

Too'gha Inc.

Tanana Water & Sewer Extension

PROJECT # 13806
JULY 2006

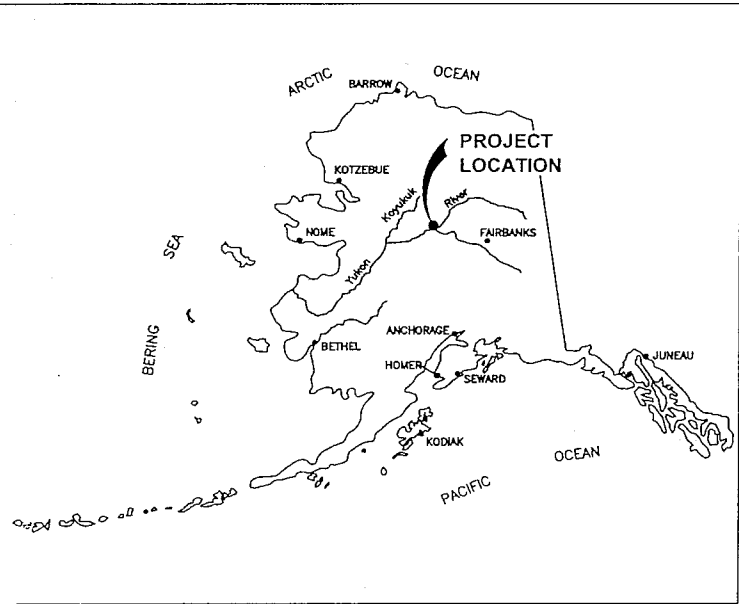
ISSUED FOR CONSTRUCTION

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

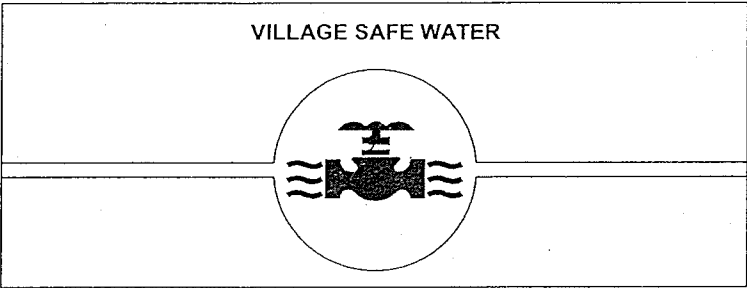
Division of Water
Anchorage
AUG 03 2006
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Location Map



Consultant

RECORD DRAWING CERTIFICATE



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

NAME DATE

Project Number (Consultant) (VSW)
VSW Project Engineer
Construction Foreman
Final Design (Date)
ADEC Approval (Date)
Construction Period (From) (To)
As-Built (Date)

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	N	NORTH
APPROX	APPROXIMATE	NA	NOT APPLICABLE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	NOM	NOMINAL
		NTS	NOT TO SCALE
BH	BORE HOLE	OC	ON CENTER
BLDG	BUILDING	OD	OUTSIDE DIAMETER
BM	BENCH MARK	PC	POINT OF CURVE
BVC	BEGIN VERTICAL CURVE	PERF	PERFORATED
		PI	POINT OF INTERSECTION
CAV	COMBINATION AIR RELEASE/ VACUUM RELIEF	PL	PLATE OR PROPERTY LINE
C	CENTERLINE	PPCD	POUNDS PER CAPITA PER DAY
C/L	CLEARING LIMIT	PPM	PARTS PER MILLION
CC	CENTER TO CENTER	PRV	PRESSURE REDUCING VAULT
CFS	CUBIC FEET PER SECOND	PSF	POUND PER SQUARE FOOT
CMP	CORRUGATED METAL PIPE	PSI	POUND PER SQUARE INCH
CTRS	CENTERS	PT	POINT OF TANGENT
CU	COPPER	PVC	POINT OF VERTICAL CURVE
CY	CUBIC YARD	PVI	OR POLYVINYL CHLORIDE
		PVT	POINT OF VERTICAL INTERSECTION
			POINT OF VERTICAL TANGENT
DET	DETAIL	QTY	QUANTITY
DI	DUCTILE IRON		
DIA	DIAMETER	R	RADIUS
DL	DEADLOAD	REF	REFERENCE
DWG	DRAWING	REINF	REINFORCEMENT
		REQD	REQUIRED
EA	EACH	RW	RAW WATER
EG	EXISTING GROUND	R/W	RIGHT-OF-WAY
EL	ELEVATION		
EVC	END VERTICAL CURVE	S	SOUTH, SLOPE
EXIST	EXISTING	SCH	SCHEDULE
		SECT	SECTION
FDN	FOUNDATION	SHT	SHEET
FF	FINISH FLOOR	SIM	SIMILAR
FG	FINISH GRADE	SS	STAINLESS STEEL OR
FPS	FEET PER SECOND		SANITARY SEWER
FT	FOOT OR FEET	STA	STATION
FTG	FOOTING	STD	STANDARD
		STL	STEEL
GA	GAGE		
GALV	GALVANIZED	TW	TREATED WATER
GB	GRADE BREAK	TYP	TYPICAL
GND	GROUND	TP	TEST PIT
GPD	GALLONS PER DAY		
GPM	GALLONS PER MINUTE	UG	UNDERGROUND
		USGS	UNITED STATES GEOLOGICAL SURVEY
HDPE	HIGH DENSITY POLYETHYLENE		
HOR	HORIZONTAL	VC	VERTICAL CURVE
HPM	HIGHWAY PRECONSTRUCTION	VER	VERTICAL
	MANUAL	VPI	VERTICAL POINT OF INTERSECTION
IE	INVERT ELEVATION		
ID	INSIDE DIAMETER	W/	WITH
IN	INCH OR INCHES	W/O	WITHOUT
IP	IRON PIPE	WS	WATER SURFACE
		WT	WEIGHT
LB	POUND	WWF	WELDED WIRE FABRIC
LBS	POUNDS		
LF	LINEAL FEET	XS	EXTRA STRONG
LL	LIVE LOAD		
		YD	YARD
MAX	MAXIMUM		
MFE	MAIN FLOOR ELEVATION		
MGAL	MILLION GALLONS		
MG/L	MILLIGRAMS PER LITER		
MIN	MINIMUM OR MINUTE		
MISC	MISCELLANEOUS		
MPH	MILES PER HOUR		

UTILITIES SHALL BE CONTACTED PRIOR TO CONSTRUCTION TO IDENTIFY CONFLICTS BETWEEN THE PIPES AND THEIR RESPECTIVE FACILITIES.

UTILITY CONTACTS

- CITY OF TANANA (907)366-7159
- TANANA POWER CO. INC. - YUKON TELEPHONE CO. INC.
LOCAL: RALPH ELLER (907)366-7190
WASILLA: DON ELLER (907)373-6007
- TANANA NATIVE COUNCIL (907)366-7113
- TOO'GHA INC. (907)366-7209

SUMMARY OF WORK

THIS PROJECT INCLUDES PIPED WATER DISTRIBUTION AND WASTEWATER COLLECTION SYSTEMS FOR THE TOWNSITE OF TANANA, EAST OF EAMOLE STREET TO EAST STREET. THE WATER DISTRIBUTION SYSTEM CONSISTS OF 5,365 FEET OF CIRCULATING WATER PIPES, WHICH CONNECT WITH THE EXISTING SYSTEM, AND TO FIRE HYDRANTS. THE WASTEWATER COLLECTION SYSTEM CONSISTS OF 3,272 FEET OF GRAVITY SEWER, INCLUDING 10 MANHOLES, CONNECTING TO THE EXISTING SYSTEM. THE NUMBER OF NEW SERVICE CONNECTIONS IS 17. WORK PRIOR TO THIS PHASE INCLUDED THE DESIGN AND CONSTRUCTION OF A NEW WATER TREATMENT PLANT AND LAUNDRY FACILITY, WHICH BECAME OPERATIONAL IN 2002. WATER DISTRIBUTION PIPING AND WASTEWATER COLLECTION PIPING WERE INSTALLED IN THE 2002-2005 CONSTRUCTION SEASONS TO PROVIDE SERVICE TO APPROXIMATELY THREE FOURTHS OF THE HOMES IN THE DOWNTOWN AREA.

GENERAL NOTES:

INFORMATION PRESENTED ON THIS DRAWING SHALL APPLY TO THE ENTIRE PROJECT EXCEPT WHERE STATED OTHERWISE ON SPECIFIC DRAWINGS OR IN THE SPECIFICATIONS.

- THE CONTRACTOR SHALL EXAMINE THE DRAWINGS AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS THE CONTRACTOR MAY FIND BEFORE PROCEEDING WITH THE WORK.
- THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS AT THE SITE AND SHALL NOTIFY THE ENGINEER OF DISCREPANCIES BETWEEN THE ACTUAL CONDITIONS AND INFORMATION SHOWN ON THE DRAWINGS BEFORE PROCEEDING WITH THE WORK.
- THE CONTRACTOR SHALL REFER TO THE BID SPECIFICATIONS FOR ANY INFORMATION REGARDING PIPES OR MANHOLES NOT COVERED BY THESE GENERAL NOTES OR THE DRAWINGS.
- THE CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR TEMPORARY ERECTION BRACING AND SHORING FOR ALL STRUCTURAL MEMBERS AS REQUIRED FOR STRUCTURAL STABILITY OF THE STRUCTURES DURING CONSTRUCTION.
- THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED PRODUCT. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. CONTRACTOR SHALL ENGAGE QUALIFIED PERSONS TO DETERMINE THAT ALL COMPLETED WORK IS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL COMPLY WITH THE EROSION AND SEDIMENT CONTROL REQUIREMENTS FOR THIS PROJECT DURING ALL PHASES OF CONSTRUCTION.
- THE CONTRACTOR SHALL STORE ALL FUELS, OILS, SOLVENTS AND HAZARDOUS MATERIALS (OHM) IN ENGINEER-APPROVED STORAGE LOCATIONS AT STAGING AREAS. APPROVED AREAS SHALL BE EXCAVATED AND LINED WITH AN IMPERMEABLE LINER TO CREATE A DEPRESSION HAVING A VOLUME LARGE ENOUGH TO CONTAIN THE TOTAL VOLUME OF OHM BEING STORED. THE CONTRACTOR SHALL KEEP CLEAN-UP CONTAINMENT KITS AT EACH STORAGE SITE.
- ALL CONSTRUCTION SHALL BE DONE IN A WORKMANLIKE MANNER AND IN CONFORMANCE WITH APPLICABLE CODES, ADEC REGULATIONS, AND PERMIT CONDITIONS.
- THE SURVEY FOR THIS PROJECT WAS PREPARED BY MANLEY LAND SURVEYORS, INC. DATED OCTOBER 2005. THE BASIS OF HORIZONTAL CONTROL IS THE BLM IRON PIPE MONUMENT, LOCATED AT COR. NO. 1 U.S. SURVEY NO. 397, ON THE NORTH RIGHT OF WAY LINE OF THIRD AVENUE AND THE CENTERLINE OF MILL STREET, ASSIGNED A COORDINATE OF 5,000.00 NORTH AND 5,000.00 EAST. BASIS OF VERTICAL CONTROL IS AN ELEVATION OF 93.02 FEET FOR THE ALUMINUM PIPE MONUMENT AT THE SOUTHEAST CORNER OF BLOCK 3 (POINT NO. 20) AS PROVIDED BY A TOO'GHA REPRESENTATIVE ON AUGUST 19, 2005. HORIZONTAL AND VERTICAL CONTROL SHALL BE REESTABLISHED PRIOR TO START OF CONSTRUCTION.
- RECORD DRAWINGS - THE PROJECT FOREMAN SHALL BE RESPONSIBLE FOR MAINTAINING A CLEAN SET OF DRAWINGS AT THE PROJECT OFFICE FOR RECORD INFORMATION. ALL REQUIRED INFORMATION SHALL BE RECORDED NEATLY AND LEGIBLY IN RED PENCIL DAILY. THE PROJECT FOREMAN SHALL RECORD ON THE RECORD DRAWINGS ALL INFORMATION LISTED IN PARAGRAPH VIII.B. OF ADEC VSW SANITATION FACILITIES CONSTRUCTION PROJECT SUPERINTENDENT'S MANUAL DATED JULY 1998. ALL ELEVATIONS AND PLANS SHALL BE MARKED R (RECORD) OR F.C. (FIELD CHANGE) WITH THE CORRECT VALUE INSERTED. ALL SURVEY NOTES SHALL BE KEPT IN GOOD QUALITY FIELD BOOKS SUBMITTED TO THE OWNER WITH THE RECORD DRAWINGS AT THE END OF THE PROJECT.
- UTILITY EASEMENTS - ALL WATER AND SEWER MAIN LINES SHALL BE INSTALLED WITHIN PUBLIC RIGHT-OF-WAY OR DEDICATED UTILITY EASEMENTS. ALL TEMPORARY CONSTRUCTION EASEMENTS NEEDED SHALL BE THE RESPONSIBILITY OF THE OWNER.
- HISTORICAL PRESERVATION - SHOULD ANY ARCHAEOLOGICAL, CULTURAL OR PALEONTOLOGICAL RESOURCES BE DISCOVERED AS A RESULT OF CONSTRUCTION ACTIVITY, WORK THAT WOULD DISTURB SUCH RESOURCES WILL BE STOPPED AND THE STATE HISTORIC PRESERVATION OFFICE AND THE TANANA TRIBAL COUNCIL SHALL BE CONTACTED IMMEDIATELY.
- GENERAL RESTORATION - THE AREAS IMPACTED BY CONSTRUCTION SHALL BE RETURNED TO PRE-CONSTRUCTION CONDITION OR BETTER. DISTURBED AREAS OUTSIDE THE TRAVELED WAY SHALL BE GROOMED AND SEEDED TO MATCH SURROUNDING TERRAIN. DISTURBED AREAS WITHIN THE TRAVELED WAY SHALL BE RESURFACED PER THE DRAWINGS. CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE AREA AND DISPOSED AS DIRECTED BY THE OWNER. DUE CARE AND CAUTION SHALL BE TAKEN TO AVOID DISTURBING PERSONAL PROPERTY.
- BARRICADES AND WARNING SIGNS SHALL BE PROVIDED TO ADVISE RESIDENTS OF ROAD CLOSURES, DETOURS, AND HAZARDOUS OPEN TRENCH CONDITIONS.

- SEEDING - ALL DISTURBED AREAS OUTSIDE TRAVELED WAYS SHALL BE FERTILIZED AND SEEDED UPON COMPLETION OF FINAL GRADING. AN 8-32-16 (NITROGEN-PHOSPHORUS-POTASSIUM) FERTILIZER MIX SHALL BE APPLIED AT A RATE OF 15 POUNDS PER 1,000 SQUARE FEET AND WORKED INTO SURFACE SOILS. SEED SHALL BE 95 PERCENT PURE WITH A MINIMUM GERMINATION RATE OF 85 PERCENT AND SHALL CONFORM TO THE FOLLOWING:

NAME	APPLICATION RATE (LB/1,000 SQ.FT.)
ARCTATED RED FESCUE	1.5
"NUGGET" BLUEGRASS	1.0

SEED SHALL BE UNIFORMLY MIXED AND MECHANICALLY SPREAD. SEEDING SHALL BE PERFORMED NO EARLIER THAN MAY 15TH AND NO LATER THAN AUGUST 15TH. SEEDING SHALL NOT BE PERFORMED DURING WINDY CONDITIONS OR WHEN CLIMATIC OR GROUND CONDITIONS WOULD HINDER PLACEMENT OR PROPER GROWTH.

EARTH WORK

- WORK PRIOR TO EXCAVATION - CLEARING AND GRUBBING OF CERTAIN AREAS PRIOR TO EXCAVATION MAY BE NECESSARY. DISPOSE OF VEGETATION AND ORGANIC MATERIAL AS DIRECTED BY THE OWNER.
- SAFETY CONSIDERATIONS - SIDEWALLS OF TRENCHES OR EXCAVATIONS SHALL BE SLOPED OR SUFFICIENTLY BRACED IN CONFORMANCE WITH ALASKA DEPARTMENT OF LABOR STANDARDS TO PROVIDE A SAFE WORKING ENVIRONMENT. ALL TRENCHES SHALL BE BACKFILLED OR COVERED, OR A GUARD SHALL BE POSTED, BEFORE WORK IS STOPPED FOR THE DAY. THE TRENCH SHALL BE GUARDED UNTIL WORK BEGINS THE FOLLOWING DAY. OPEN EXCAVATIONS SHALL BE ADEQUATELY SIGNED AND BARRICADED TO WARN RESIDENTS OF THE HAZARD. TAKE ALL REASONABLE AND PRACTICAL MEASURES TO PROTECT PUBLIC HEALTH AND SAFETY AND PRIVATE PROPERTY.
- SURFACE WATER/GROUNDWATER CONTROL - TRENCH BOTTOM SHALL BE MAINTAINED IN RELATIVELY DRY CONDITION DURING THE PIPE LAYING OPERATION. SURFACE DRAINAGE SHALL BE DIRECTED AWAY FROM THE TRENCH THROUGH USE OF DIVERSION BERMS OR OTHER APPROPRIATE MEASURES. USE OF PUMPING EQUIPMENT MAY BE REQUIRED IN SOME AREAS FOR TRENCH DEWATERING. DISCHARGE FROM DEWATERING OPERATIONS SHALL BE RETURNED TO NATURAL DRAINAGE ROUTES. SETTLING PITS, STRAW DIKES, OR OTHER APPROPRIATE MEASURES SHALL BE TAKEN TO PREVENT HIGHLY TURBID WATERS FROM ENTERING EXISTING LAKES, STREAMS, OR WETLANDS.
- EXCAVATED UNUSABLE MATERIAL - DISPOSAL OF UNUSABLE EXCAVATED MATERIAL SHALL BE AS DIRECTED BY OWNER.
- OVER EXCAVATION - OVER EXCAVATION SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE DRAWINGS WHENEVER ICE RICH FROZEN SOILS, SATURATED THAWED SOILS OR ORGANIC RICH SOILS ARE ENCOUNTERED WITHIN THE LIMITS OF EXCAVATION.

PIPE TRENCH MATERIAL SPECIFICATION

LEVELING COURSE: SHALL MEET THE FOLLOWING SPECIFIC GRADED FRACTION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING BY WEIGHT
1-1/2"	100
1"	70-100
3/4"	69-90
3/8"	50-80
#4	30-65
#8	25-55
#40	10-30
#200	4-10

PIPE BEDDING MATERIAL: WELL GRADED GRAVEL AND COARSE SAND WITH 1" MAXIMUM PARTICLE SIZE AND 6% MAXIMUM PASSING THE NO. 200 SIEVE.

SELECT MATERIAL: WELL GRADED GRAVEL AND COARSE SAND WITH 3" MAXIMUM PARTICLE SIZE AND 6% MAXIMUM PASSING THE NO. 200 SIEVE.

NON-CLASSIFIED MATERIAL: MAY CONSIST OF EXCAVATED NATIVE MATERIAL PROVIDED IT IS FREE OF CONSTRUCTION DEBRIS, BOULDERS OR COBBLES, ORGANIC AND FROZEN MATERIALS.

EXTERIOR PIPING

- GRADE AND ALIGNMENT - SURVEYING EQUIPMENT SHALL BE USED TO TRANSFER GRADES FROM ESTABLISHED CONTROL POINTS. QUALIFIED PERSONNEL SHALL OPERATE SURVEY EQUIPMENT AND MAINTAIN SURVEY NOTES TO BE SUBMITTED TO THE OWNER WITH THE RECORD DRAWINGS AT THE END OF THE PROJECT.
- PIPE SHALL BE LIFTED AND PLACED USING PIPE SLINGS LOCATED TO PREVENT DAMAGE TO THE PIPE. THE PIPE SLINGS SHALL BE CONSTRUCTED OF NYLON OR OTHER SUITABLE MATERIALS WHICH WILL NOT GOUGE, TEAR, PUNCTURE, SCRATCH OR OTHERWISE DAMAGE THE OUTER JACKET OR THE PROTECTIVE COATING OF THE PIPE AS IT IS HANDLED OR INSTALLED. CHAINS, CHOKERS OR SIMILAR LIFTING DEVICES SHALL NOT BE USED.
- ONCE THE PIPE IS LOWERED INTO THE TRENCH IT SHALL BE INSPECTED FOR DAMAGE TO THE OUTER JACKET OR PROTECTIVE COATING. ANY DAMAGE TO THE OUTER JACKET SHALL BE REPAIRED USING HEAT SHRINK WRAP. ANY DAMAGE TO THE PROTECTIVE COATING SHALL BE REPAIRED IN ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS.
- PIPE LAYING - ALL PIPE SHALL BE LAID IN REASONABLY CLOSE CONFORMANCE TO LINES AND GRADES SHOWN ON THE DRAWINGS. A CLEAN PIPE SHALL BE LAID, NO TRASH OR DEBRIS SHALL BE ALLOWED TO ENTER THE PIPE. OPEN ENDS OF PIPE AND FITTINGS SHALL BE PLUGGED AT ALL TIMES WHEN WORK IS NOT IN PROGRESS.
- THE FIELD SUPERVISOR HAS THE AUTHORITY TO FIELD LOCATE BENDS AND INSTALL PIPES THAT BEST MEET SITE AND UNDERGROUND UTILITY CONDITIONS.
- FLUSHING - ALL UTILITY LINES SHALL BE FLUSHED PRIOR TO PRESSURE TESTING TO REMOVE ANY FOREIGN MATTER.
- WATER LINE TESTING - THE WATERLINE SHALL BE PRESSURE TESTED WITH AIR TO 100 PSI WITH NO LEAKS. IF THE PRESSURE REMAINS STEADY FOR 15 MINUTES, NO LEAKAGE IS INDICATED.
- THE GRAVITY SEWER LINES SHALL BE PRESSURE TESTED WITH AIR TO 15 PSI UPON COMPLETION OF CONSTRUCTION. IF THE PRESSURE REMAINS STEADY FOR 15 MINUTES, NO LEAKAGE IS INDICATED.
- WATER LINE DISINFECTION - PRIOR TO BEING PLACED IN SERVICE, ALL POTABLE WATER PIPING SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. AFTER DISINFECTION, FLUSH THE LINES WITH POTABLE WATER.

