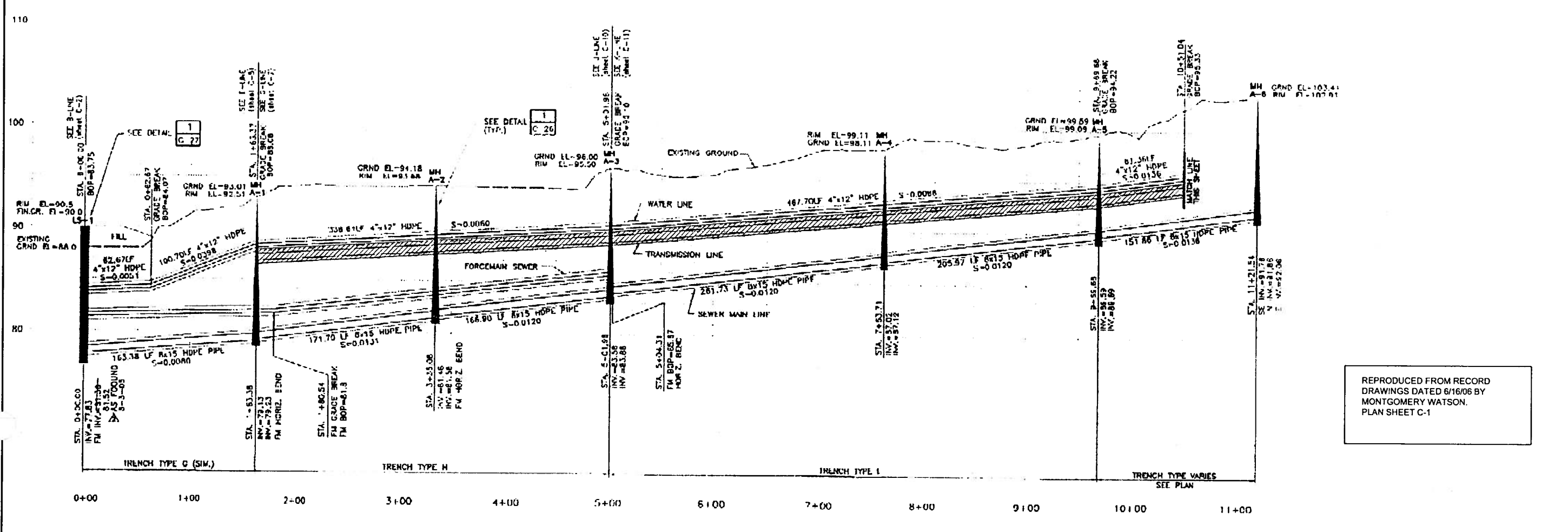
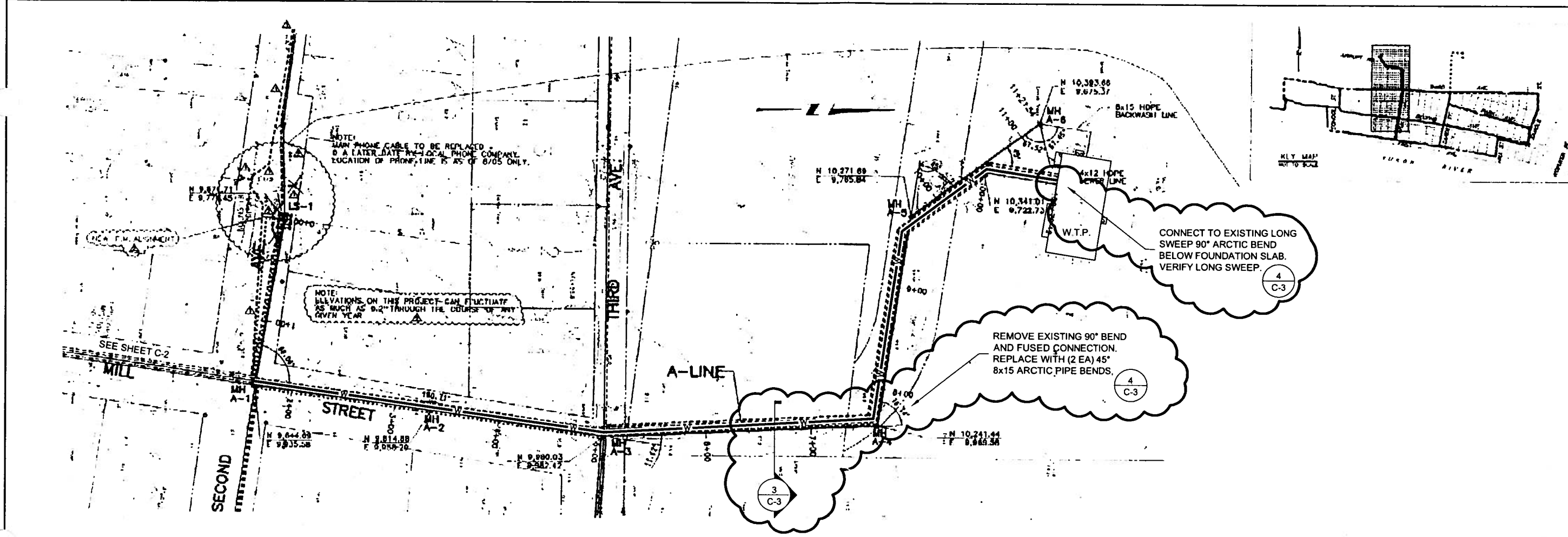