- FUSION JOINTS WILL BE VISUALLY INSPECTED BEFORE AND AFTER FUSION TO ENSURE THAT JOINTS ARE FUSED IN ACCORDANCE WITH THE VISUAL QUALITY CONTROL CRITERIA.

- THE DOUBLE BEAD SHALL BE ROLLED OVER TO THE SURFACE AND BE UNIFORMLY ROUNDED AND CONSISTENT IN SIZE THROUGHOUT THE ENTIRE CIRCUMFERENCE OF THE JOINT.
- THE GAP BETWEEN THE TWO BEADS MUST NOT BE BELOW THE FUSION SURFACE THROUGHOUT THE ENTIRE CIRCUMFERENCE OF THE JOINT.
- THE DISPLACEMENT (PERPENDICULAR TO THE PIPE CENTERLINE) BETWEEN THE FUSED ENDS MUST NOT EXCEED 10% OF THE PIPE MINIMUM WALL THICKNESS.
- THE WIDTH OF THE COMBINED BEAD FOR SDR 11 PIPE SHALL BE AS FOLLOWS:

PIPE DIA.	MINIMUM BEAD WIDTH	MAXIMUM BEAD WIDTH
4" PIPE	5/16-INCH	7/16-INCH
8" PIPE	1/2-INCH	11/16-INCH

- BOTH BEADS OF EACH FUSION JOINT SHALL BE OF UNIFORM SIZE AND SHAPE. THE RATIO OF THE DIFFERENCE IN INDIVIDUAL BEAD WIDTHS DIVDED BY THE TOTAL WIDTH OF BOTH BEADS SHALL NOT EXCEED 100%.

- DESTRUCTIVE TESTING OF THE BUTT FUSED JOINT QUALITY WILL BE CONDUCTED BY PERFORMING THE BENT STRAP TEST. FREQUENCY OF TESTING WILL BE A MINIMUM OF ONE TEST EVERY CALENDAR WEEK THAT THE FUSING PROCESS OCCURS. APPROXIMATELY 2/3 OF THE BENT STRAP TESTS WILL BE CONDUCTED ON THE WATER LINE AND APPROXIMATELY 1/3 OF THE TESTS WILL BE ON THE SEWER LINE.

- MANHOLES WILL BE LEAK TESTED IN ACCORDANCE WITH THE FOLLOWING PROCEDURE:

- PLUG THE INLETS AND OUTLETS OF THE MANHOLE.
- FILL THE MANHOLE WITH WATER TO A MINIMUM DEPTH OF TWO FEET ABOVE THE TOP OF THE SEWER LINE OR TWO FEET ABOVE THE EXISTING GROUNDWATER - WHICHEVER IS GREATER.
- ALLOW THE WATER TO STABILIZE FOR ONE-HALF HOUR AND REFILL THE MANHOLE TO THE ORIGINAL LEVEL.
- MARK INITIAL DEPTH OF THE WATER.
- ALLOW THE NAHOLE TO SIT FOR ONE HOUR.
- RECORD THE DROP OF THE WATER LEVEL IN THE MANHOLE.
- THE MAXIMUM ALLOWABLE DROP IN VERTICAL WATER HEIGHT IN THE MANHOLE SHALL BE 1/4-INCH FOR ALL MANHOLE DIAMETER SIZES. IF THE WATER LEVEL IN THE MANHOLE DROPS BELOW THE ALLOWABLE DROP, REPAIR THE LEAK AND RE-TEST.

RECORD DRAWING CERTIFICATE

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

VILLAGE SAFE WATER



Too'gha Inc.

Tanana Water and Sewer Extension

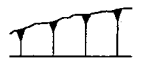
GENERAL NOTES AND ABBREVIATIONS

Sheet No.

G2.0

ISSUED FOR CONSTRUCTION

CIVIL LEGEND



EMBANKMENT SLOPE

50.5

CONTOUR



VEGETATION (SIZE)



CLEANOUT



MANHOLE



MONITORING WELL



PIEZOMETER



STORM DRAIN CATCH BASIN



UTILITY VAULT



POWER POLE



TELEPHONE POLE



FIRE HYDRANT



LIGHT POLE



EXISTING SPOT ELEVATION



FINISHED SPOT ELEVATION



BENCHMARK



IDENTIFICATION AND APPROXIMATE LOCATION OF SOIL TEST HOLE



WATER WELL



DOWNGUY



PEDESTAL, ELECTRIC



PEDESTAL, CABLE TV



PEDESTAL, TELEPHONE



SIGN



CULVERT



HORIZONTAL CONTROL



VERTICAL CONTROL



HORIZONTAL/VERTICAL CONTROL



STRUCTURE



MISC. OBJECT



AIR RELEASE VALVE



WATER ISOLATION VALVE



HEAT TRACE POWER PANEL



SEWER FLOW DIRECTION ARROW



NORTH ARROW

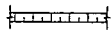
NOTES:

1. UTILITIES THAT ARE SUSPENDED ABOVE GRADE ARE DESIGNATED BY THE PREFIX "OH" (OVERHEAD).

- TELEPHONE LINE
- OVERHEAD ELECTRIC LINE
- WATER LINE
- SEWER LINE
- CABLE TV LINE
- PETROLEUM FUEL/OIL/LUBRICANT LINE
- PIPELINE
- LARGE PIPELINE
- UTILITY BENEATH STRUCTURE
- RAILROAD
- DRAINAGE FLOW
- NATURAL WATERWAY
- CHAIN LINK FENCE
- FIELD FENCE
- PROPERTY LINE
- CENTERLINE
- ROCK BERM
- SILT FENCE
- EASEMENT
- LIMITS OF CONSTRUCTION
- ROW
- TO BE REMOVED
- ROAD
- EDGE OF WATER

GENERAL LEGEND

MATERIALS IN PLAN/SECTION



ACOUSTICAL CEILING TILE (SECTION)



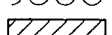
ASPHALT (PLAN OR SMALL-SCALE SECTION)



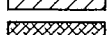
ASPHALT (LARGE-SCALE SECTION)



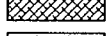
BATT INSULATION (SECTION)



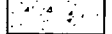
BRICK MASONRY (PLAN AND/OR SECTION)



CHECKERED PLATE (PLAN)



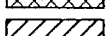
CONCRETE (PLAN AND/OR SECTION)



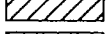
CONCRETE MASONRY (PLAN AND/OR SECTION)



DEMOLITION (PLAN AND/OR SECTION)



EARTH (SECTION)



FILTER POINT MAT (PLAN)



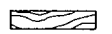
FINISHED WOOD (SECTION)



GLULAM LUMBER (SECTION)



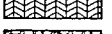
GRANULAR FILL (SECTION)



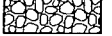
GRATING (SECTION)



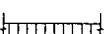
GRATING (PLAN)



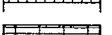
GROUT (SECTION)



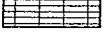
GYPSUM BOARD (SECTION)



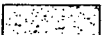
METAL (SECTION)



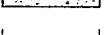
ORIENTED STRAND BOARD (SECTION)



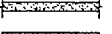
PARTICLE BOARD (SECTION)



PLYWOOD (LARGE-SCALE SECTION)



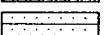
PLYWOOD (SMALL-SCALE SECTION)



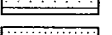
PRECAST CONCRETE (PLAN AND/OR SECTION)



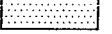
RIGID INSULATION (SECTION)



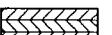
RIPRAP (PLAN AND/OR SECTION)



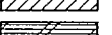
SAND (SECTION)



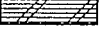
SOD (SECTION)



WEEP JOINT MORTAR PROTECTION SYSTEM (SECTION)



WOOD - CONTINUOUS (SECTION)



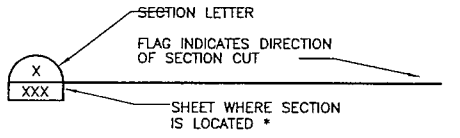
WOOD BLOCKING (SECTION)

DETAIL AND SECTION CALLOUTS

PLAN

1/4" = 1'-0"

PLAN TITLE

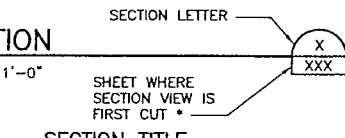


SECTION CUT MARKER

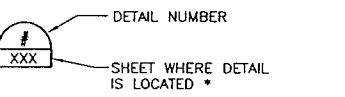
SECTION

3/8" = 1'-0"

SECTION TITLE



SECTION CUT MARKER



DETAIL MARKER

FOR REFERENCING DETAILS INCLUDED IN DRAWING SET.

XXXXXXXXXX

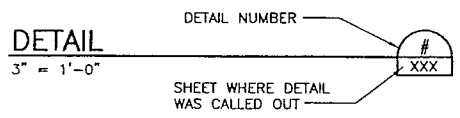
DETAIL MARKER

FOR REFERENCING DETAILS BOUND IN SPECIFICATIONS OR SEPARATE VOLUME.

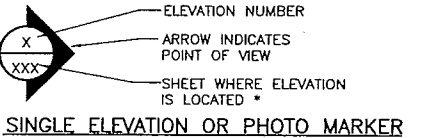
DETAIL

3" = 1'-0"

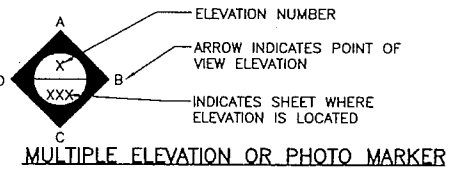
DETAIL TITLE



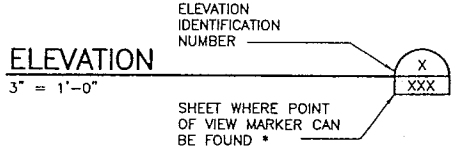
* FOR COMMON DETAILS AND SECTIONS OR DETAILS THAT ARE CUT OR CALLED OUT ON MULTIPLE SHEETS, THE SHEET NUMBER IS REPLACED BY A DASH (-).



SINGLE ELEVATION OR PHOTO MARKER



MULTIPLE ELEVATION OR PHOTO MARKER



ELEVATION

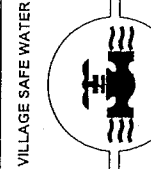
3" = 1'-0"

ELEVATION TITLE

GENERAL NOTES:

- 1. THIS IS A STANDARD SHEET SHOWING COMMON SYMBOLS. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
- 2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.

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



Too'gha Inc.
Tanana Water and Sewer Extension
CIVIL AND GENERAL
LEGENDS

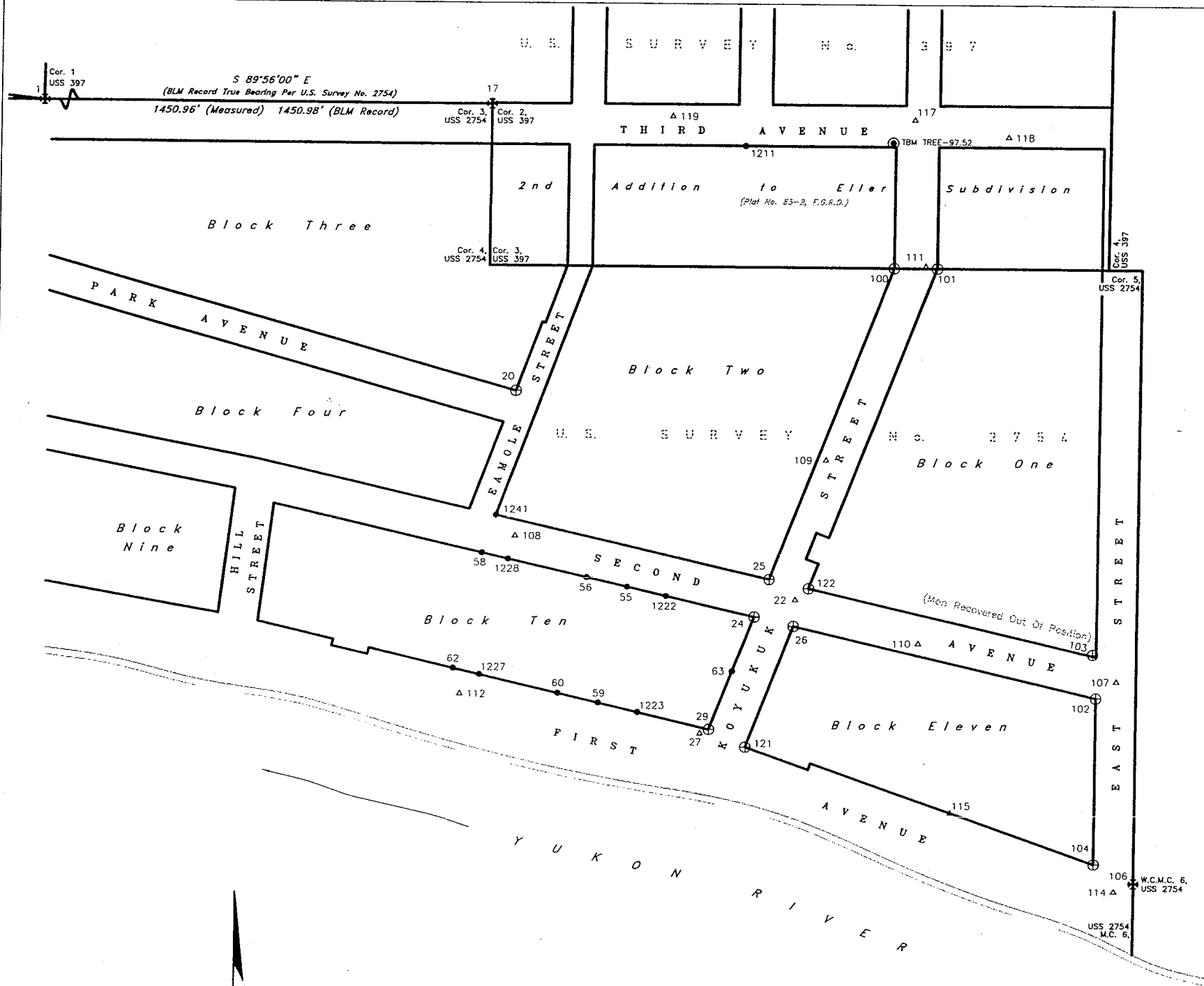
REVISION	BY	DATE

Project No.	13806
Date	JULY 2006
Designed	JG
Drawn	JJ
Approved	TB

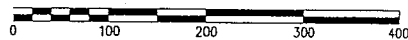
Sheet No. **G3.0**
SHEET 3 OF 29

ISSUED FOR CONSTRUCTION

User: JEFFERY Jul 17, 2006
Project: 13606
Drawing: 2231-YUKON TANANA
Title: 2231-YUKON TANANA
Scale: 1"=1000'



Graphic Scale



Legend

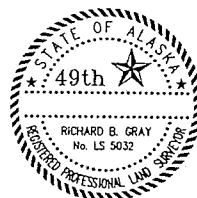
- BLM Brass Capped Iron Post, Recovered
- Primary Monument by Others, Recovered
- Rebar With Aluminum Cap, 5032-S, Recovered
- Control Spike
- TBM Tree

Surveyor's Certificate

I hereby certify that I am registered and licensed to practice land surveying in the State of Alaska, that this plot represents a survey made by me or under my direct supervision, that the monuments shown hereon actually exist as described, and that all dimensions and other details are correct.

Date _____ Registration No. 5032-S

Richard B. Gray, Registered Land Surveyor



Vertical Control Table

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
20	4571.88	6492.11	93.02	ALUM MON 2238-S
25	4291.12	6873.09	97.34	ALUM MON 2238-S
29	4066.30	6786.20	98.09	ALUM MON 2238-S
104	3867.91	7362.41	98.22	ALUM MON 2238-S

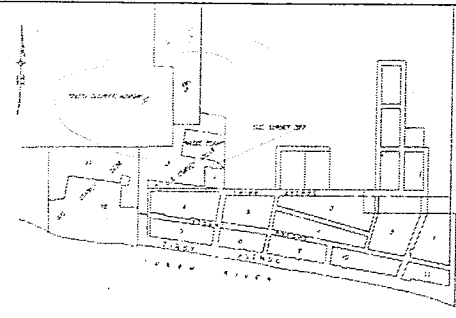
TBM - Elevation 97.52
A spike set on the northeast side of a 12" diameter birch tree located at the southwest corner of Koyukuk Street and Third Avenue

Monument Coordinate Table

POINT NO.	NORTHING	EASTING	DESCRIPTION
1	5000.00	5000.00	BLM BC IP
17	4998.31	6450.96	BLM BC IP
20	4571.88	6492.11	ALUM MON 2238-S
24	4234.80	6851.34	ALUM MON 2238-S
25	4291.12	6873.09	ALUM MON 2238-S
26	4221.08	6910.33	ALUM MON 2238-S
29	4066.30	6786.20	ALUM MON 2238-S
55	4278.74	6660.77	BAR/CAP 5032-S
56	4292.55	6600.85	BAR/CAP 5032-S
58	4328.50	6444.96	BAR/CAP 5032-S
59	4105.04	6620.16	BAR/CAP 5032-S
60	4119.01	6560.29	BAR/CAP 5032-S
62	4155.35	6404.56	BAR/CAP 5032-S
63	4153.43	6819.88	BAR/CAP 5032-S
100	4757.45	7053.32	ALUM MON 2238-S
101	4757.36	7117.25	ALUM MON 2238-S
102	4116.43	7362.97	ALUM MON 2238-S
103	4181.59	7357.58	ALUM MON 2238-S
104	3867.91	7362.41	ALUM MON 2238-S
106	3839.34	7422.35	BLM BC IP
121	4040.14	6840.51	ALUM MON 2238-S
122	4277.77	6932.21	ALUM MON 2238-S
1211	4937.71	6828.79	BAR/CAP 5032-S
1222	4265.26	6719.23	BAR/CAP 5032-S
1223	4091.41	6678.59	BAR/CAP 5032-S
1227	4146.27	6443.47	BAR/CAP 5032-S
1228	4319.51	6483.93	BAR/CAP 5032-S
1241	4385.18	6465.15	BAR/CAP 5032-S

Control Spike Coordinate Table

POINT NO.	NORTHING	EASTING	DESCRIPTION
22	4260.37	6912.49	SPIKE
27	4060.29	6772.97	SPIKE
107	4140.91	7393.29	SPIKE
108	4354.11	6493.76	SPIKE
109	4470.27	6955.63	SPIKE
110	4196.38	7096.53	SPIKE
111	4760.24	7100.43	SPIKE
112	4117.18	6414.73	SPIKE
114	3826.56	7392.91	SPIKE
115	3943.19	7146.12	SPIKE
117	4977.33	7081.61	SPIKE
118	4952.42	7221.03	SPIKE
119	4981.32	6719.92	SPIKE



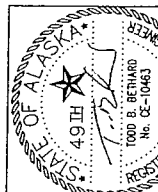
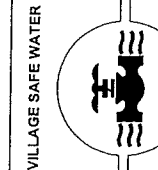
Vicinity Map

SCALE: 1 INCH = 1000 FEET

Notes

- The Basis of Elevations for this survey is an elevation of 93.02 feet for the aluminum pipe monument at the southeast corner of Block 3 (point no. 20) as provided by a Too'gha representative on August 19, 2005. Only elevations provided on the Vertical Control Table on this drawing should be utilized as vertical control to relate to the design topographic survey completed during August 2005 by Manley Land Surveyors, Inc.
- The Basis of Coordinates for this survey is the BLM iron pipe monument at Cor. No. 1 of U.S. Survey No. 397, on the north right of way line of Third Avenue and the centerline of Mill Street, assigned a coordinate of 5000.00 North and 5000.00 East.
- The Basis of Bearings for this survey is the BLM record true bearing of S. 89°56'00" E., from Cor. No. 1, U.S. Survey No. 397 to Cor. No. 3, U.S. Survey No. 2754.
- The control spikes listed in the Control Spike Coordinate Table on this drawing should be utilized as horizontal control to relate to the design topographic survey completed during August 2005 by Manley Land Surveyors, Inc.
- Monument coordinates provided on the Monument Coordinate Table on this drawing are for the purpose of assisting Too'gha in avoiding them during further construction activities and should not be utilized for horizontal construction control.

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



Too'gha Inc.
Tanana Water and Sewer Extension

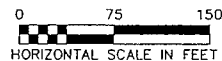
SURVEY CONTROL
DIAGRAM

REVISION	BY	DATE

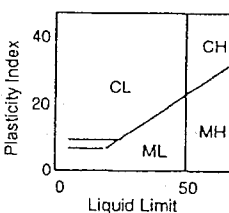
Project No. 13606	Date JULY 2006
Designed JG	Drawn JJ
Approved TB	

Sheet No. G4.0
4 of 29

ISSUED FOR CONSTRUCTION



UNIFIED SOILS CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOL	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% larger than #200 sieve, >0.07 mm	GRAVELS More than half of the coarse fraction is larger than #4 sieve size, > 4.75 mm.	Clean gravels with little or no fines	GW	Well graded gravels, sandy gravel
			GP	Poorly graded gravels, sandy gravel
		Gravels with more than 12% fines	GM	Silty gravels, silt sand gravel mixtures
	SANDS More than half of the coarse fraction is smaller than #4 sieve size		GC	Clayey gravels, clay sand gravel mixtures
		Clean sands with little or no fines	SW	Well graded sand, gravelly sand
			SP	Poorly graded sands, gravelly sand
FINE GRAINED SOILS >50% finer than #200 sieve, 0.07 mm		Sands with more than 12% fines	SM	Silty sand, silt gravel sand mixtures
			SC	Clayey sand, clay gravel sand mixtures
	Plasticity Chart 	SILTS and CLAYS Liquid limit less than 50	ML	Inorganic silt and very fine sand, rock flour
			CL	Inorganic clay, gravelly and sandy clay, silty clay
		SILTS and CLAYS Liquid limit greater than 50	OL	Organic silts and clay of low plasticity
			MH	Inorganic silt
	HIGHLY ORGANIC SOILS		CH	Inorganic clay, fat clay
			OH	Organic silt and clay of high plasticity
			Pt	Peat and other highly organic soil

ICE CLASSIFICATION SYSTEM

GROUP	ICE VISIBILITY	DESCRIPTION	SYMBOL
N	Segregated ice not visible by eye	Poorly bonded or friable	Nf
		Well bonded	Nb
		No excess ice	
V	Segregated ice is visible by eye and is one inch or less in thickness	Excess microscopic ice	Nbn
			Nbe
		Individual ice crystals or inclusions	Vx
		Ice coatings on particles	Vc
ICE	Ice greater than one inch in thickness	Random or irregularly oriented ice	Vr
		Stratified or distinctly oriented ice	Vs
		Ice with soil inclusions	ICE + soil type
		Ice without soil inclusions	ICE

SOURCE:

TESTHOLE LOCATION AND CLASSIFICATION INFORMATION TAKEN FROM MHW TOO'GHA INC. - TANANA, ALASKA WATER DISTRIBUTION & WASTEWATER COLLECTION SYSTEM ISSUED FOR CONSTRUCTION PLAN SET. TYPICAL FOR G6.1, G6.2.

ISSUED FOR CONSTRUCTION

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DURING CONSTRUCTION.
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VILLAGE SAFE WATER



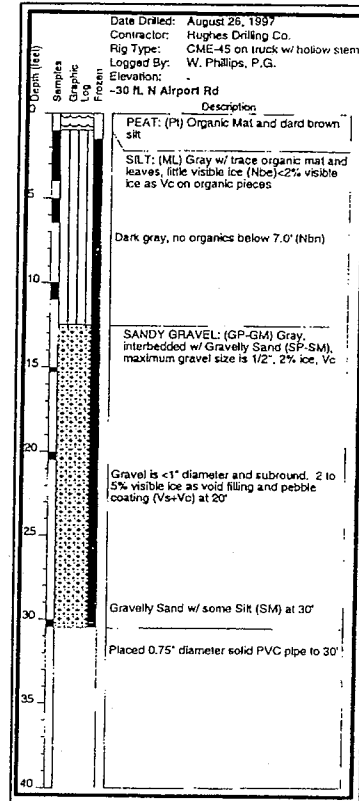
Too'gha Inc.
Tanana Water and Sewer Extension

SOIL TEST HOLE LOCATIONS
AND CLASSIFICATIONS

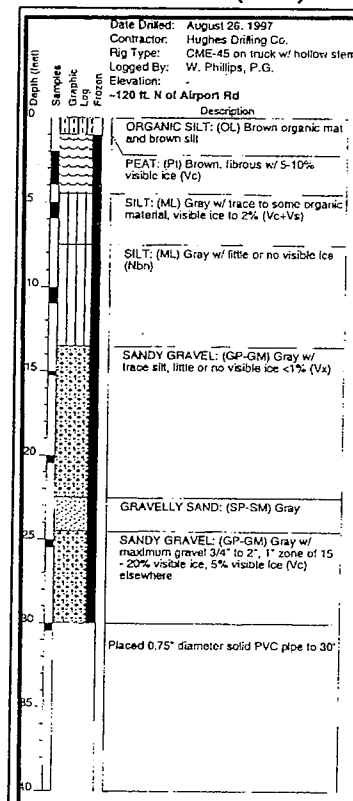
REVISION	BY	DATE

Project No. 13806	Date JULY 2006	Designed JC	Drawn JU	Approved TB
-------------------	----------------	-------------	----------	-------------

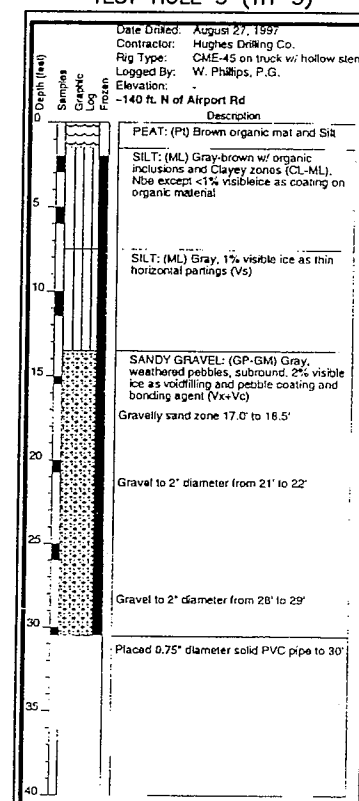
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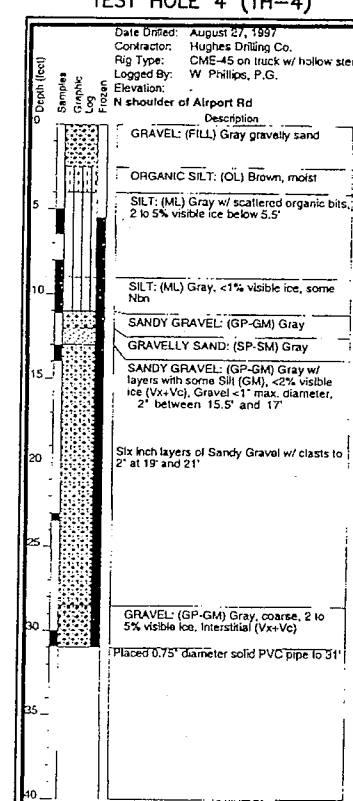
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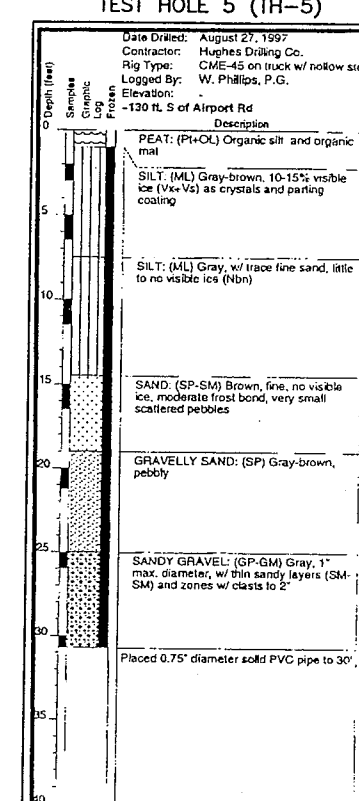
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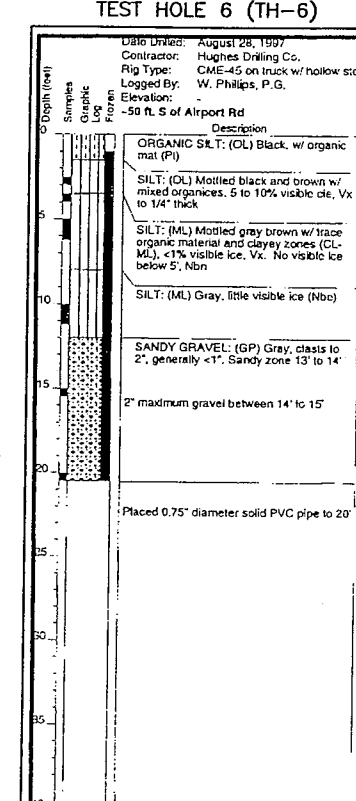
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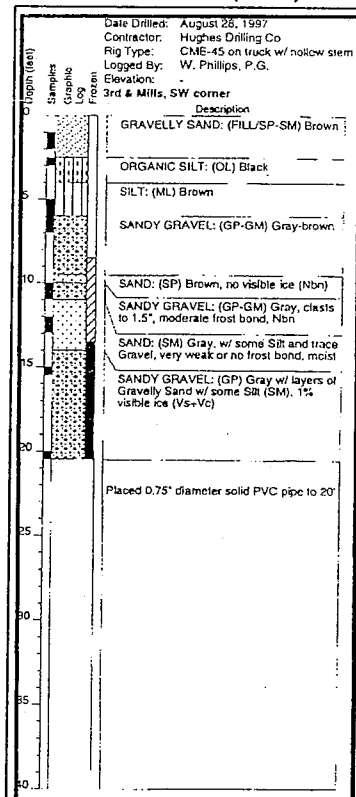
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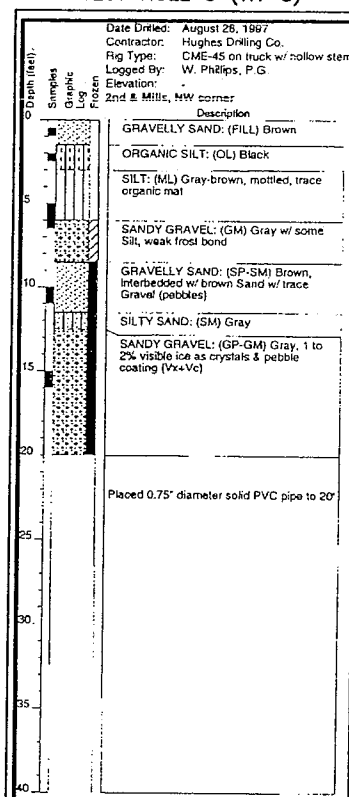
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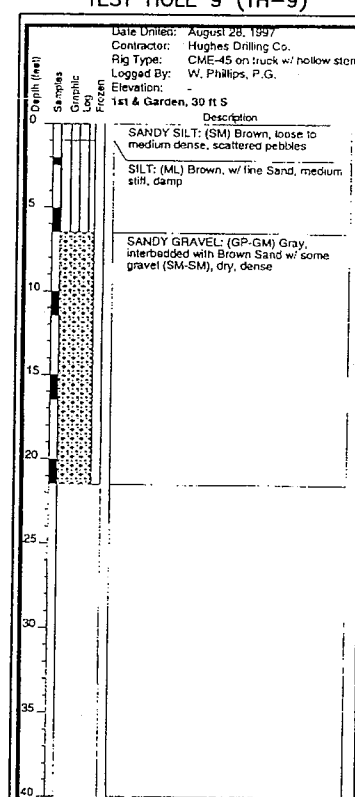
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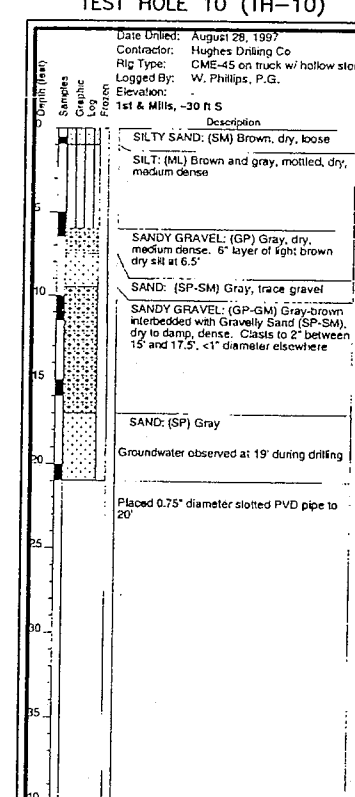
TEST HOLE 8 (TH-8)



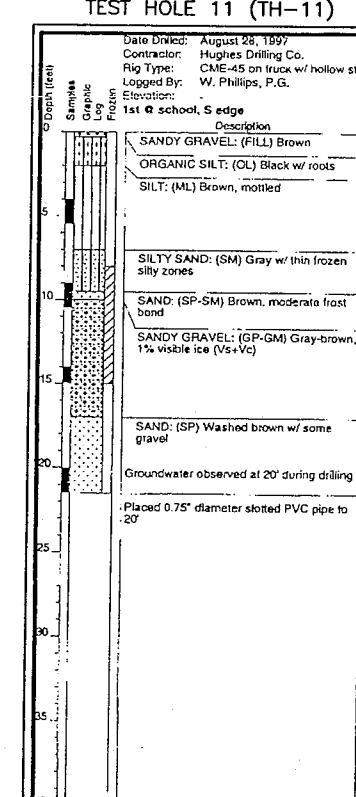
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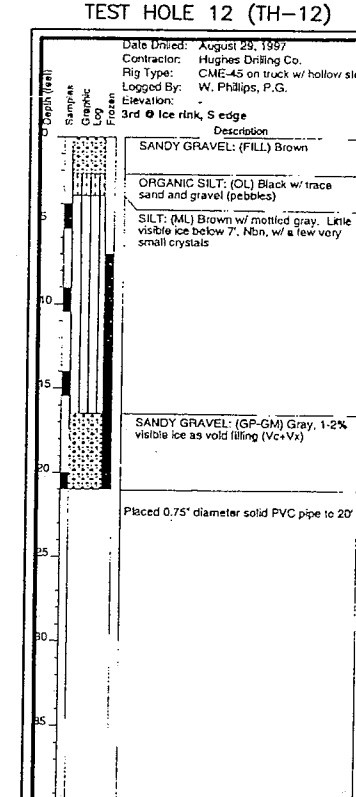
TEST HOLE 10 (TH-10)



TEST HOLE 11 (TH-11)

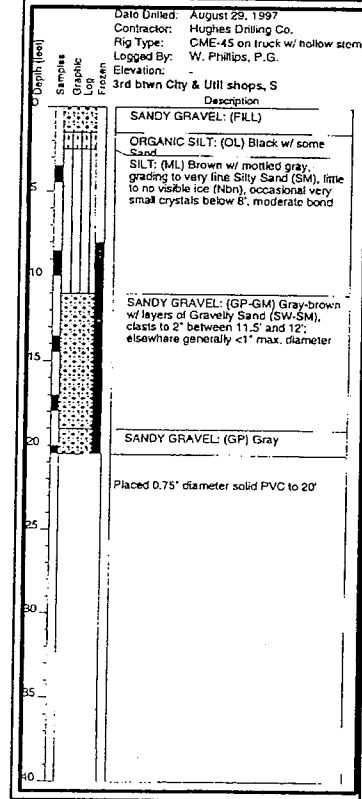


TEST HOLE 12 (TH-12)

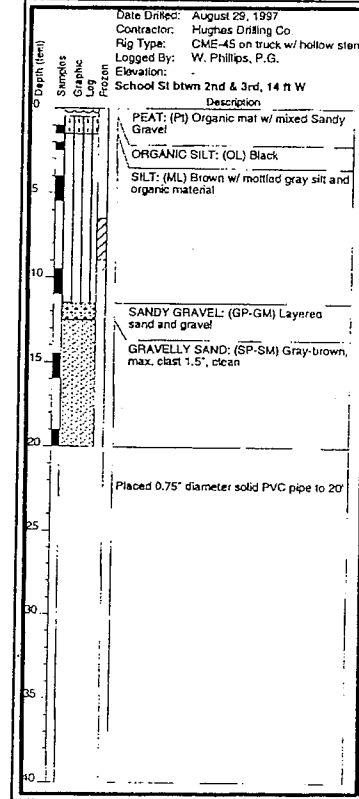


User: JEFFER Jul 17, 2006
Drawing: C:\PROJECTS\TANANA\G5.0-2.DWG - Layout: G5.2
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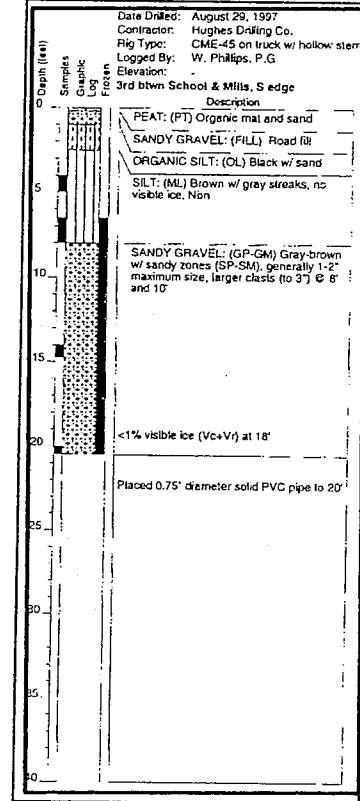
TEST HOLE 13 (TH-13)



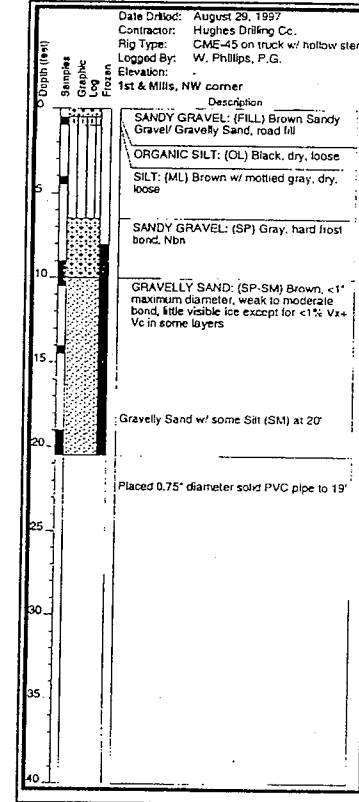
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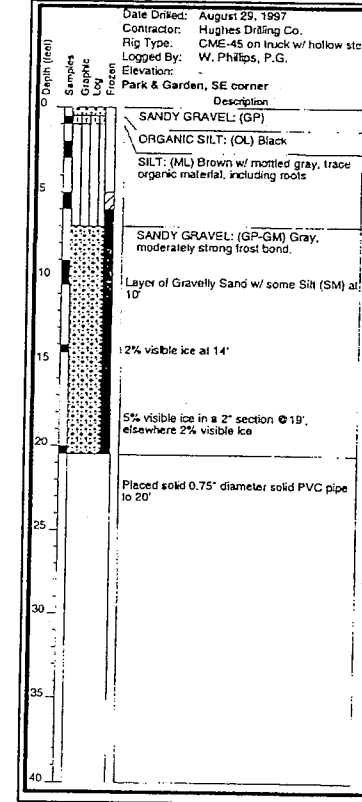
TEST HOLE 15 (TH-15)



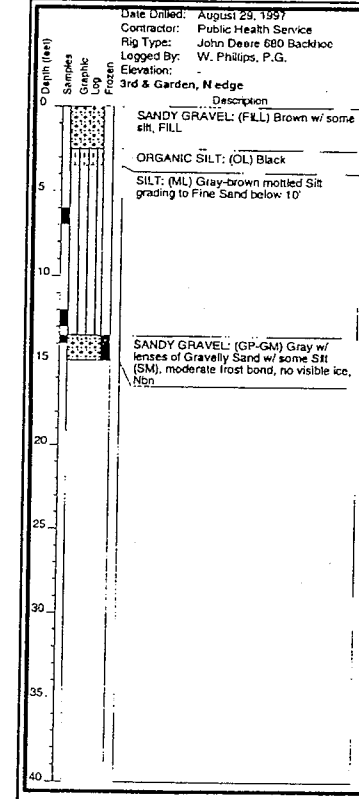
TEST HOLE 16 (TH-16)



TEST HOLE 17 (TH-17)



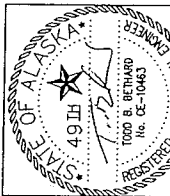
TEST HOLE 18 (TH-18)



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VILLAGE SAFE WATER



Too'gha Inc.
Tanana Water and Sewer Extension

SOIL TEST HOLE LOGS
(TH13 - TH18)

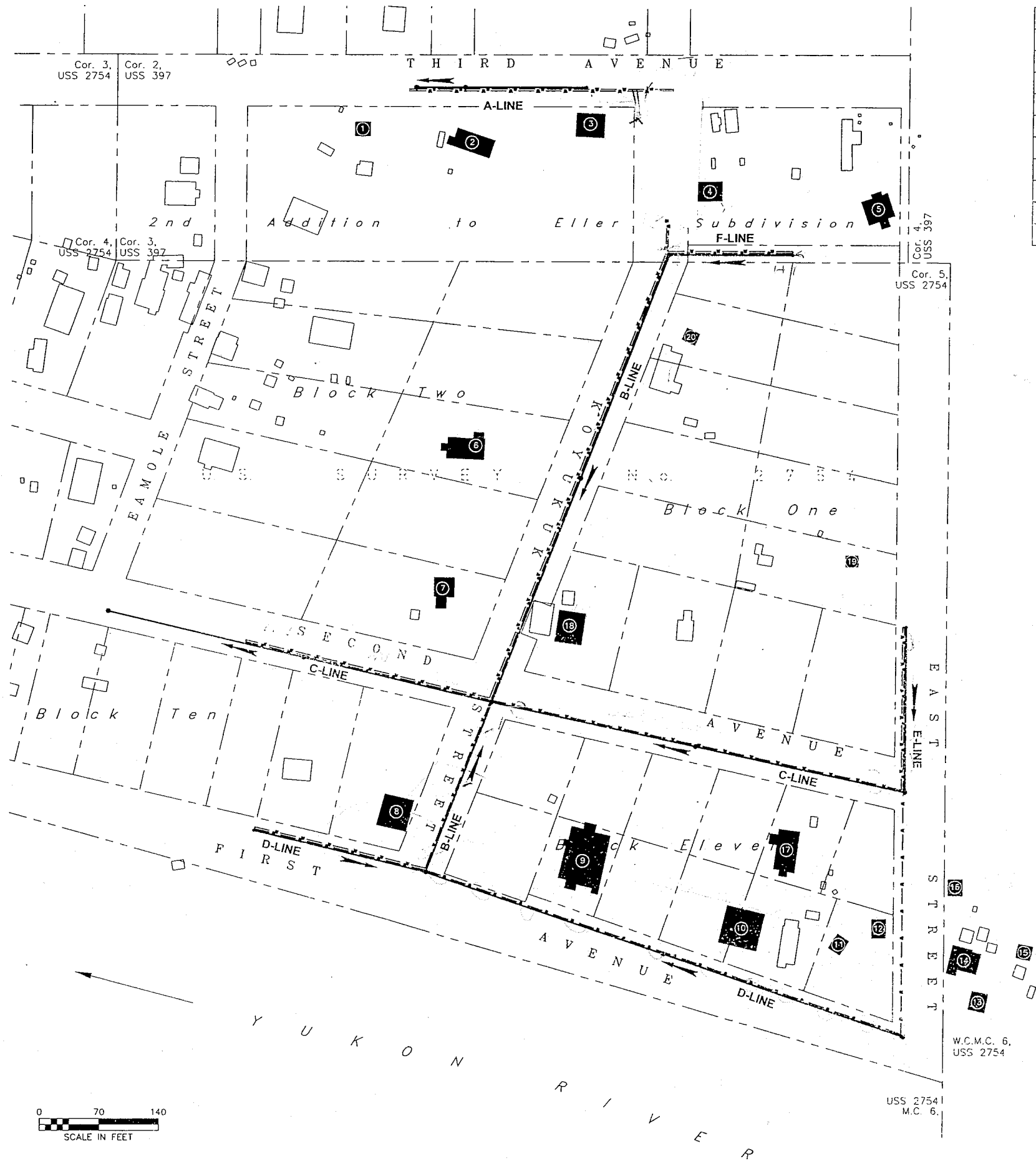
REVISION	BY	DATE

Project 13806	Date JULY 2006
Designed JG	Drawn JJ
Approved TB	

Sheet No. **G5.2**
SHEET 7 OF 29

ISSUED FOR CONSTRUCTION

Users: JEFFERY Jul 17, 2006 - 34521938\TANANA-C1_0C2_1-B.dwg - Layout: C1.0 (SITE PLAN)
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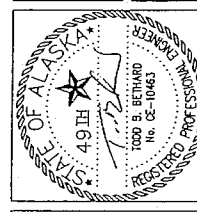
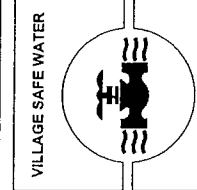


HOUSE NO.	OWNER/RESIDENT	HOUSE NO.	OWNER/RESIDENT
1	J. CLIFTON ELLER	11	NOT SERVED
2	PATRICIA & DAVID BOWEN	12	ARVIN KANGAS
3	MARTY SCHARF	13	BUILDING TO BE TORN DOWN
4	PATRICK MOORE	14	BUILDING TO BE TORN DOWN
5	CHRISTIAN RYCHTA	15	RICHARD GRANT JR.
6	ARLAND & ZELMA DICK	16	REGINA GRANT
7	MILTON NICHOLIA JR.	17	THOMAS ROBERTS
8	TANANA TRIBAL COUNCIL (TEEN CENTER)	18	GEORJEANA WALLACE
9	TANANA TRIBAL COUNCIL (COMMUNITY HALL)	19	CHARLES CAMPBELL
10	JOSEPHINE ROBERTS	20	TOM HYSLOP

LEGEND
- - - - - WATER PIPE
- - - - - SEWER PIPE
← SEWER FLOW DIRECTION

NOTE: WATER FLOWS IN COUNTER-CLOCKWISE DIRECTION

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RECORDED INFORMATION OBTAINED
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INFORMATION PROVIDED HEREIN
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MY KNOWLEDGE.