ENGINEERS, INC.
PO BOX 23264 ANCHORAGE, AK 99523 PH 907-545-1100 FAX 907-545-1015

2007 RAW WATER TRANSMISSION LINE REPAIR
SHEET INDEX
PLAN AND PROFILE
TANANA, ALASKA

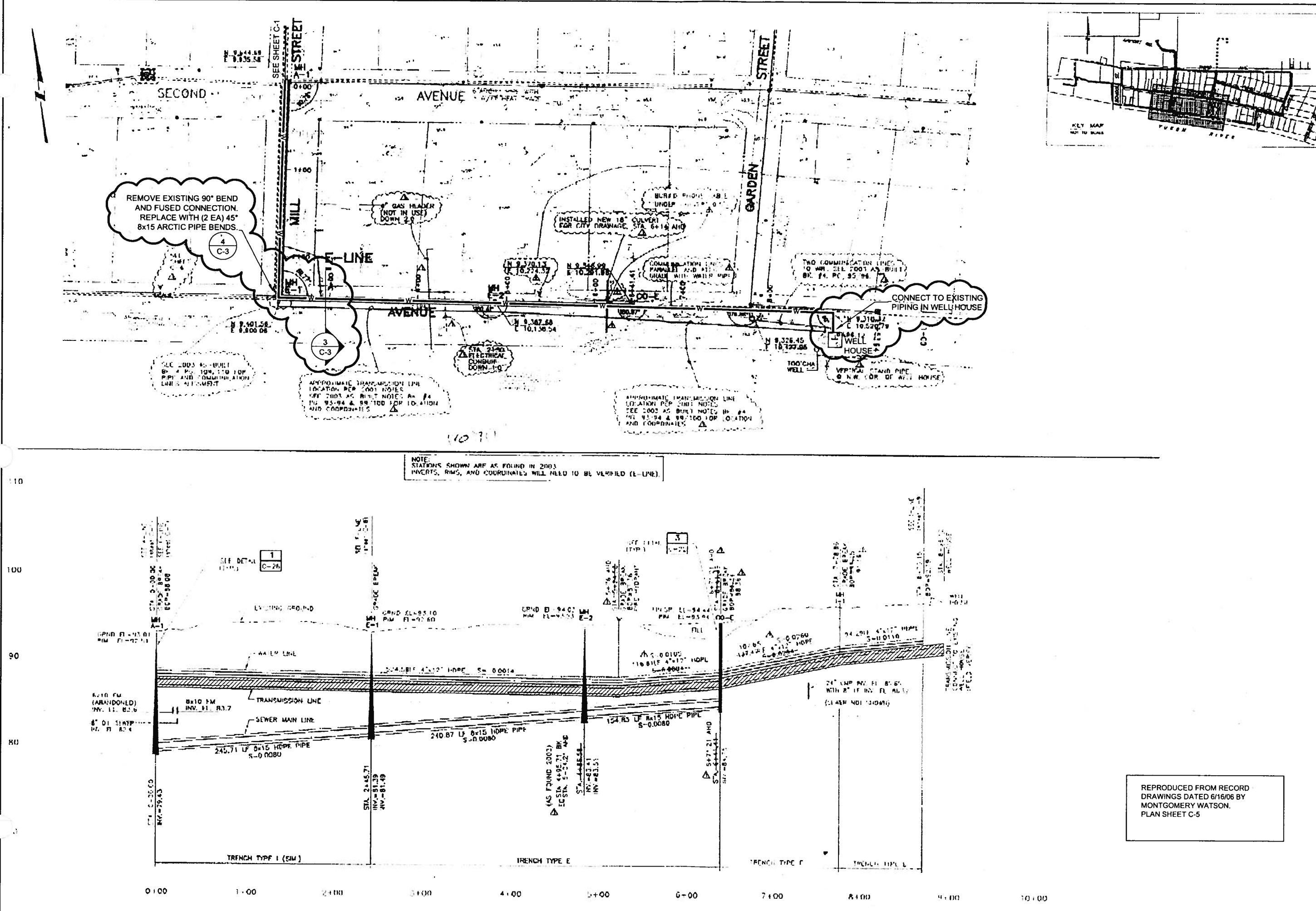


SCALE: 1" = 50' (AS SHOWN)
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THIS SHEET: 1" = 50' (AS SHOWN)
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NAME: _____ DATE: _____



REPRODUCED FROM RECORD
DRAWINGS DATED 6/16/06 BY
MONTGOMERY WATSON.
PLAN SHEET C-1

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SCALE:	1" = 40'
VILLAGE SAFE WATER	
STATE OF ALASKA	
2007 RAW WATER TRANSMISSION LINE REPAIR	
TRANSMISSION LINE PLAN AND PROFILE	
TANANA, ALASKA	
CE2 ENGINEERS, INC.	
PO BOX 22046 ANCHORAGE, AK 99521 PH 907.345.0015 FAX 907.345.0015	
REVISION	DATE
BY	
PROJECT NO.	AUG 2007
DESIGNED	
DRAWN	PCW
APPROVED	
SHEET NO.	C-1



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KNOWLEDGE.