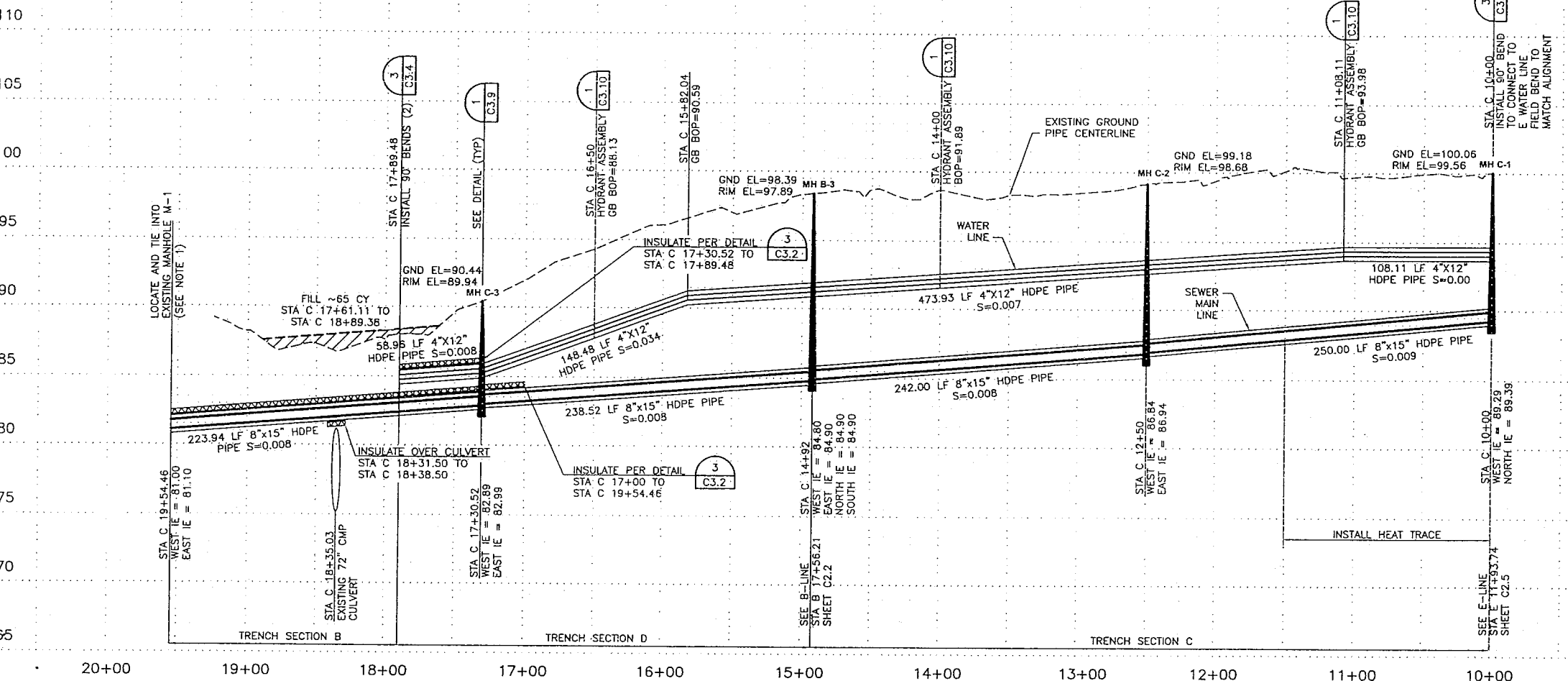
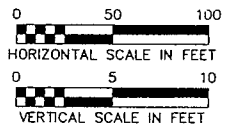
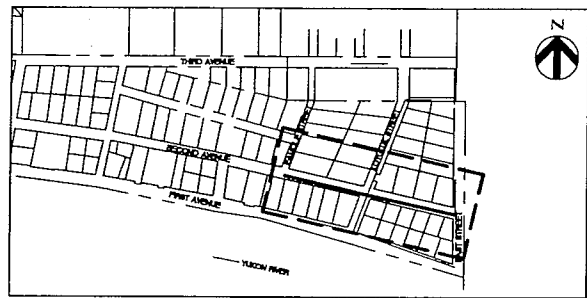
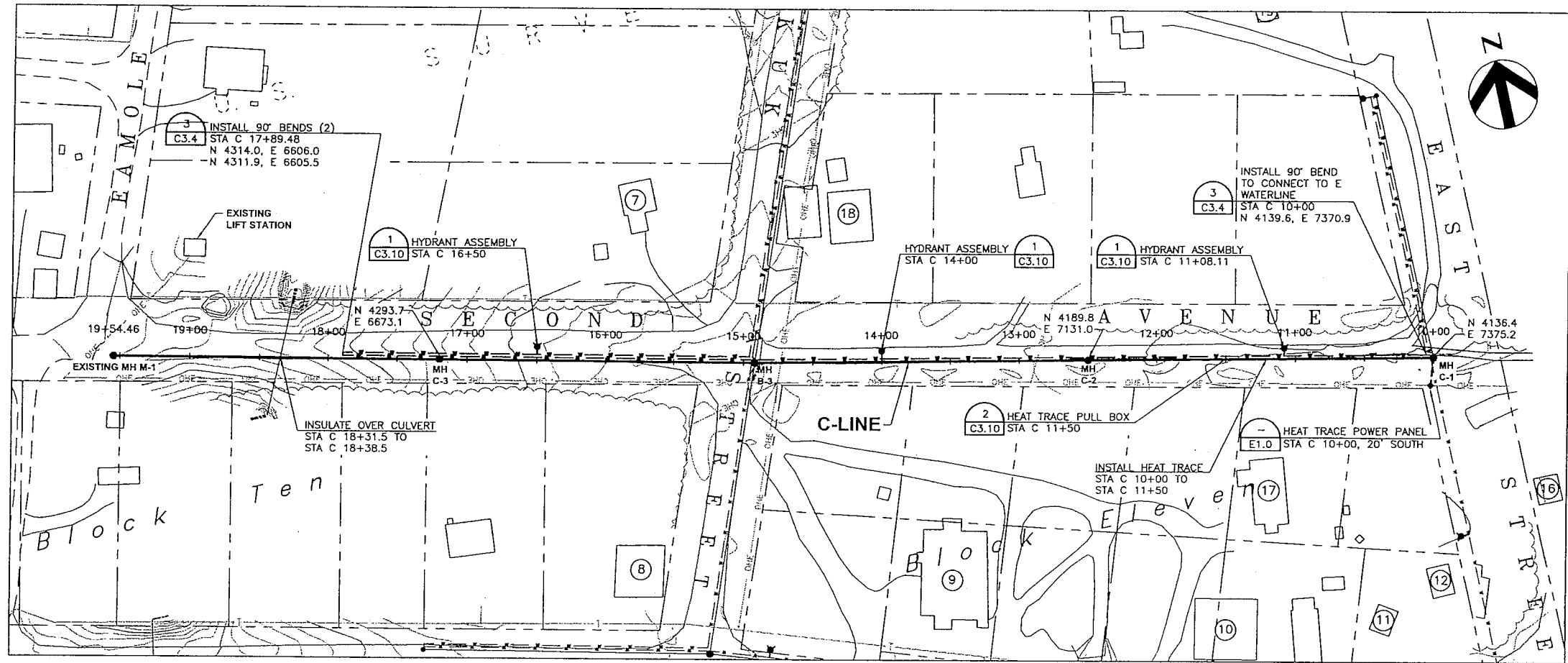


Too'gha Inc.
Tanana Water and Sewer Extension
SITE PLAN

REVISION	BY	DATE

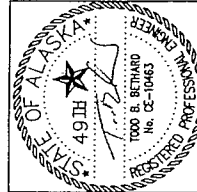
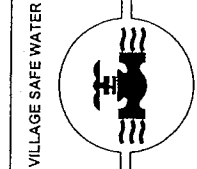
Project No. 13806	Date JULY 2006	Designed JG	Drawn JI	Approved TB
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USER: JEFFREY Jul 17, 2006
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- NOTES:
1. CONTRACTOR TO VERIFY EXISTING INVERT ELEVATION AND PIPE SIZE PRIOR TO CONSTRUCTION
 2. CONTRACTOR TO FIELD LOCATE SERVICE CONNECTIONS
 3. WATER LINE JOINTS WILL BE A MINIMUM OF 9' FROM SEWER LINE JOINTS.

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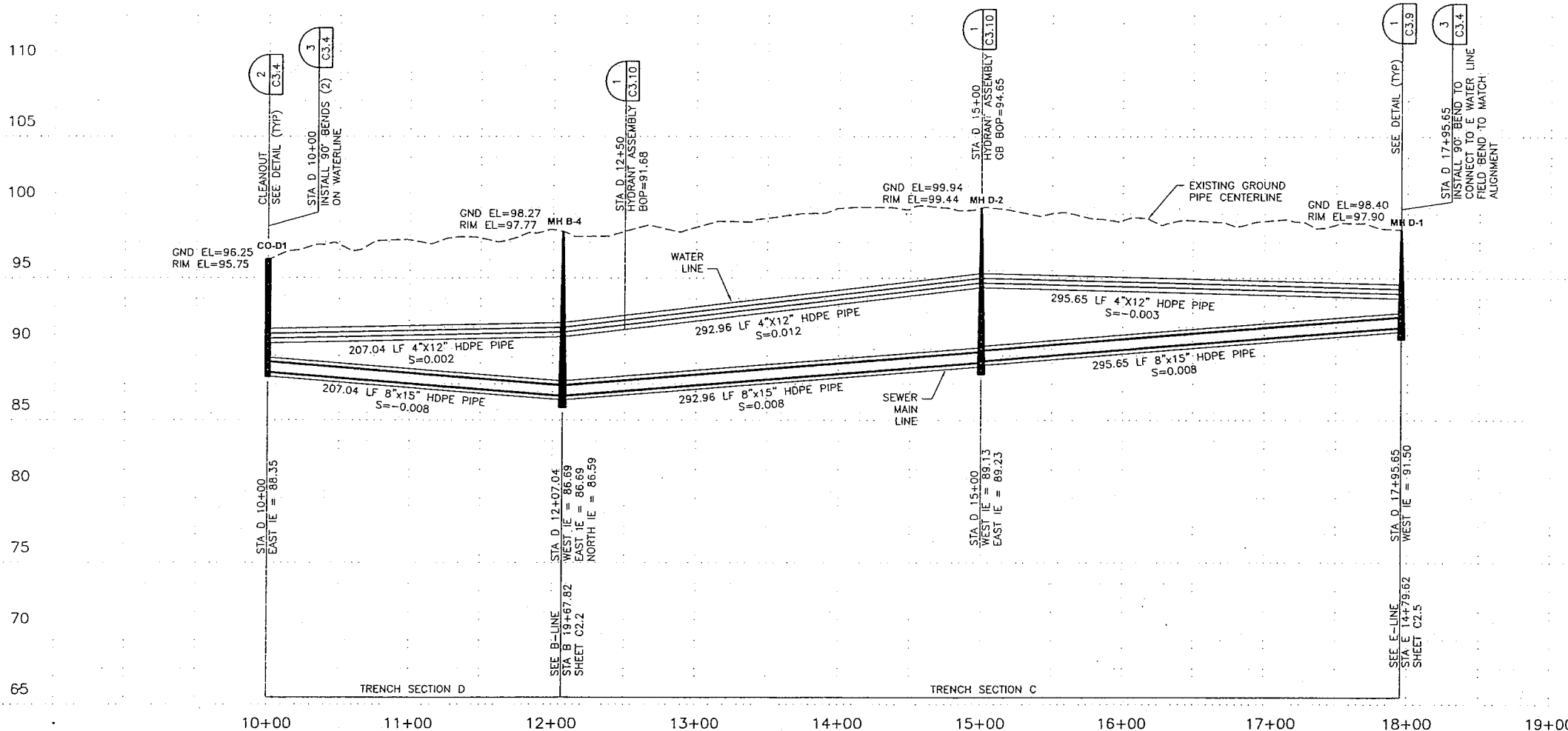
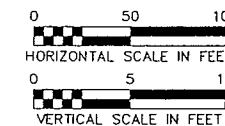
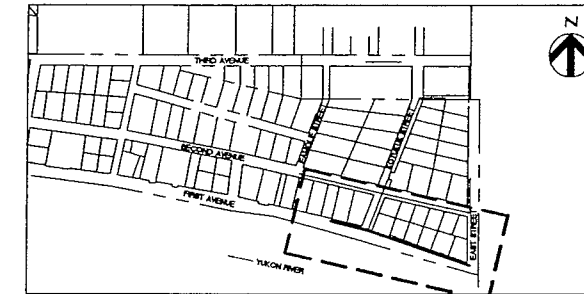
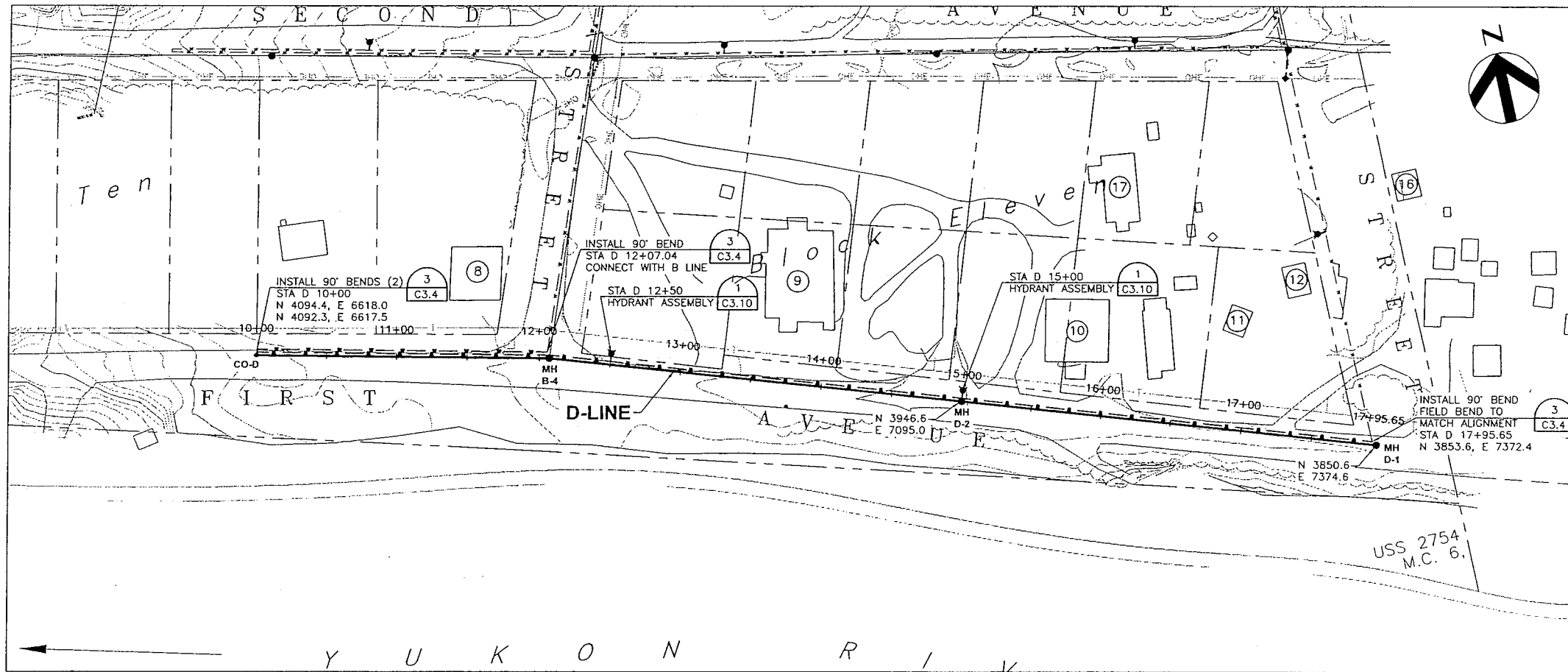
Too'gha Inc.
Tanana Water and Sewer Extension
C-LINE
WATER AND SEWER
PLAN AND PROFILE

REVISION	BY	DATE

Project No. 13806	Date JULY 2006	Designed JG	Drawn JU	Approved TB
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ISSUED FOR CONSTRUCTION

Users: JEFFERY Jul 17, 2006 -
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- NOTES
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VILLAGE SAFE WATER

STATE OF ALASKA

49TH

TODD B. BERHARD

REG. 02-10463

PROFESSIONAL ENGINEER

HDR

HDR Alaska, Inc.

Toc'gha Inc.

Tanana Water and Sewer Extension

D-LINE

WATER AND SEWER

PLAN AND PROFILE

REVISION	BY	DATE

Project 13806

No.

Date JULY 2006

Designed JG

Drawn JJ

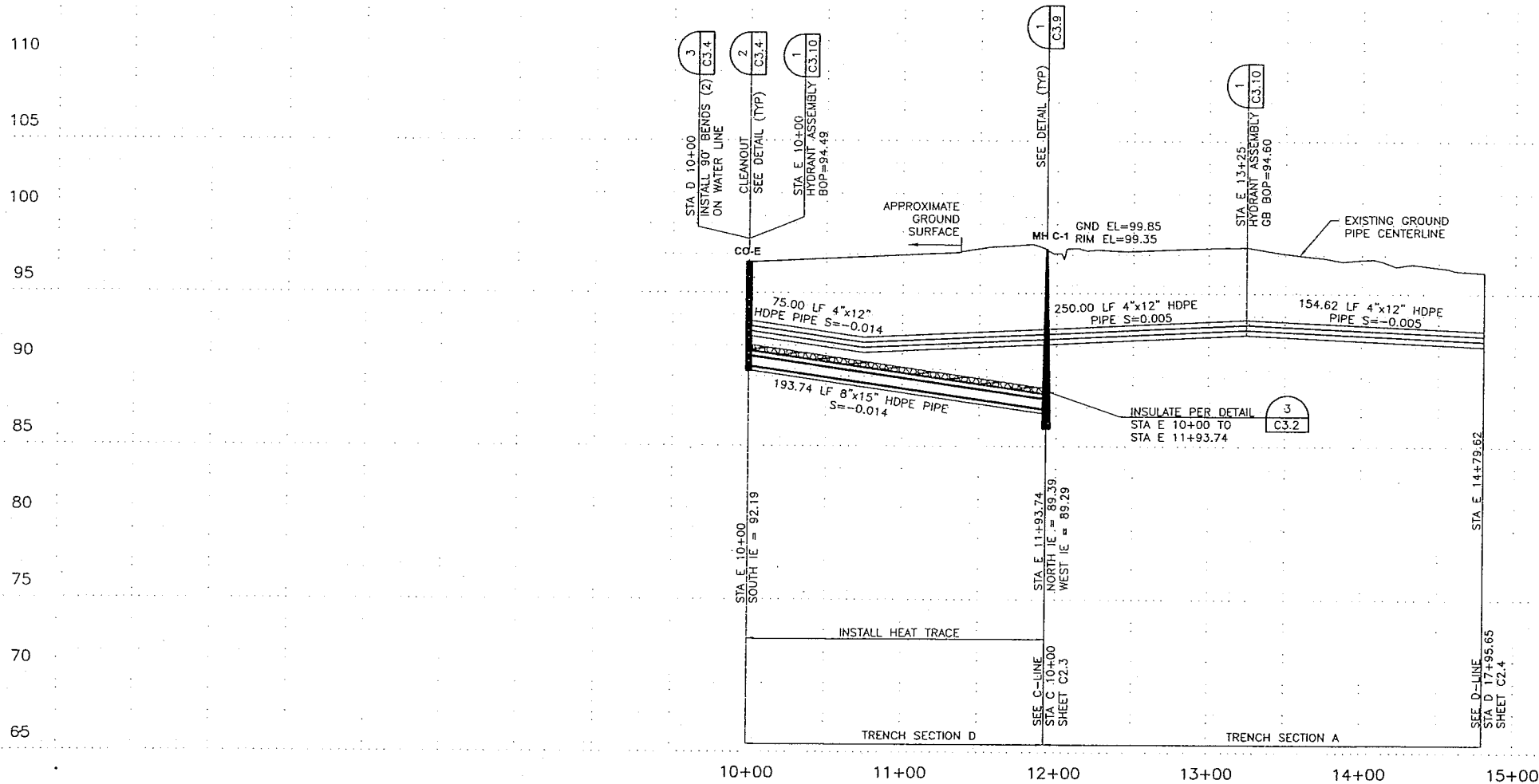
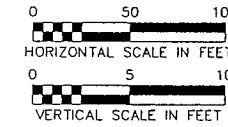
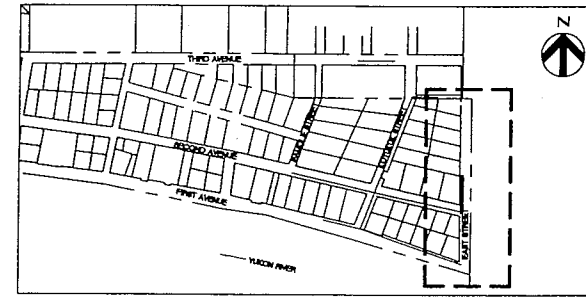
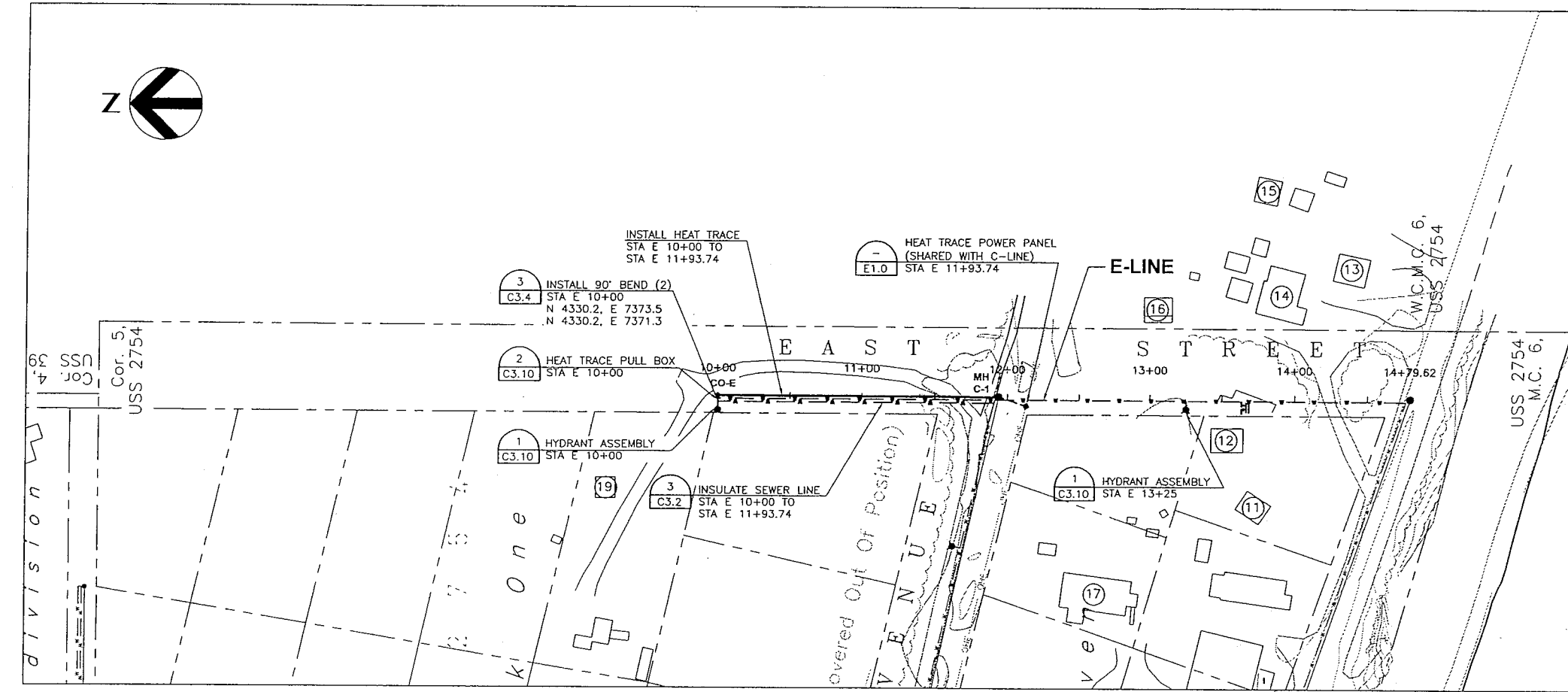
Approved TB

Sheet No. **C2.4**

SHEET 12 OF 29

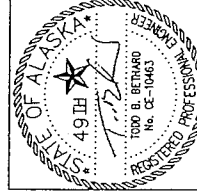
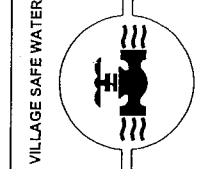
ISSUED FOR CONSTRUCTION

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- NOTES
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Tanana Water and Sewer Extension
E-LINE
WATER AND SEWER
PLAN AND PROFILE

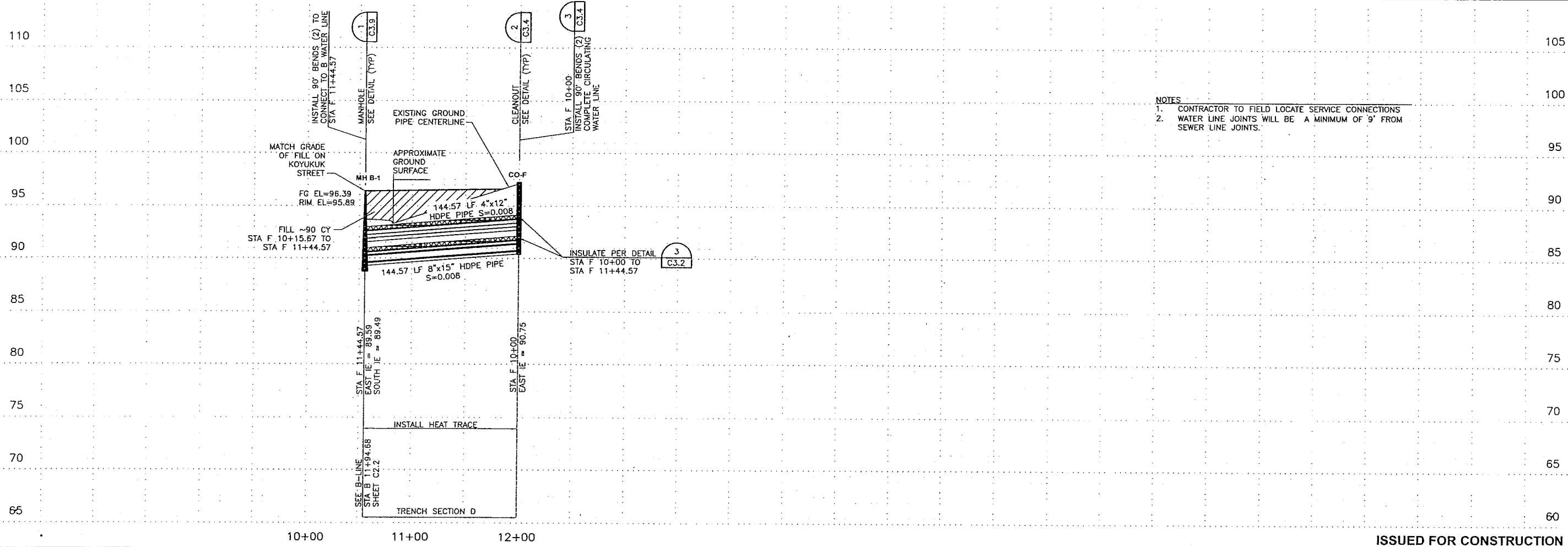
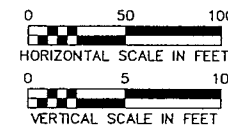
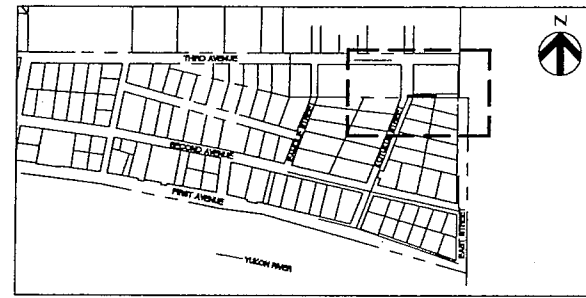
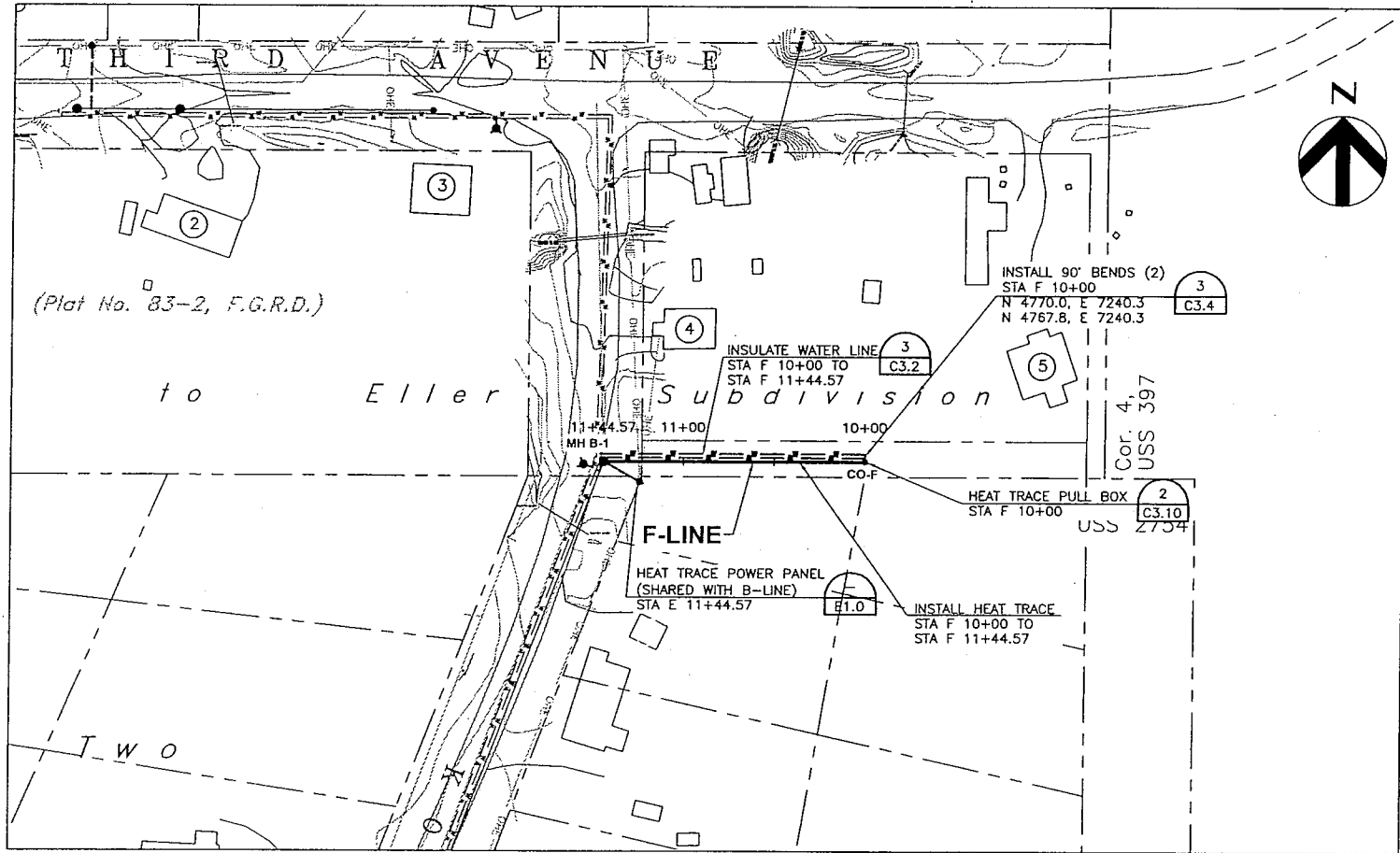
REVISION	BY	DATE

Project No. 13806	Date JULY 2006	Designed JG	Drawn JU	Approved TB
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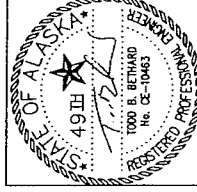
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SHEET 13 OF 29

ISSUED FOR CONSTRUCTION

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DRAWN: JEFFREY, JUL 17, 2005
CHECKED: JEFFREY, JUL 17, 2005
DATE: JUL 17, 2005
PROJECT: TANANA WATER AND SEWER EXTENSION
SHEET: TANANA_BASE.DWG 22334-EP.DWG X-EXISTING UTILITIES.DWG WTP PIPING.DWG - Image: TANANA-26-93-2.5'PIXEL.TIF TANANA-26-93-2.5'PIXEL.TIF TODD B SIG.TIF
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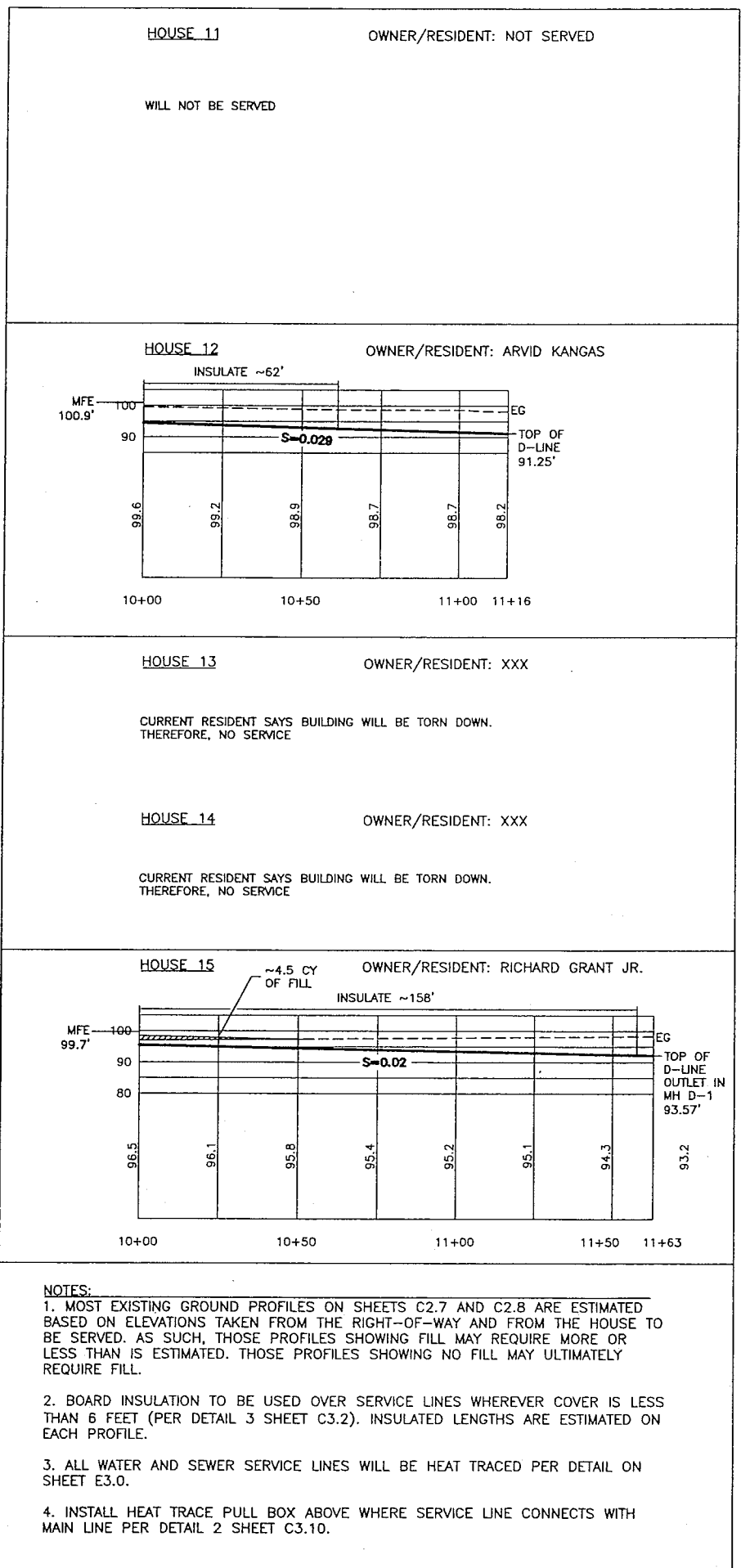
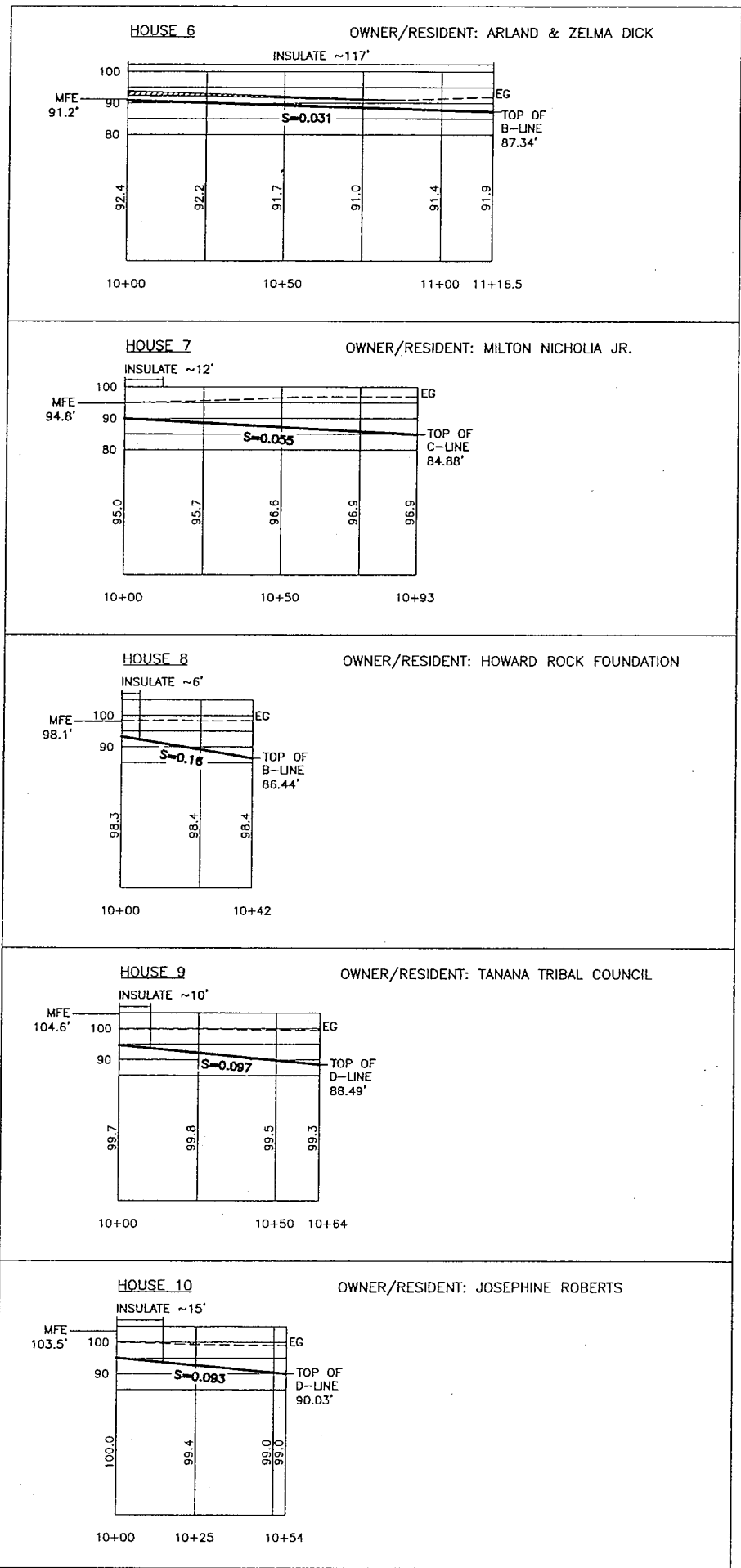
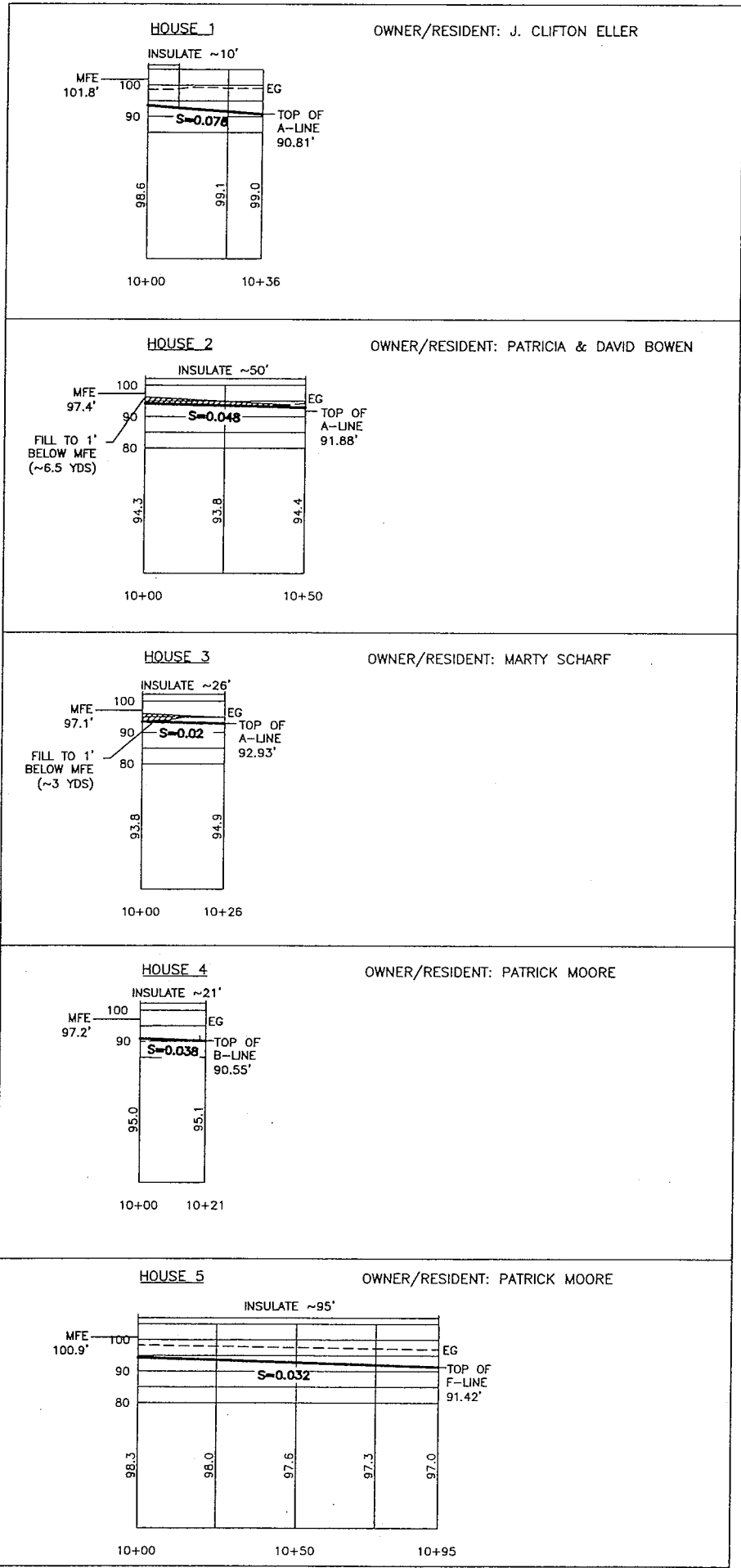


- NOTES
1. CONTRACTOR TO FIELD LOCATE SERVICE CONNECTIONS
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VILLAGE SAFE WATER	
	
	
	
Too'gha Inc. Tanana Water and Sewer Extension	
F-LINE WATER AND SEWER PLAN AND PROFILE	
Project No. 13806	BY DATE
Date JULY 2005	REVISION
Designed JG	
Drawn JU	
Approved TB	
Sheet No. C2.6	
SHEET 14 OF 29	

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NAME _____ DATE _____

VILLAGE SAFE WATER

STATE OF ALASKA
49th
TODD B. BETHARD
No. CE-10463
REGISTERED PROFESSIONAL ENGINEER

HDR
HDR Alaska, Inc.