SCALE:
AS SHOWN ON DRAWING

VILLAGE SAFE WATER

STATE OF ALASKA
PUBLIC ENGINEER
PAUL C. WEDDER
EX-10278

2007 RAW WATER
TRANSMISSION LINE REPAIR
TRANSMISSION LINE
PLAN AND PROFILE
TANANA, ALASKA

CER
ENGINEERS, INC.
PO BOX 22944 ANCHORAGE, AK 99523 PH 907-545-1010 FAX 907-545-1015

REVISION	BY	DATE

Project No. _____

Date AUG 2007

Designed _____

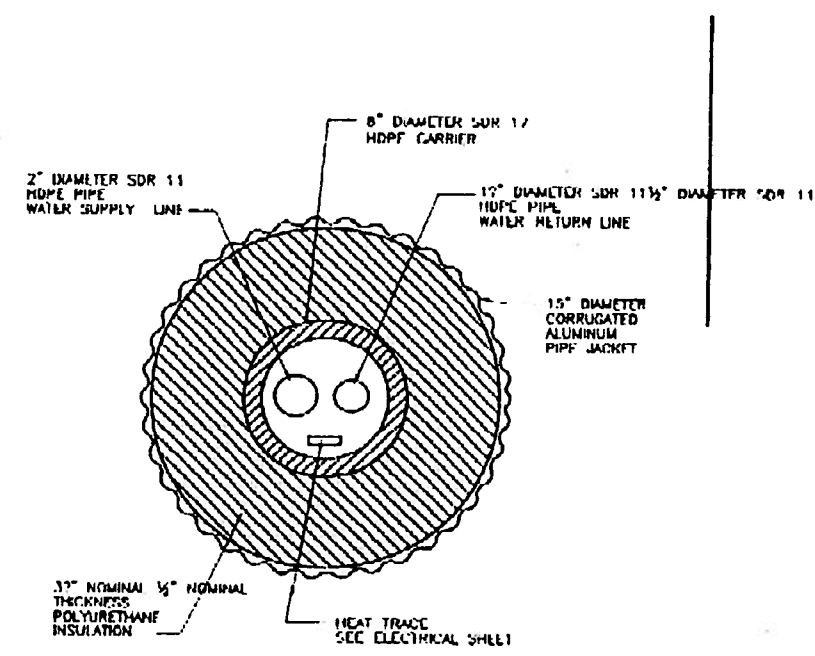
Drawn _____

Approved PCW

Sheet No. C-2

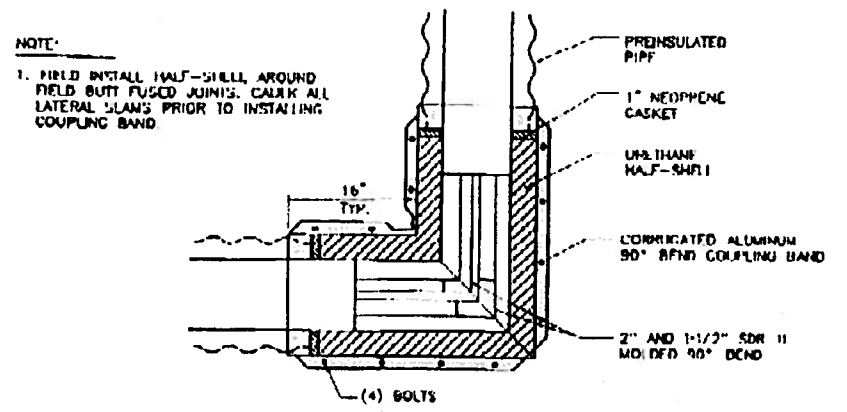
NAME _____
DATE _____

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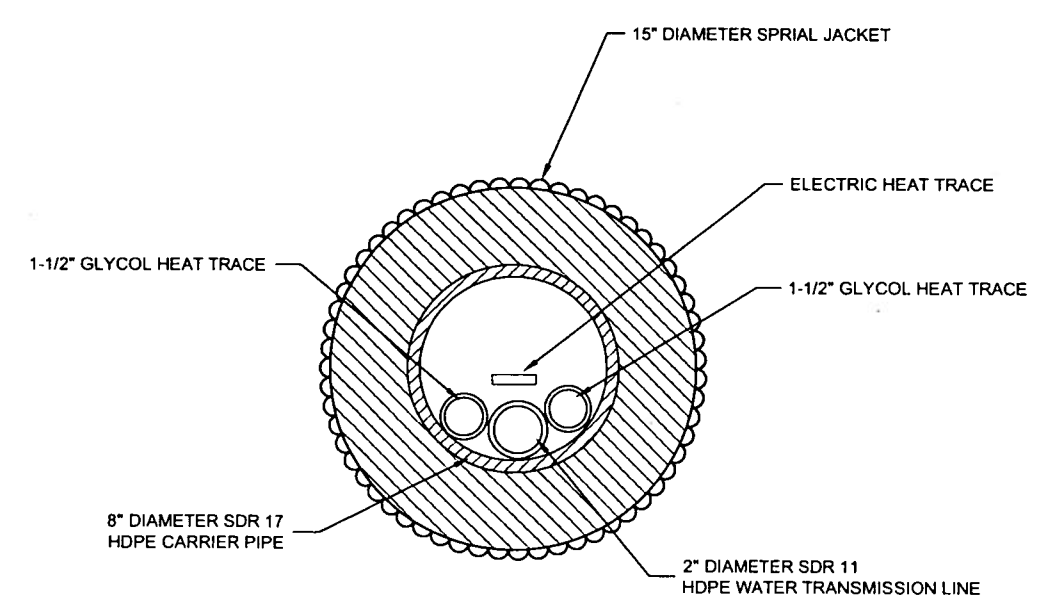


1 EXISTING TRANSMISSION LINE
NTS

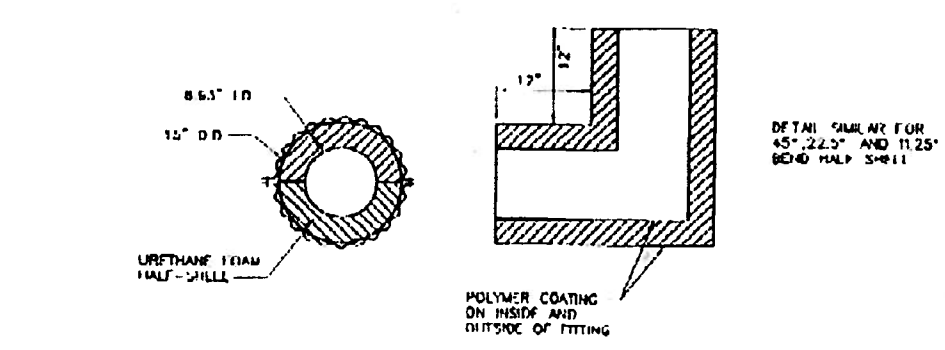
REPRODUCED FROM RECORD
DRAWINGS DATED 6/16/06 BY
MONTGOMERY WATSON.
PLAN SHEET C-20 & C-22



2 EXISTING 90° TRANSMISSION LINE BEND (TO BE REMOVED)
NTS



3 PROPOSED TRANSMISSION LINE
NTS



4 NEW 90° TRANSMISSION LINE SEGMENTED BEND
NTS

45 DEGREE BEND TABLE		
NOMINAL SIZE	PIPE DIAMETER	NOM. OUTER JACKET
8"	8.625"	15"

RECORD DRAWING CERTIFICATE

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NAME _____ DATE _____

SCALE:

1" = 1'-0"

1" = 1'-0"

VILLAGE SAFE WATER

STATE OF ALASKA

REGISTERED PROFESSIONAL ENGINEER

PAUL C. WISNER

CE-10278

2007 RAW WATER TRANSMISSION LINE REPAIR

TRANSMISSION LINE PIPE SECTIONS / DETAILS

TANANA, ALASKA

ENGINEERS, INC.