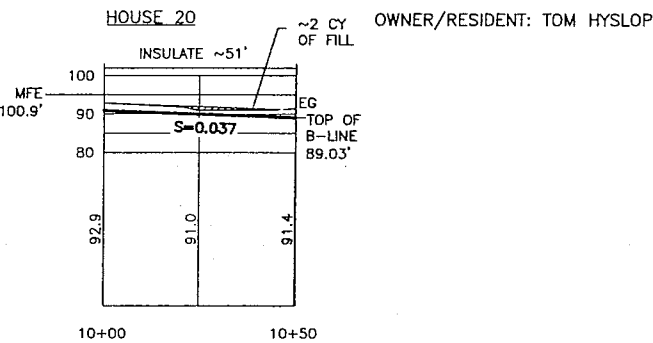
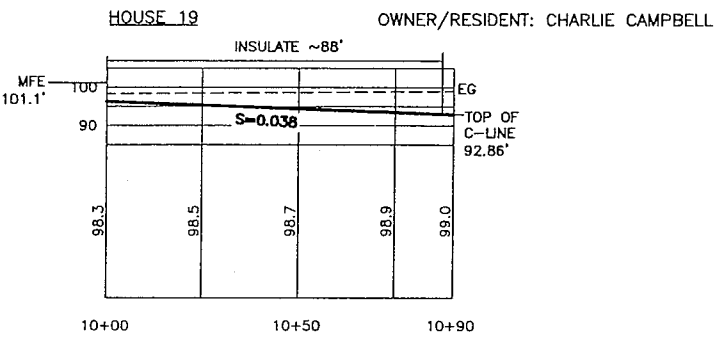
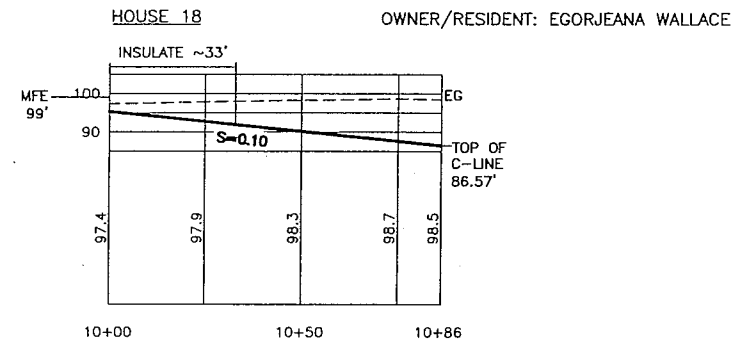
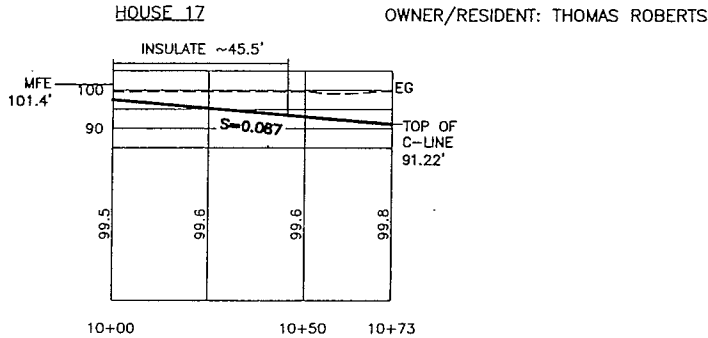
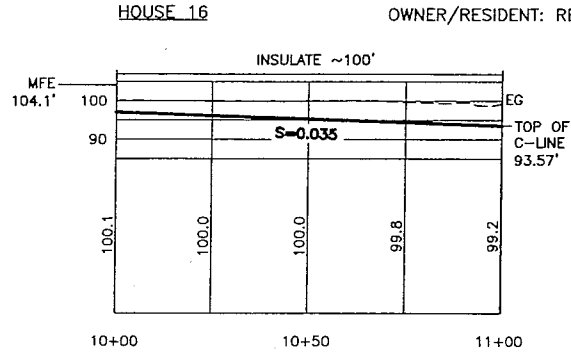
Too'gha Inc.
Tanana Water and Sewer Extension
SERVICE CONNECTION PROFILES

REVISION	BY	DATE

Project 13806
No. _____
Date JULY 2006
Designed JC
Drawn JJ
Approved TB

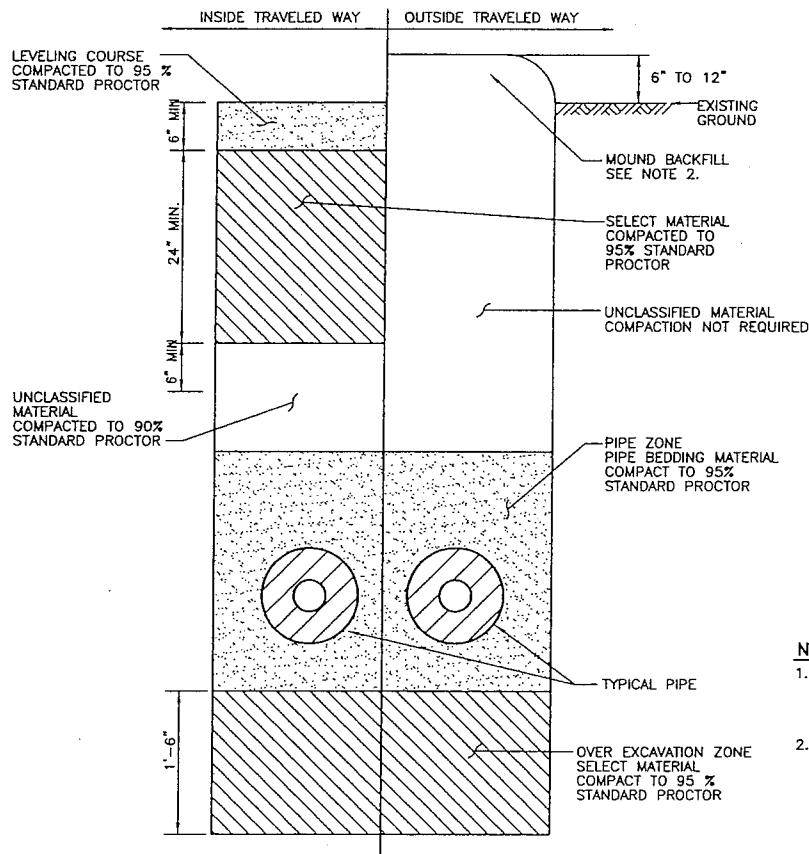
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SHEET 15 OF 29

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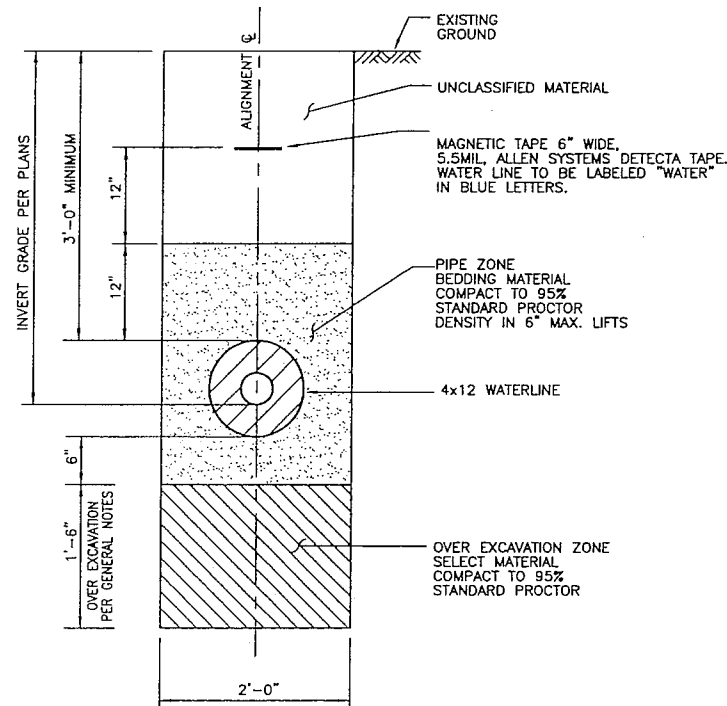
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Project No. 13806	Sheet No. C2.8	DATE JULY 2006	DESIGNED JC	DRAWN JJ	APPROVED TB
SHEET 16 OF 29					
REVISION					
BY DATE					
TOO'GHA Inc. Tanana Water and Sewer Extension SERVICE CONNECTION PROFILES					
STATE OF ALASKA 49th 1000 B. BETHARD No. 02-10463 REGISTERED PROFESSIONAL ENGINEER					
VILLAGE SAFE WATER					
RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.					
NAME DATE					

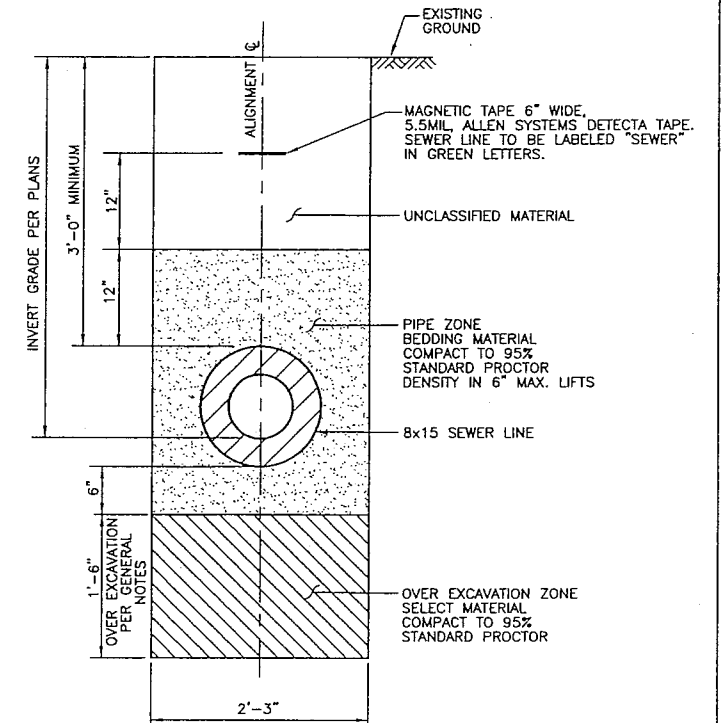


INSIDE / OUTSIDE TRAVELED WAY TYPICAL TRENCH DETAIL
SCALE: 1" = 1'-0"

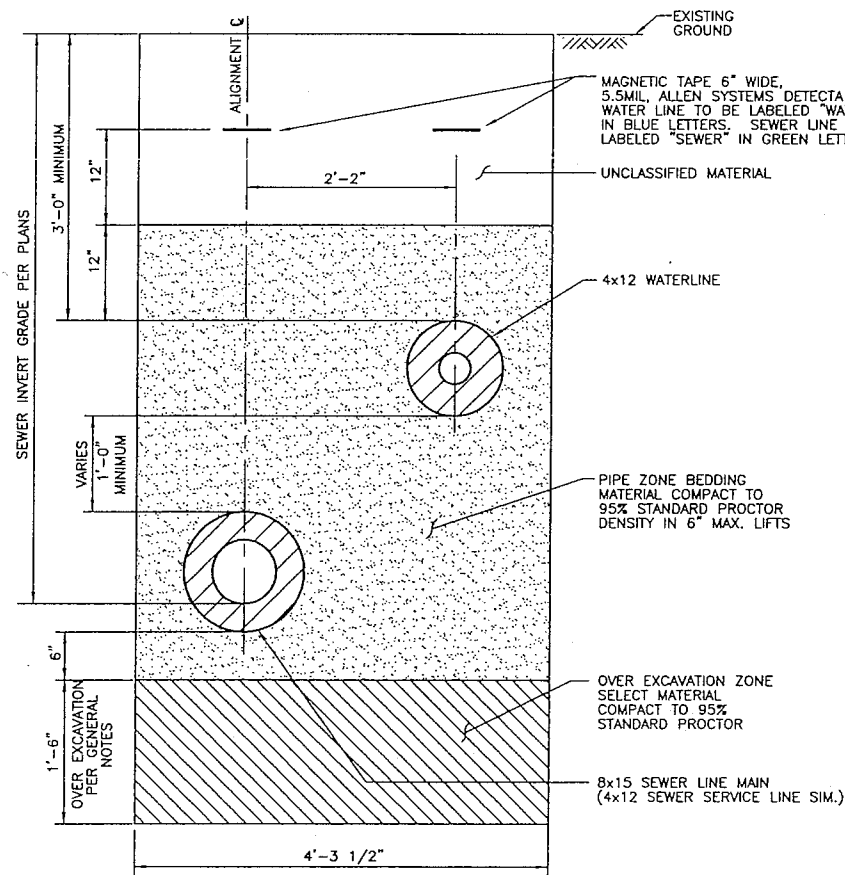
- NOTES:
1. TRAVELED WAYS INCLUDE PARKING LOTS, ROAD SURFACES, TOE OF ROADWAYS, AND DRIVEWAYS. RECONSTRUCT TRAVELED WAY WHERE DISTURBED BY TRENCH EXCAVATION.
 2. UNCLASSIFIED MATERIAL MAY BE USED ABOVE THE PIPE ZONE FOR TRENCHES OUTSIDE OF THE TRAVELED WAY. MOUND EXCESS MATERIAL ABOVE TRENCH TO COMPENSATE EXPECTED SETTLEMENT. FUTURE GRADING OR FILLING MAY BE REQUIRED TO PRODUCE A LEVEL SURFACE.



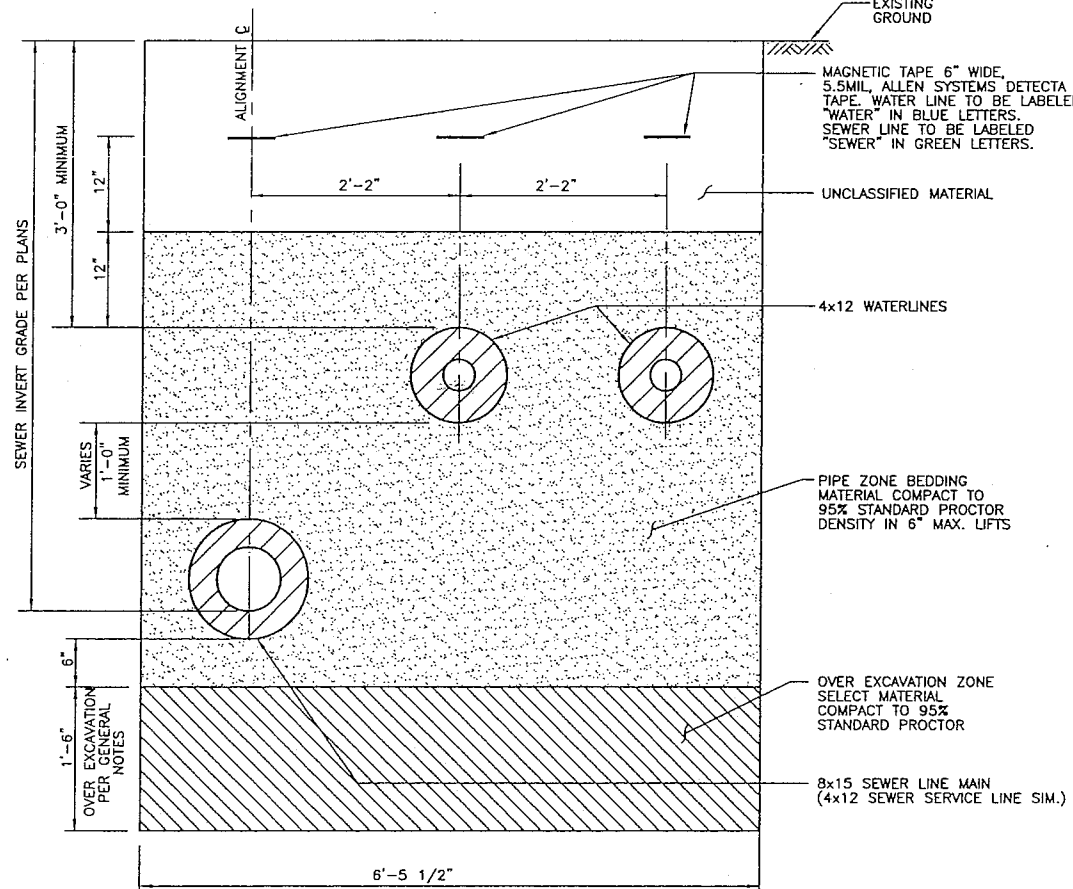
SINGLE WATERLINE TRENCH SECTION
SCALE: 1" = 1'-0"



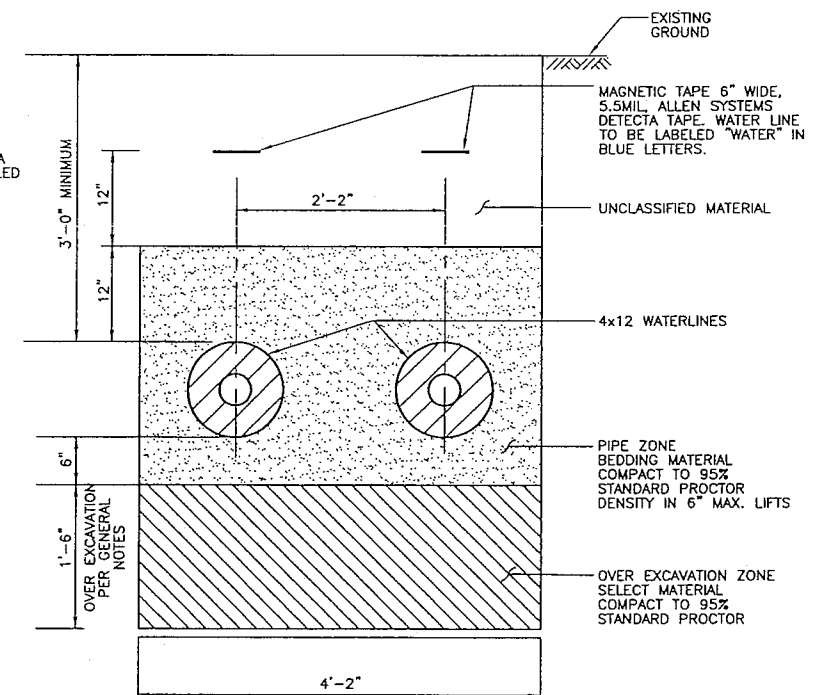
SEWER ONLY TRENCH SECTION
SCALE: 1" = 1'-0"



ONE SEWER LINE AND ONE WATERLINE TRENCH SECTION
SCALE: 1" = 1'-0"



ONE SEWER LINE AND TWO WATERLINES TRENCH SECTION
SCALE: 1" = 1'-0"



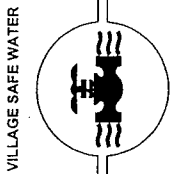
TWO WATERLINES TRENCH SECTION
SCALE: 1" = 1'-0"

TRENCH SECTION SHEET NOTES

1. REFER TO DETAIL 1/C3.1 FOR TRENCH CONSTRUCTION REQUIREMENTS INSIDE OR OUTSIDE OF TRAVELED WAY. THIS INFORMATION IS NOT SHOWN ON TRENCH SECTIONS "A" THROUGH "I" FOR CLARITY.
2. SEE GENERAL NOTES ON C2.0 FOR TRENCH REQUIREMENTS AND PIPE TRENCH MATERIAL SPECIFICATIONS.
3. PLAN AND PROFILE REFERENCE ALIGNMENT IS BASED ON CENTER OF SEWER LINE ALIGNMENT AS INDICATED IN SECTION DETAILS.