PO BOX 2204 ANCHORAGE, AK 99501 PH 907-348-1000 FAX 907-348-1015

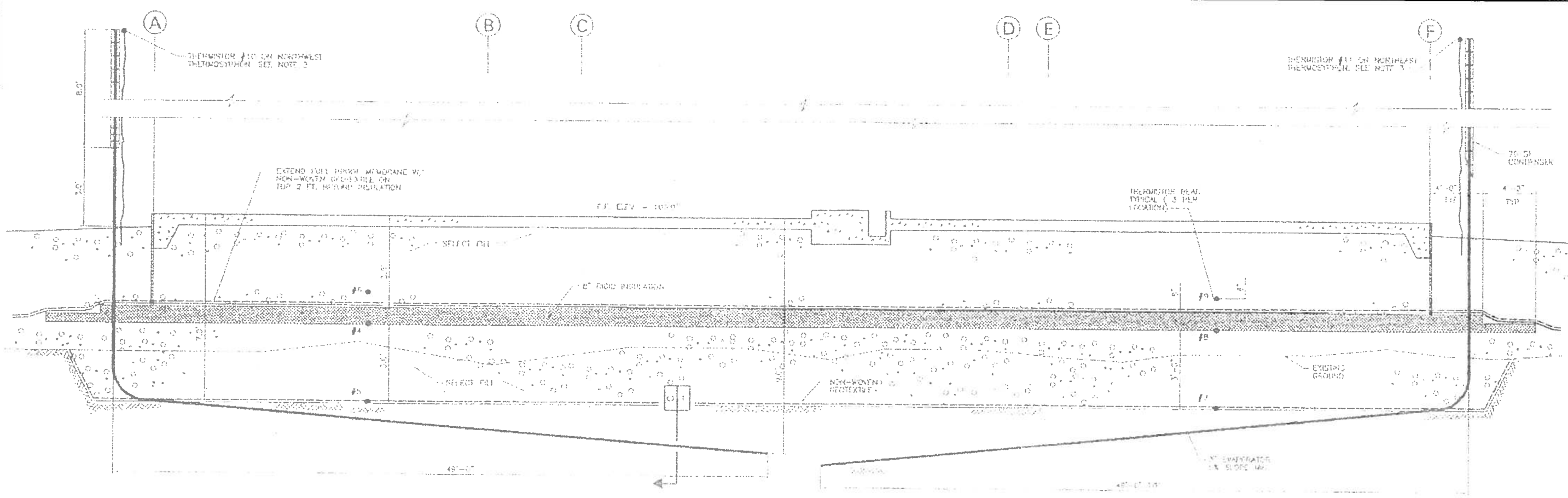
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Date	AUG 2007
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Approved	PCW

Sheet No.

C-3

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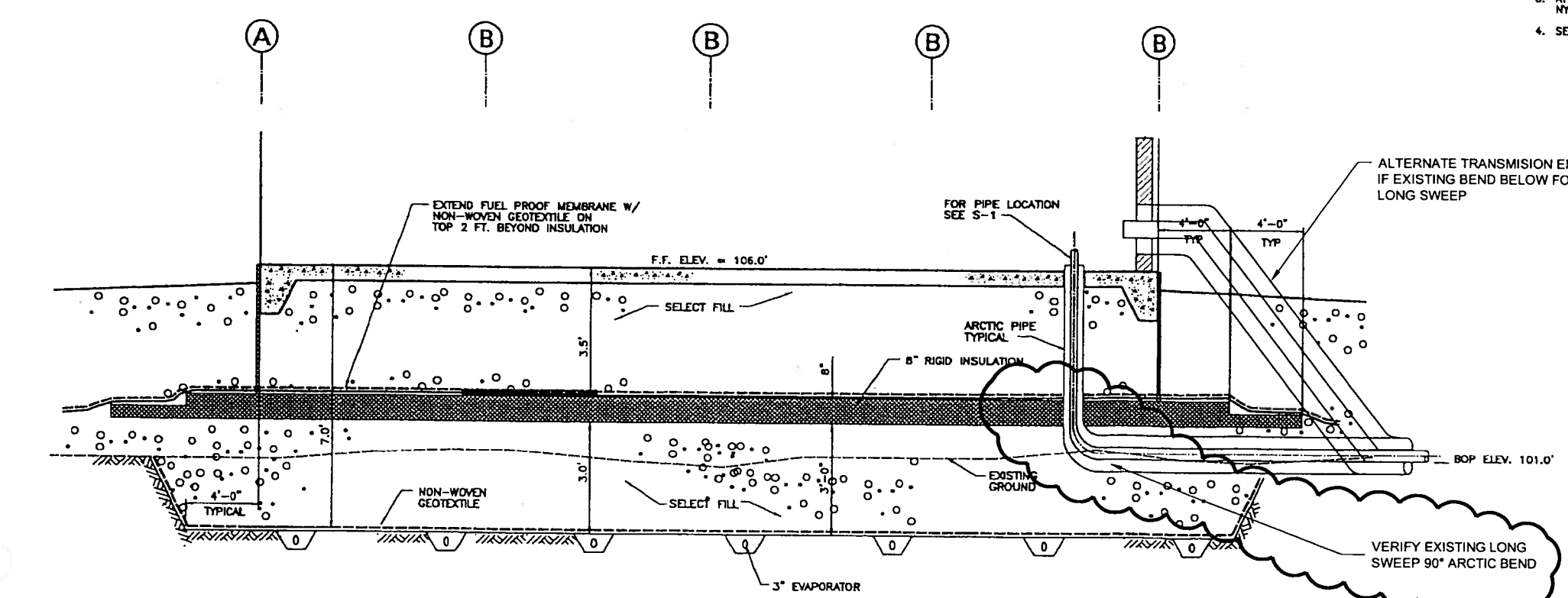


BUILDING FOUNDATION SECTION

A
C-1

NOTES:

1. FUEL PROOF MEMBRANE SHALL BE PERMALON X-150 (10 MIL) CROSS LAMINATED HDPE MANUFACTURED BY GEOCHEM, INC.
2. NON-WOVEN GEOTEXTILE SHALL BE AMOCO 4545 USED TO CUSHION FUEL PROOF MEMBRANE. WOVEN GEOTEXTILE SHALL BE AMOCO 2004 USED AS SEPARATION AND REINFORCEMENT.
3. ATTACH THERMISTORS #10 AND #11 TO TOP OF CONDENSER WITH NYLON STRAPS.
4. SELECT FILL SHALL BE COMPACTED TO 95% MAXIMUM DENSITY.