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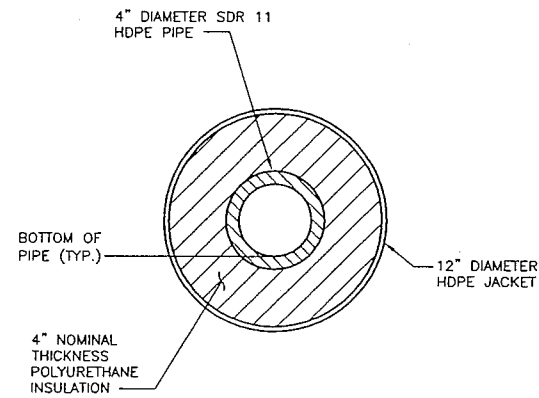


Too'gha Inc.
Tanana Water and Sewer Extension
TRENCH SECTIONS

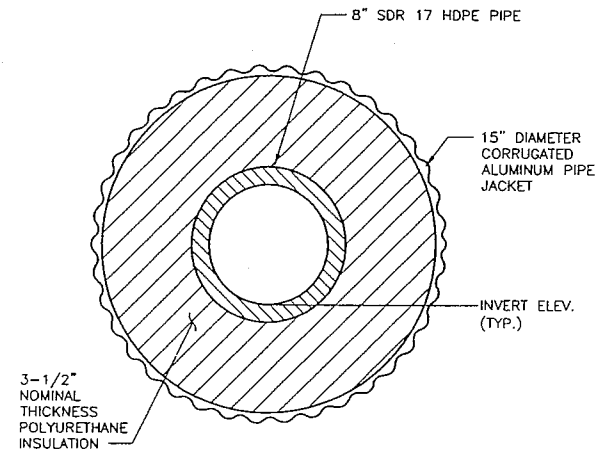
REVISION	BY	DATE

Project 13806	By DATE
No. 1	
Date JULY 2006	
Designed JG	
Drawn JU	
Approved TB	

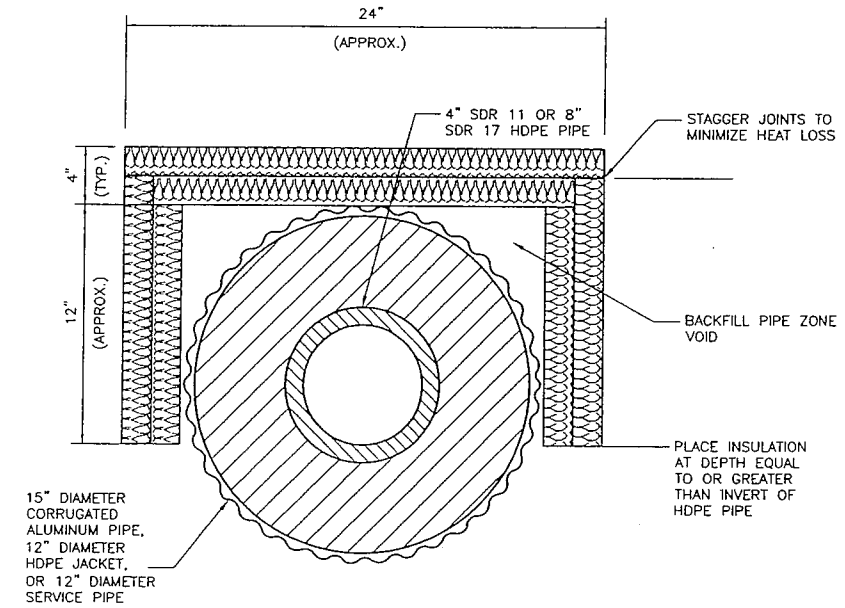
Sheet No. C3.1
SHEET 17 OF 29



WATER MAIN PIPE SECTION 1
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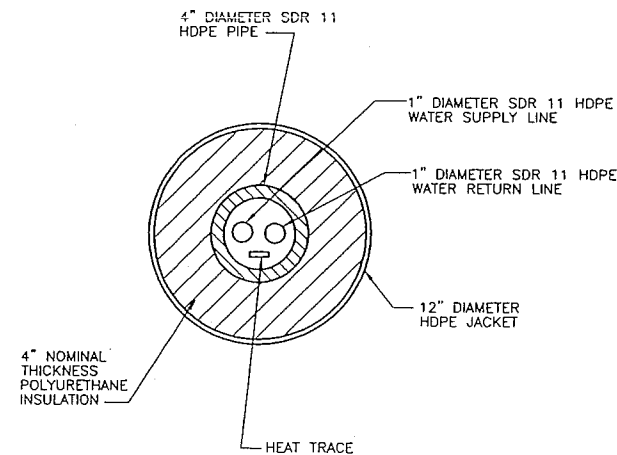
SEWER MAIN PIPE SECTION 2
NOT TO SCALE



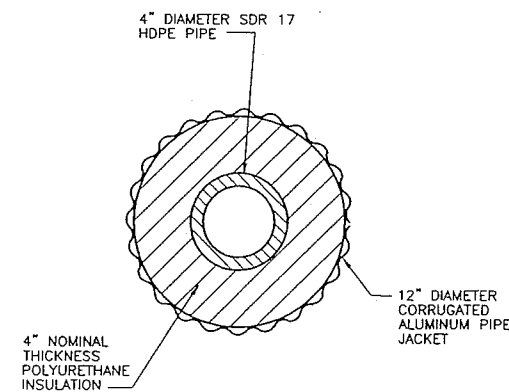
NOTE:

1. APPLY THIS DETAIL WHEREVER LESS THAN 6 FEET OF COVER IS AVAILABLE FOR SEWER LINES AND 4 FEET OF COVER FOR WATER LINES
2. INSULATION SHOULD HAVE A R VALUE OF 10

PIPE INSULATION DETAIL 3
NOT TO SCALE



WATER SERVICE CARRIER PIPE SECTION 4
NOT TO SCALE

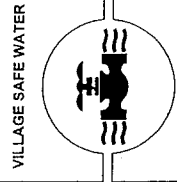


SEWER SERVICE PIPE SECTION 5
NOT TO SCALE

PIPE MATERIAL SPECIFICATIONS

CORE PIPE:	HIGH-DENSITY POLYETHYLENE (HDPE), CELL CLASSIFICATION PE345444 COMPOSITION CLASS C PER ASTM D3350.
INSULATION:	RIGID CLOSED-CELL POLYURETHANE FOAM, WITH DENSITY 3.0-4.0 POUNDS PER CUBIC FEET.
HDPE JACKET:	HDPE, CELL CLASSIFICATION PE345444 COMPOSITION CLASS C PER ASTM D3350, 175 MIL THICKNESS.
ALUMINUM JACKET:	16 GAGE INTERNAL HELICAL LOCK SEAM ALUMINUM PIPE, ALUMINUM ALLOY MATERIAL 3004-H34 WITH A 7072 COATING ON THE OUTSIDE JACKET OR 5052-H32.
HEAT TRACE CHANNEL:	FULLY ENCLOSED CHANNEL, POLYETHYLENE (PE) OR ACRYLONITRILE BUTADIENE STYRENE (ABS).
HEAT SHRINK WRAP:	36-INCH WIDE WRAP AND CLOSURE STRIP, CANUSAWRAP WTC-B-900-BK, OR APPROVED EQUAL. WRAP DIMENSION SHALL BE THE ACTUAL PIPE DIAMETER PLUS A 4-INCH OVERLAP.
POLYMER COATING:	TWO COMPONENT, 100 MIL MINIMUM THICKNESS, 100% SOLIDS POLYUREA ELASTOMER, POLYSHIELD SS-100 HI-E, OR APPROVED EQUAL.

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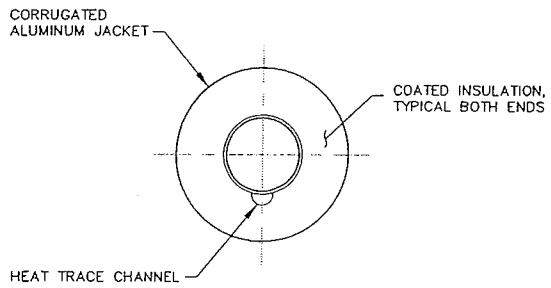
Tougha Inc.
Tanana Water and Sewer Extension
PIPE SECTIONS

REVISION	BY	DATE

Project No.	13806
Date	JULY 2006
Designed	JG
Drawn	JU
Approved	TB

Sheet No. **C3.2**
SHEET 18 OF 29

ISSUED FOR CONSTRUCTION

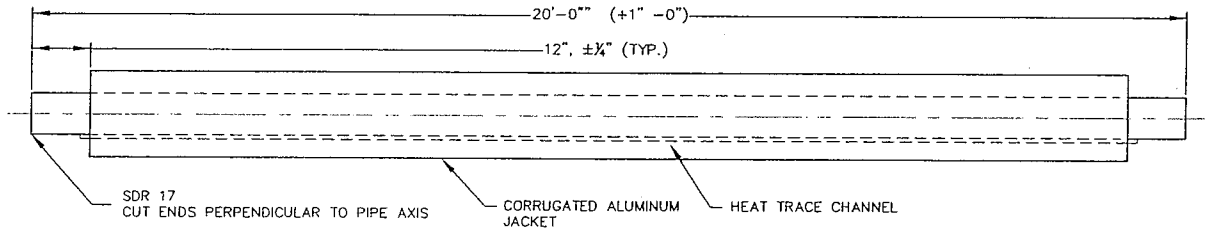


END VIEW

NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

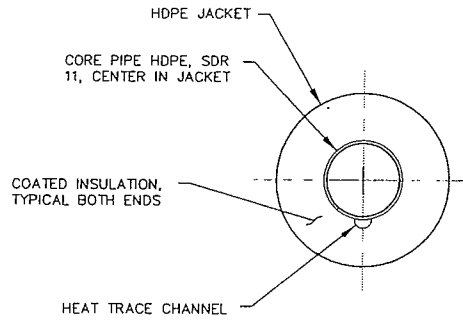
NOMINAL INSULATED PIPE	INNER CORE PIPE O.D.	NOMINAL OUTER JACKET
4"	4.500"	12" +1/4" -0"
8"	8.625"	15" +1/4" -0"



SIDE VIEW

INSULATED POLYETHYLENE GRAVITY SEWER PIPE WITH HEAT TRACE

NOT TO SCALE

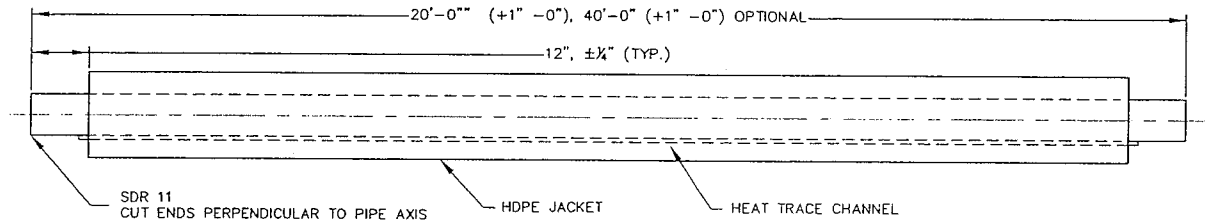


END VIEW

NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. HEAT TRACE CHANNEL TO BE FOAMED INTO PLACE ON CARRIER PIPE.
3. COATED INSULATION RELIEF IS 1/4" ACROSS THE FACE AND 1/8" AT THE PIPE ENTER LINE.

NOMINAL INSULATED PIPE	INNER CORE PIPE O.D.	NOMINAL OUTER ALUMINUM JACKET	OUTER HDPE JACKET
4"	4.500"	12"	12.80"

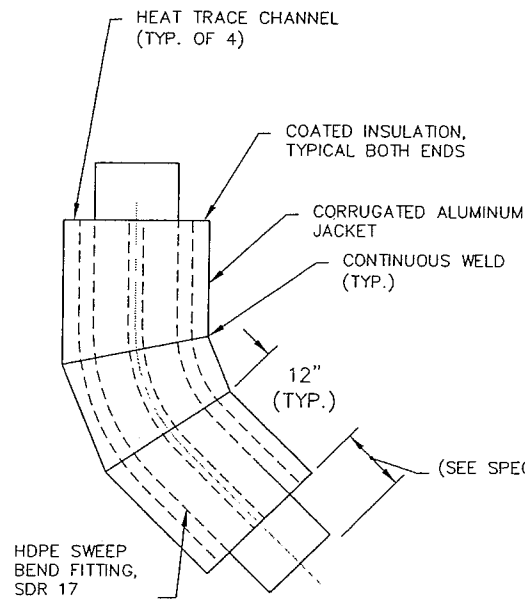


SIDE VIEW

INSULATED POLYETHYLENE PRESSURE WATER PIPE WITH HEAT TRACE

NOT TO SCALE





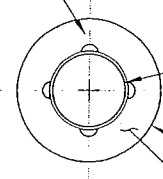
SIDE VIEW

NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

NOMINAL INSULATED PIPE	INNER CORE PIPE O.D.	NOMINAL OUTER JACKET
8"	8.625"	15" +1/4" -0"

HEAT TRACE CHANNEL (TYP. OF 4)



SPIGOT END VIEW

GRAVITY SEWER MAIN 45° BEND DETAIL

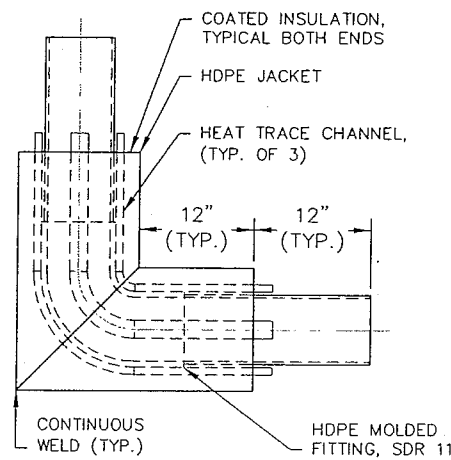
NOT TO SCALE



NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. HEAT TRACE CHANNEL TO BE FOAMED INTO PLACE ON CARRIER PIPE.
3. HEAT TRACE CHANNEL ON INSIDE & OUTSIDE RADIUS AND ALONG ONE SIDE.
4. DETAIL SIMILAR FOR PREINSULATED 45° BENDS.

NOMINAL INSULATED PIPE	INNER CORE PIPE O.D.	INNER CORE PIPE O.D.	OUTER HDPE JACKET
4"	4.500"	12"	12.80"



WATER MAIN 90° BEND DETAIL

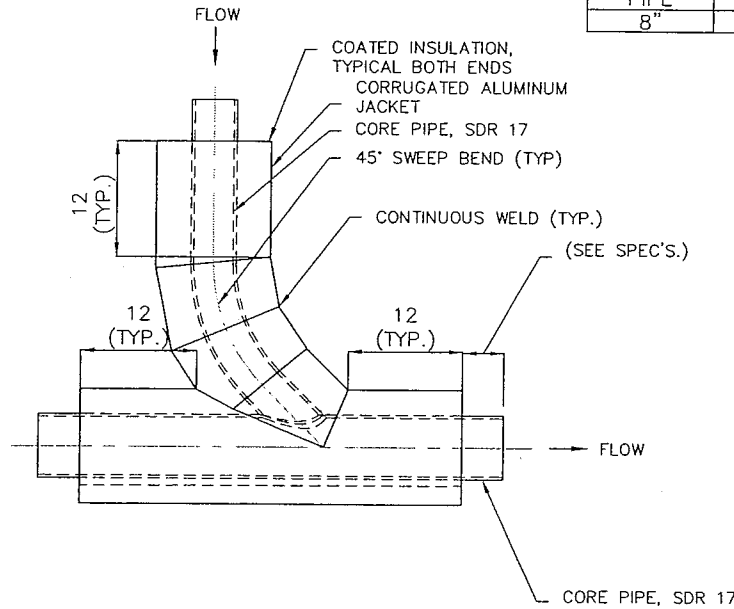
NOT TO SCALE



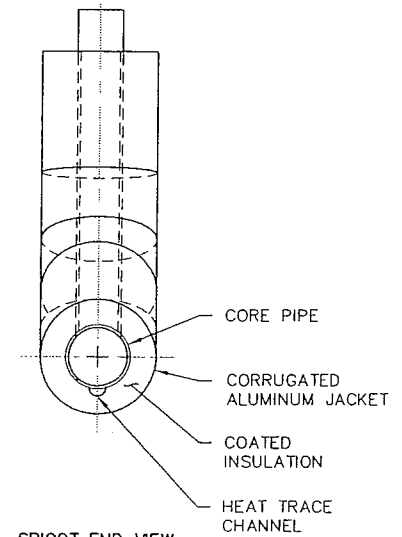
NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

NOMINAL INSULATED PIPE	INNER CORE PIPE O.D.	NOMINAL OUTER JACKET
8"	8.625"	15" +1/4" -0"



SIDE VIEW



SPIGOT END VIEW

GRAVITY SEWER MAIN CLEANOUT DETAIL

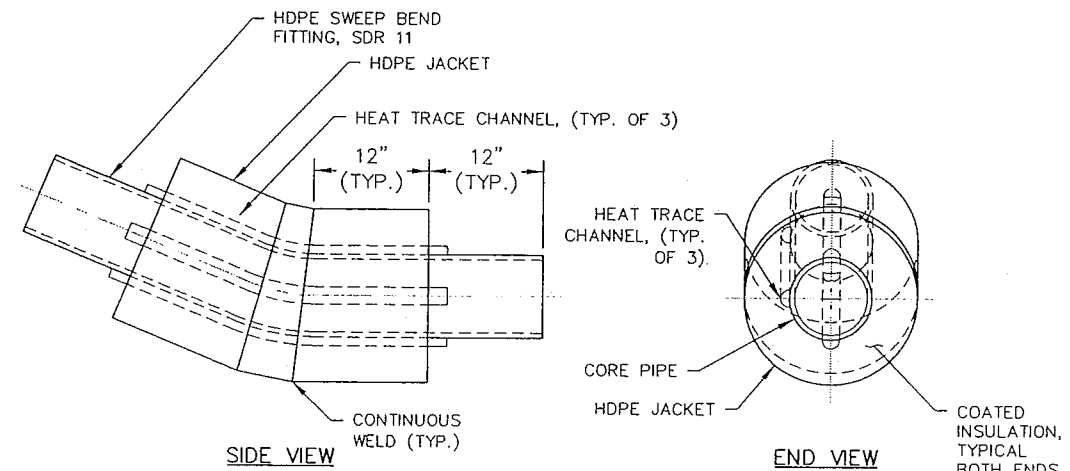
NOT TO SCALE



NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. HEAT TRACE CHANNEL TO BE FOAMED INTO PLACE ON CARRIER PIPE.
3. HEAT TRACE CHANNEL ON INSIDE & OUTSIDE RADIUS AND ALONG ONE SIDE.

NOMINAL INSULATED PIPE	INNER CORE PIPE O.D.	INNER CORE PIPE O.D.	OUTER HDPE JACKET
4"	4.500"	12"	12.80"



SIDE VIEW

END VIEW

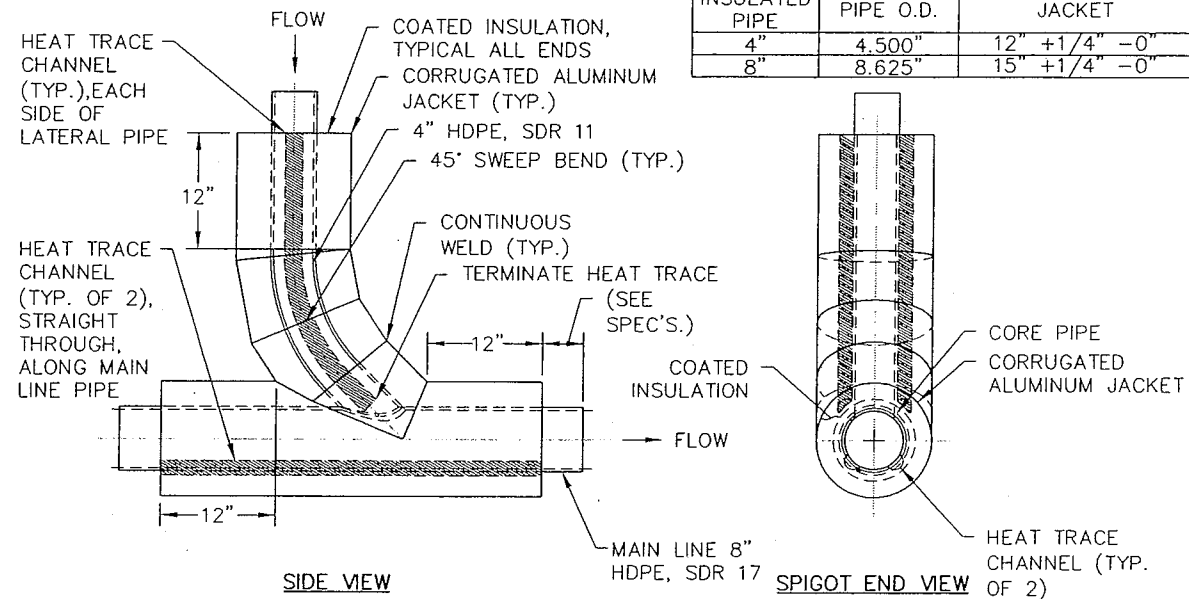
WATER MAIN 22.5° BEND DETAIL

NOT TO SCALE



NOTES:

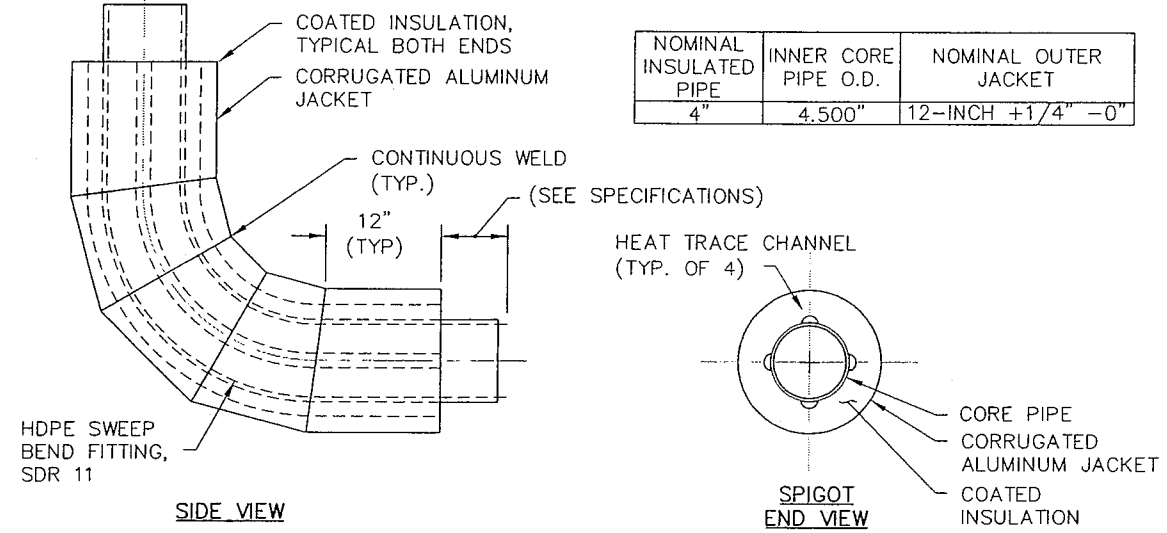
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