BUILDING FOUNDATION SECTION

B
C-1

SCALE: HORIZ. 1"=4'
VERT. 1"=2'

HORIZ. SCALE IN FEET
VERT. SCALE IN FEET

REPRODUCED FROM RECORD
DRAWINGS DATED 2/10/03 BY
MONTGOMERY WATSON.
PLAN SHEET C-3

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SCALE
AS SHOWN
ON DRAWING

VILLAGE SAFE WATER

STATE OF ALASKA
PAUL C. WATSON
CE-10276

2007 RAW WATER
TRANSMISSION LINE REPAIR
WTP FOUNDATION
PIPE PENETRATIONS
TANANA, ALASKA

C/E2
ENGINEERS, INC.
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REVISION	BY	DATE

Project No.
Date AUG 2007
Designed
Drawn PCW
Approved

Sheet No.
C-4

GENERAL NOTES:

1. ALL PLUMBING AND HEATING WORK SHALL BE DONE IN ACCORDANCE WITH THE 2000 EDITIONS OF THE IBC AND UPC.
2. EXPANSION TANKS AND WATER HEATERS SHALL BE BOLTED TO THE FLOOR FOR SEISMIC RESTRAINT.
3. PIPING SHALL BE SUSPENDED FROM CLEVIS HANGERS, TRAPEZE ASSEMBLIES, OR SUPPORTED FROM FLOOR SUPPORTS PER THE PLANS AND THE UNIFORM PLUMBING CODE (UPC). SWAY BRACE PIPING FOR THRUST AND SEISMIC LOADS. MAINTAIN 7'-0" MINIMUM CLEARANCE FOR OVERHEAD PIPING FROM FLOOR, U.O.N.
4. PRESSURE GAGES, THERMOMETERS: SEE EQUIPMENT LISTING ON SHEET M-1.

SEQUENCE OF OPERATION:

1. CIRCULATOR PUMPS CP-1A OR CP-1B ARE OPERATED MANUALLY FROM A SWITCH NEAR MOTOR STARTER
2. TEMPERATURE CONTROL OF HEAT TRACE GLYCOL IS ACHIEVED BY MODULATING FLOW THROUGH 2-WAY GLOBE VALVE CV-1 USING TEMPERATURE CONTROLLER TC-1. SET POINT: 60°F. THROTTLING RANGE 20°F.

PIPE COLOR SCHEDULE	
PIPING TYPE	COLOR
RAW WATER	GREEN
POTABLE WATER	DARK BLUE
WASTE HEAT	BLACK
WASTEWATER /BACKWASH	BROWN
FUEL OIL	ORANGE
AIR	PLAIN GALV.
VALVE HANDLES - NORM. OPEN	GREEN
VALVE HANDLES - NORM. CLOSED	RED

PLUMBING MATERIALS:

TREATED WATER PIPING

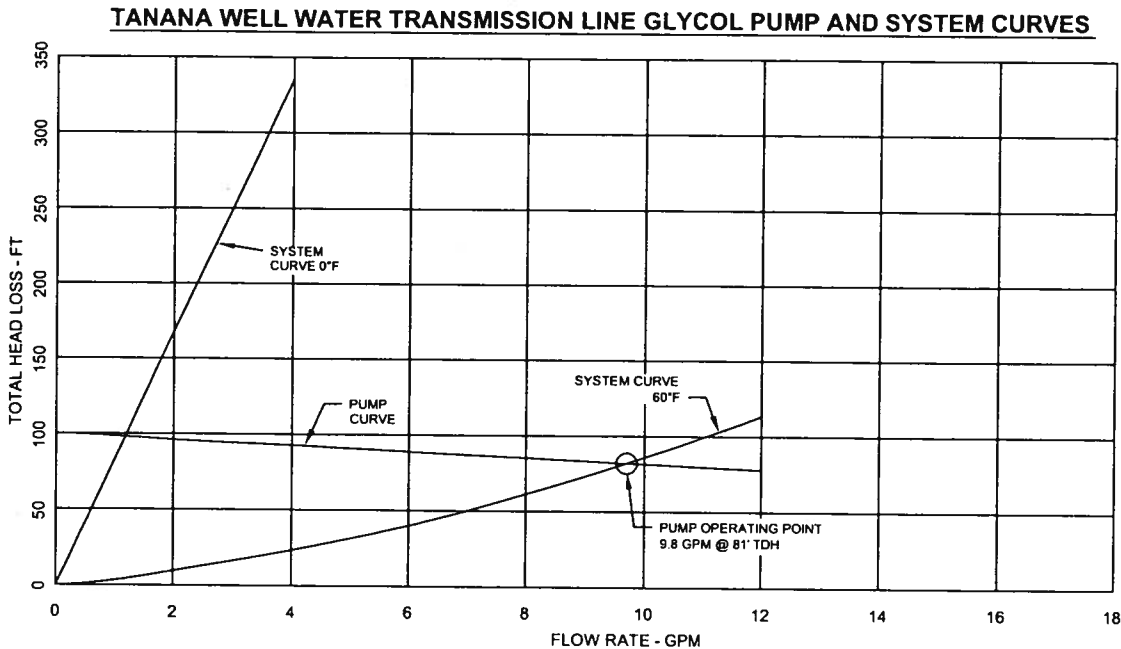
1. ALL PIPING SHALL BE TYPE L HARD COPPER TUBING, U.O.N. CONNECT WITH WROUGHT COPPER FITTINGS AND "BRIDGIT" OR EQUIVALENT NO-LEAD SOLDER
2. FIXTURES (TOILETS, LAVATORIES, SINKS). SUPPLY PIPING FROM ANGLE STOPS TO FIXTURES: STAINLESS STEEL BRAIDED FLEX CONNECTORS (AQUAFLOW OR EQUAL).
3. VALVES SHALL BE BALL-TYPE 2" AND BELOW, LARGE PORT SWEAT- TYPE, STAINLESS TRIM (HAMMOND #8513) U.O.N.
4. CHECK VALVES: 2" AND UNDER BRONZE SPRING CHECK, HAMMOND FIG. 947 C x C, U.O.N.
5. ALL MATERIALS IN CONTACT WITH POTABLE WATER SHALL BE NSF-61 CERTIFIED. ALL SOLDER SHALL BE LEAD FREE (BRIDGETT OR EQUAL).

HYDRONIC SYSTEM

1. ALL HYDRONIC LINES 4" AND SMALLER SHALL BE TYPE L HARD COPPER 1" TUBING, U.O.N. CONNECT WITH WROUGHT COPPER FITTINGS AND "BRIDGIT" OR EQUIVALENT NO-LEAD SOLDER.
2. ISOLATION VALVES 2" AND SMALLER SHALL BE LARGE PORT SWEAT BALL VALVES. 2" STAINLESS STEEL TRIM (HAMMOND #8513) AND VALVES LARGER THAN 2" SHALL BE BUTTERFLY VALVES, U.O.N.
3. CHECK VALVES: 2" AND UNDER BRONZE SPRING CHECK, HAMMOND FIG. 947 3. C x C, U.O.N. VALVES 2 1/2" AND LARGER, SILENT CHECK VALVE, GLOBE- TYPE, FLANGED, METRAFLEX STYLE 900 OR EQUAL.
4. AUTO AIR VENTS 1/2" MPT, TACO #426 OR EQUAL, MOUNTED ON 1/2" BALL ISOLATION VALVE U.O.N.
5. FLOW CONTROL VALVES/CIRCUIT SETTERS: BELL & GOSSET "CS" SERIES OR EQUAL. USE B & G CIRCUIT SETTER CALCULATOR OR EQUAL FOR INITIAL SETTINGS AND ACTUAL FLOW RATES FROM MEASUREMENTS.

PIPE INSULATION

1. ALL DOMESTIC HOT WATER PIPING AND HYDRONIC PIPING SHALL BE INSULATED WITH "MICROLOCK" RIGID FIBERGLASS INSULATION WITH AP-T JACKET AND PVC "ZESTON" FITTINGS FOR ELBOWS AND TEES. PROVIDE MANUFACTURER'S APPROVED SUPPORT AT PIPE HANGERS. DOMESTIC HOT WATER PIPING 1" THICK HYDRONIC PIPING 2 1/2" - 2" THICK 2" AND SMALLER - 1" THICK



GLYCOL HEAT TRACE LOOP LENGTH:
4,000 LF 1 1/2" SDR9 HDPE

CIRCULATION PUMP:
VERTICAL INLINE 1 1/2" 300# FLANGE
SUCTION/DISCHARGE G&L #1SVB1C5B0,
3500 RPM 1/2 HP 208V 3PH TEFC MOTOR, 2
STAGE, PUMP RATING:15 GPM @65' TDH
OPERATING PERFORMANCE: 9.8 GPM @
81' TDH

A PRESSURE RELIEF VALVE BYPASSES
FLOW, AS REQUIRED, AROUND THE PUMP IN
CONDITIONS OF LOW GLYCOL
TEMPERATURE TO PROTECT THE PUMP
FROM OVERHEATING AND CAVITATING.

RECORD DRAWING CERTIFICATE
THESE DRAWINGS REFLECT RECORDED
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CONSTRUCTION. INFORMATION PROVIDED
HEREIN IS ACCURATE TO THE BEST OF MY
KNOWLEDGE.

SCALE:
AS SHOWN
1" = 10'-0"

VILLAGE SAFE WATER

STATE OF ALASKA
DEPARTMENT OF COMMUNITY AND DEVELOPMENT
DIVISION OF PLANNING AND DESIGN
PROJECT NO. 2007-001010
DATE: 08/15/07

2007 RAW WATER
TRANSMISSION LINE REPAIR
WTP PUMP CURVE
AND PLUMBING NOTES
TANANA, ALASKA

ENGINEERS, INC.
PO BOX 22946 ANCHORAGE AK 99512 PH: 907-344-1010 FAX: 907-344-1015

REVISION	BY	DATE

Project No.	Date	Designed	Drawn	Approved
	AUG 2007		DDR	PCW

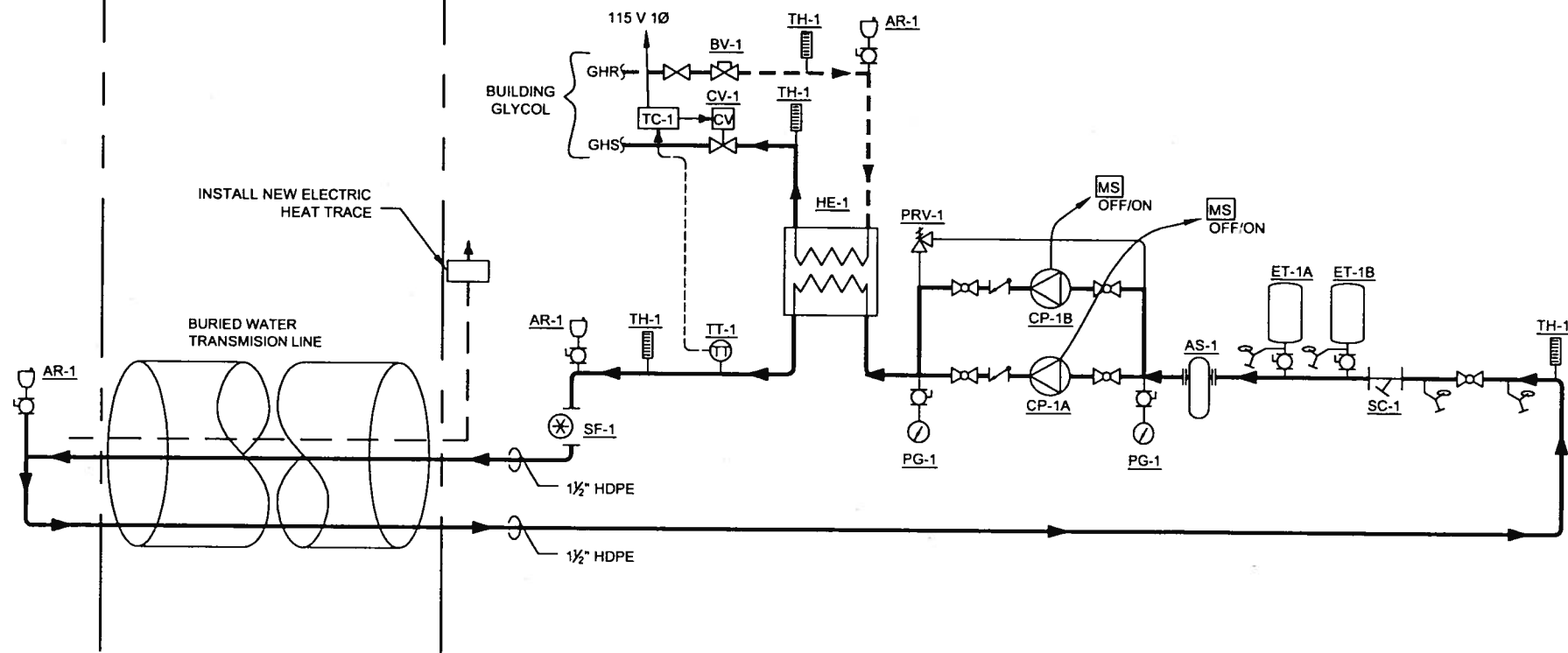
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WELL HOUSE

EXTERIOR

WATER TREATMENT PLANT



COMPONENT SCHEDULE				
REF. OR TAG NO.	EQUIPMENT DESCRIPTION	LOCATION	MANUFACTURER'S SPECIFICATION	SETPOINT
AR-1	AUTOMATIC AIR RELEASE USED THROUGHOUT PLANT FOR HYDRONIC HEATING PIPING.	WTP, VARIOUS LOCATIONS, AS REQUIRED	TACO #418 HY-VENT, 3/4" MPT, 150 PSIG, 240°F MAX TEMP.	N/A
AS-1	AIR SEPARATOR FOR HYDRONIC HEATING SYSTEM, 1-1/2" FIPT WITH AUTO AIR VENT AND DRAIN HOLE	WTP	SPIROVENT JUNIOR MICROBUBBLE ELIMINATOR, MODEL 150TM	N/A
BV-1	1" BALANCING VALVE/CIRCUIT SETTER REGULATES THE RATE OF GLYCOL FLOW THROUGH HE-1	WTP	TACO ACCU-FLOW BALANCING VALVE #ACUF-100-AC (1" SWEAT)	9.5 GPM---45 DEG INITIAL SETTING
CP-1A CP-1B	VERTICAL MULTI-STAGE CENTRIFUGAL PUMP, SS HOUSING, IMPELLER, & SHAFT, 9.8 GPM @ 91' TDH, 1-1/4" 300 LB SUCTION AND DISCHARGE FLANGES, 60" F, 50% PROPYLENE-GLYCOL / WATER MIX, 208 VAC 3 PH	WTP	G & L MODEL SSV1SV SIZE 1-1/4X1-1/4, 2 STAGE, 1/2 HP 3500 RPM TEFC MOTOR, 208 V 3 PH, VERTICAL MULTI-STAGE CENTRIFUGAL PUMP, G&L CAT. # 1SVB1C5B0	N/A
CV-1	EQUAL PERCENTAGE TWO-WAY THREADED GLOBE VALVE (BRASS, 1", 11.7 Cv) WITH SPRING RETURN DIRECT COUPLED GLOBE VALVE ACTUATOR (135 lbf, 12 VA, MODULATING CONTROL SIGNAL)	WTP	HONEYWELL V5011N (V5011N1065) GLOBE VALVE W/ ML7425 (ML7425B3013) ACTUATOR	TEMPERATURE CONTROLLER TC-1
ET-1A ET-1B	UPRIGHT EXPANSION TANK, BOTTOM CONNECTION 1" NPT, 20 GALLON TANK / 11.5 GALLON ACCEPTANCE VOL., 12 PSI PRECHARGE	WTP	AMTROL, SX-40V	12 PSI AIR PRECHARGE
HE-1	BRAZED PLATE-TYPE HEAT EXCHANGER, SINGLE WALLED, SS, FLUID - FLUID	WTP	FLAT-PLATE #FP5X12L (1"MPT), 4.9"W x 12.2"L x 1.3"D, 6.4 LBS, 3.1 SQ FT, TH-IN=180°F, TH-OUT=140°F, TC-IN=45°F, TC-OUT=65°F, 82,000 BTU/HR, SELECTION ID #NU7A5V4X	N/A
PG-1	PROCESS PRESSURE GAUGE, 4" DIAMETER FACE, 0-600 PSIG, SILICONE FILLED, 1/2" MPT BOTTOM PIPING CONNECTION, STAINLESS TUBE, POCAN CASE.	WTP	WIKA MODEL 9834826	N/A
PRV-1	PRESSURE RELIEF VALVE, BRONZE BODY, 1" NPTF, 40 PSI SET (ADJUSTABLE), RIGHT ANGLE VALVE	WTP	KUNKLE MODEL 20, 1" MIPT INLET, 1" FIPT OUTLET	41 PSIG
SC-1	BRONZE SWEAT WYE STRAINER, 1-1/2"C	WTP	METRAFLEX MODEL# BSJC0150	N/A
SF-1	SIGHT FLOW INDICATOR, LOW PRESSURE, SINGLE WINDOW, 1-1/2" FPT CONNECTIONS, WITH ROTATOR PADDLEWHEEL	WTP	JOHN C. ERNST CO. MODEL 118P	N/A
TC-1	TEMPERATURE CONTROLLER, RESISTANCE TEMP SENSOR, SET TO 4-20 MA CONTROL	WTP	HONEYWELL T775M2048 WITH TEMPERATURE SENSOR, AND #50001774-001 SS IMMERSION WELL, 1/2" MIPT	60°F WITH 20°F THROTTLING RANGE
TH-1	THERMOMETER, DIGITAL, SELF-POWERED, VARIABLE ANGLE MOUNTING, RANGE -40F TO +300F, WITH THERMOWELL	WTP	WEISS #DVU35 ELECTRONIC THERMOMETER (INDUSTRIAL BLASS THERMOMETER STEM ASSEMBLY, 3 1/2" STEM LENGTH), WITH E35-75BS 3/4" NPT SOCKET	N/A
TT-1	TEMPERATURE TRANSMITTER	WTP	#50021579-001 SENSOR IN HONEYWELL #50001774-001 STAINLESS IMMERSION WELL	60°F ON TC-1

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SCALE:
GRAPHIC SCALE
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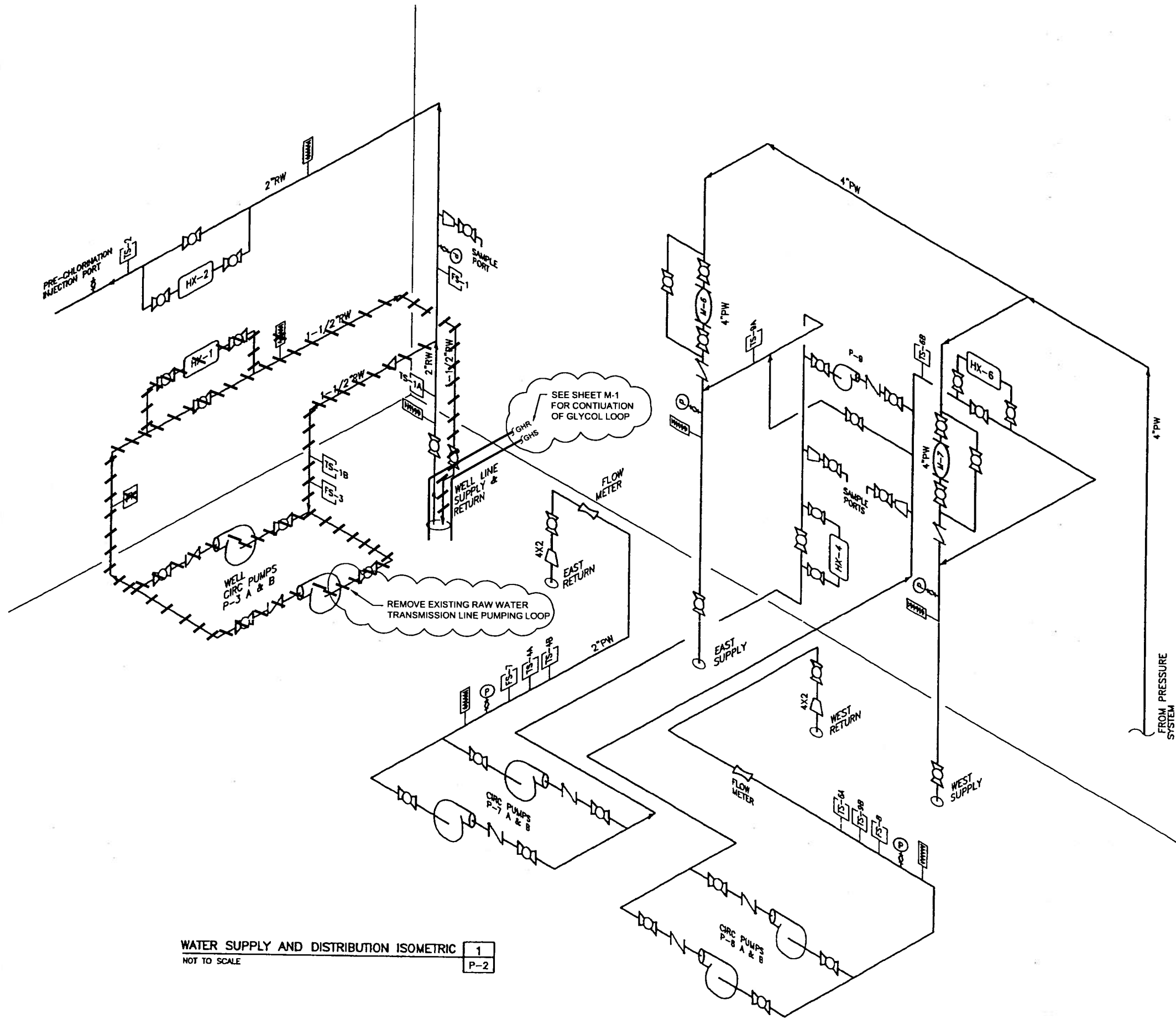
VILLAGE SAFE WATER

2007 RAW WATER
TRANSMISSION LINE REPAIR
WTP GLYCOL LOOP
DIAGRAM
TANANA, ALASKA

ENGINEERS, INC.
PO BOX 22946 ANCHORAGE AK 99523 PH 907-345-1010 FAX 907-345-1015

BY DATE
REVISION
PROJECT No. AUG 2007
DESIGNED
DRAWN
APPROVED
PCW

Sheet No. M-1



WATER SUPPLY AND DISTRIBUTION ISOMETRIC	1
NOT TO SCALE	P-2

REPRODUCED FROM RECORD
DRAWINGS DATED 2/10/03 BY
MONTGOMERY WATSON.
PLAN SHEET P-4

Project	REVISION	BY	DATE
No _____			
Date AUG 2007 _____			
Designed _____			
Drawn _____			
Approved PCW _____			

Sheet No. **M-2**

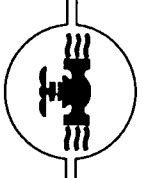
2007 RAW WATER
TRANSMISSION LINE REPAIR

WTP PROCESS PIPING
ISOMETRIC

TANANA, ALASKA



VILLAGE SAFE WATER



SCALE:

2. [REDACTED] IS THE NICHOLAS CARROLL, DRAWING

IF THE ONE MENTIONED THE DATE, AT THE DATED 11/10/2004

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NAME _____

DATE _____