SEWER SERVICE TEE DETAIL
NOT TO SCALE

NOTES:

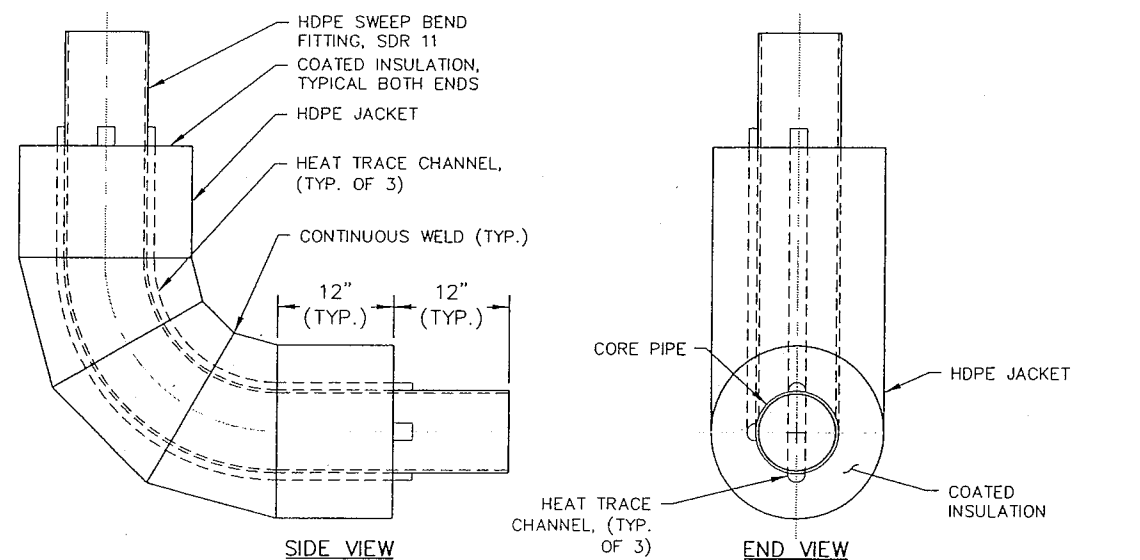
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. DETAIL SIMILAR FOR PREINSULATED 22.5° BEND



SEWER SERVICE LINE 92° BEND DETAIL
NOT TO SCALE

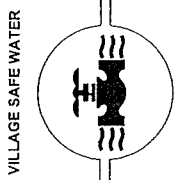
NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. HEAT TRACE CHANNEL TO BE FOAMED INTO PLACE ON CARRIER PIPE.
3. HEAT TRACE CHANNEL ON INSIDE & OUTSIDE RADIUS AND ALONG ONE SIDE.



WATER SERVICE LINE 90° BEND DETAIL
NOT TO SCALE

RECORD DRAWING CERTIFICATE
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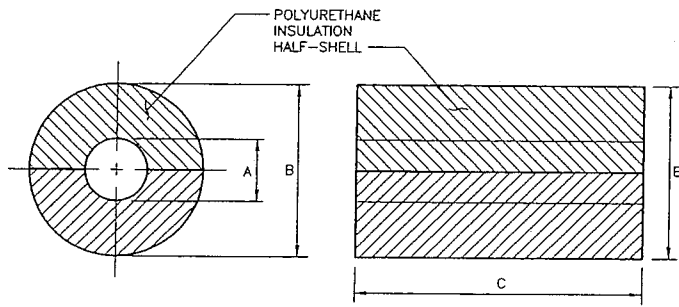
Too'gha Inc.
Tanana Water and Sewer Extension
SERVICE LINE PIPE FITTING
DETAILS

REVISION	BY	DATE

Project No.	13806
Date	JULY 2006
Designed	JG
Drawn	JJ
Approved	TB

Sheet No. **C3.5**
SHEET 21 OF 29

ISSUED FOR CONSTRUCTION



END VIEW

SIDE VIEW

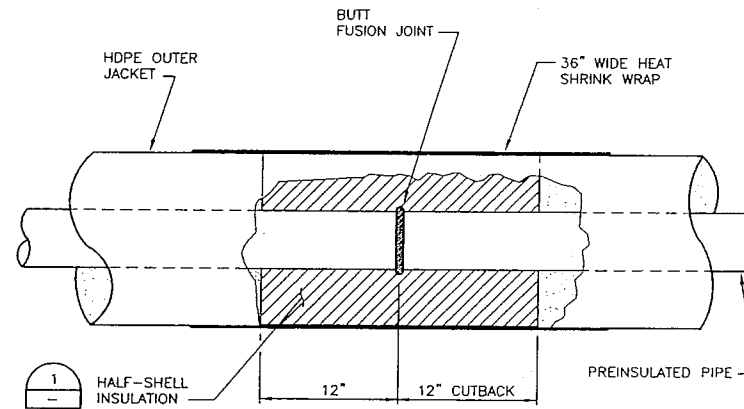
HALF SHELL	A	B	C
4x12	4-5/8"	13"	24"
8x15	8-3/4"	15"	24"

NOTE:

1. SEE FORCE MAIN SEWER JOINT DETAIL FOR HEAT TRACE CONDUIT CUTOUT REQUIREMENTS.
2. MANUFACTURER SHALL SUPPLY HALF-SHELLS PRECUT TO DIMENSIONS SHOWN.

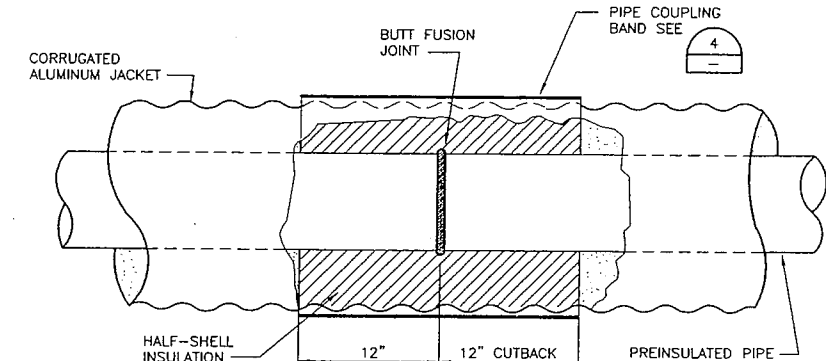
INSULATION HALF-SHELL DETAIL

NOT TO SCALE



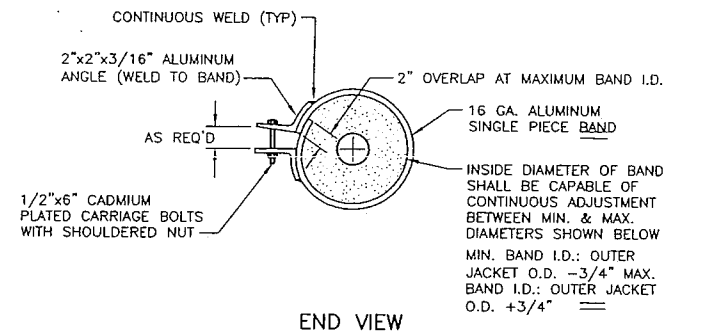
WATER LINE JOINT DETAIL

NOT TO SCALE

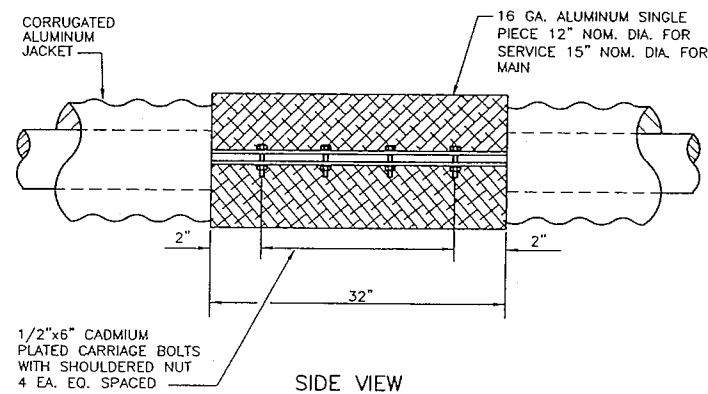


GRAVITY SEWER LINE JOINT DETAIL

NOT TO SCALE



END VIEW



SIDE VIEW

PIPE COUPLING BAND DETAIL

NOT TO SCALE



RECORD DRAWING CERTIFICATE

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VILLAGE SAFE WATER



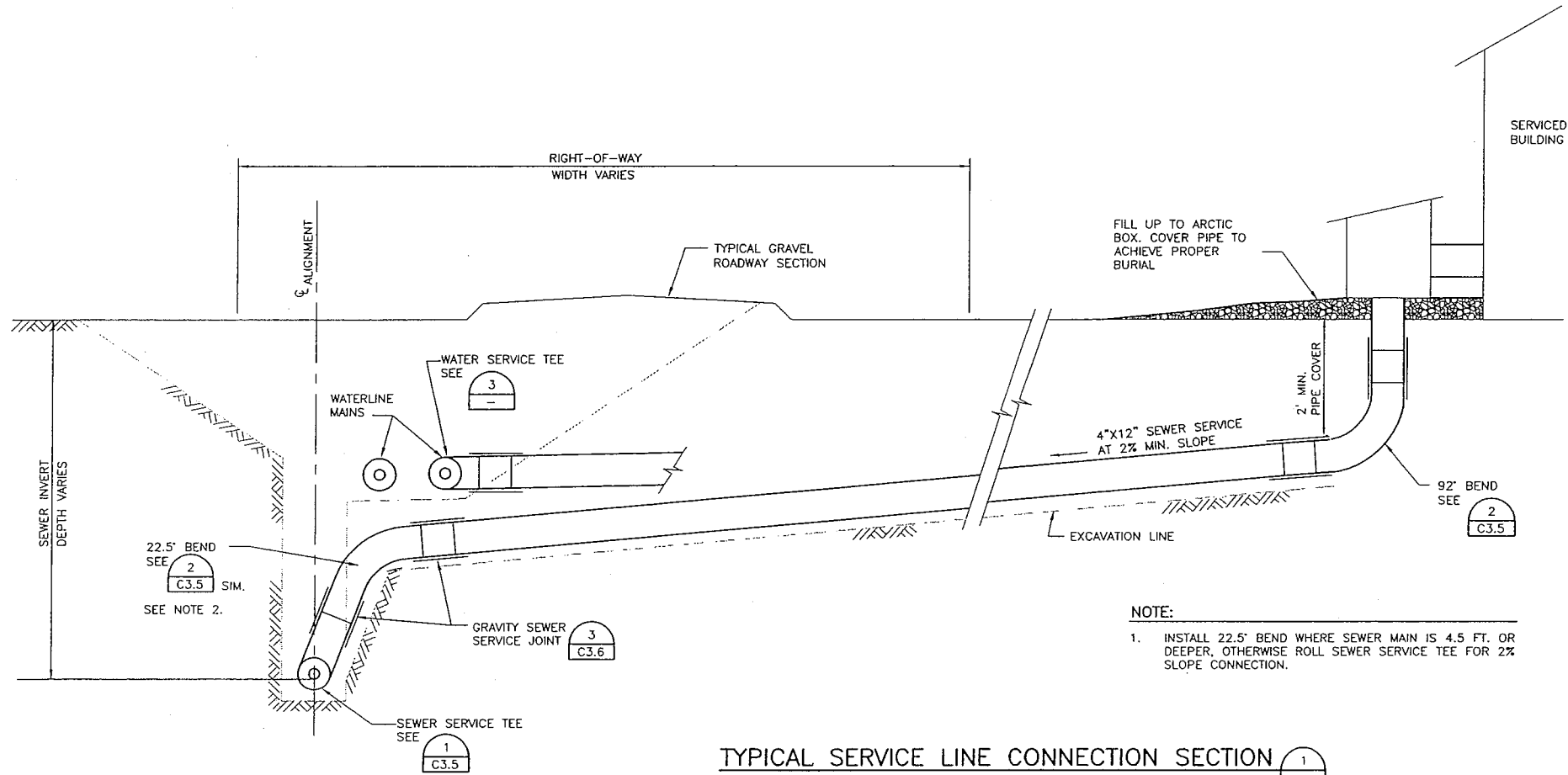
Too'gha Inc.

Tanana Water and Sewer Extension

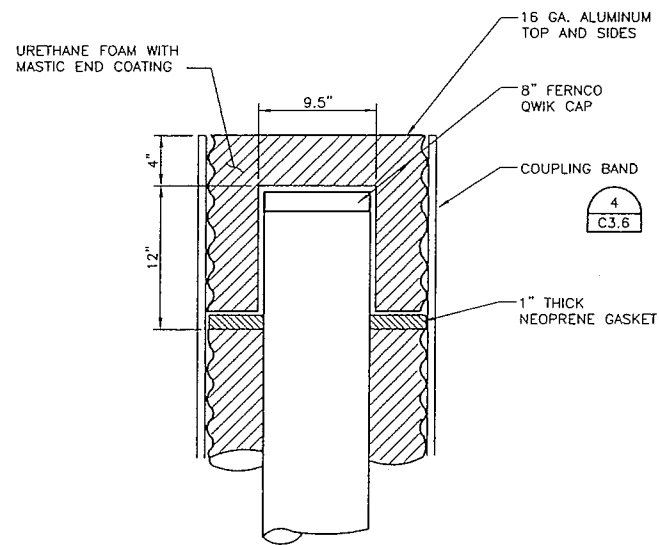
INSULATION AND PIPE JOINT DETAILS

REVISION	BY	DATE

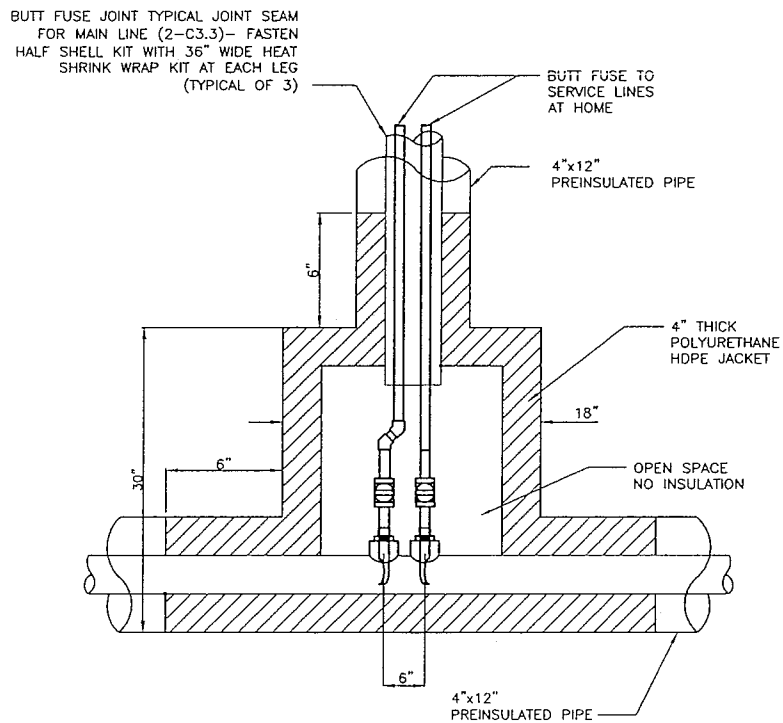
Project No.	13806
Date	JULY 2006
Designed	JG
Drawn	JJ
Approved	TB



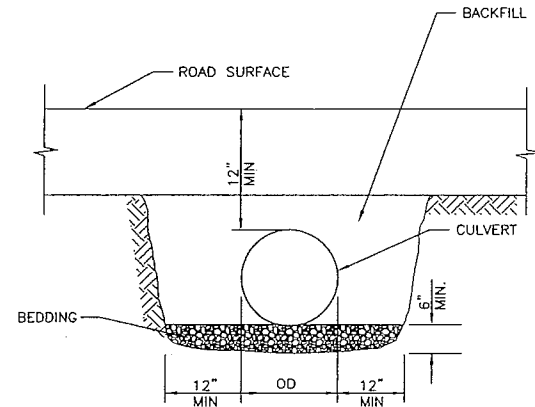
TYPICAL SERVICE LINE CONNECTION SECTION
NOT TO SCALE



SEWER MAIN CLEANOUT CAP DETAIL
NOT TO SCALE



WATER SERVICE TEE DETAIL
NOT TO SCALE



NOTE:

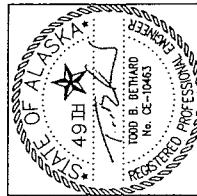
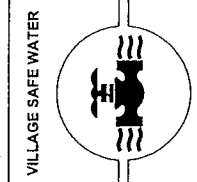
1. PROVIDE INSULATION WHERE INDICATED ON PLAN AND PROFILE SHEETS

CULVERT CROSS SECTION DETAIL
NOT TO SCALE

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NAME _____ DATE _____



Tanana Water and Sewer Extension
SERVICE CONNECTION AND CLEANOUT DETAILS

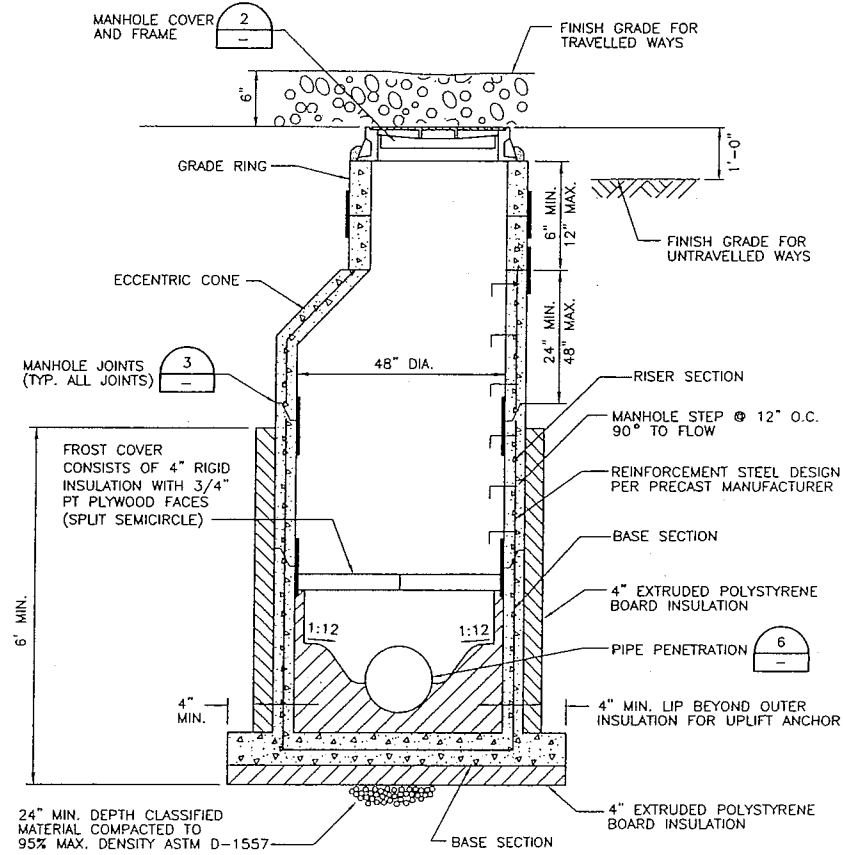
REVISION	BY	DATE

Project No. 13806
Date JULY 2006
Designed JG
Drawn JJ
Approved TB

Sheet No. **C3.8**
SHEET 24 OF 29

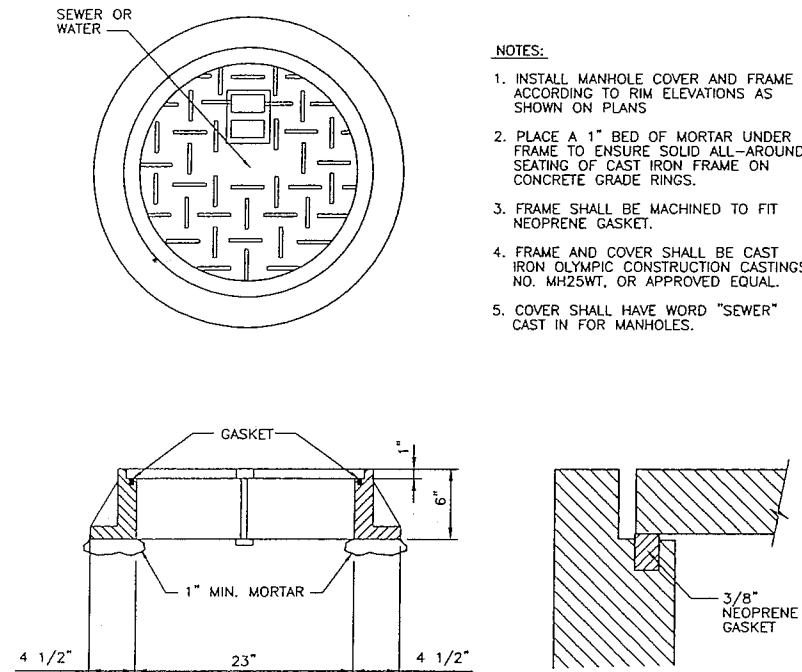
ISSUED FOR CONSTRUCTION

User: JJEFFERI Jul 17, 2006 - 4
Drawing: C:\WORKING\SEA\JEFFERI\DM521956\TANANA-C3-1-10_VSW_STANDARDS.DWG - Layout: C3.9
Xref: 22X34-V.DWG - Images: TODD B SIG.TIF



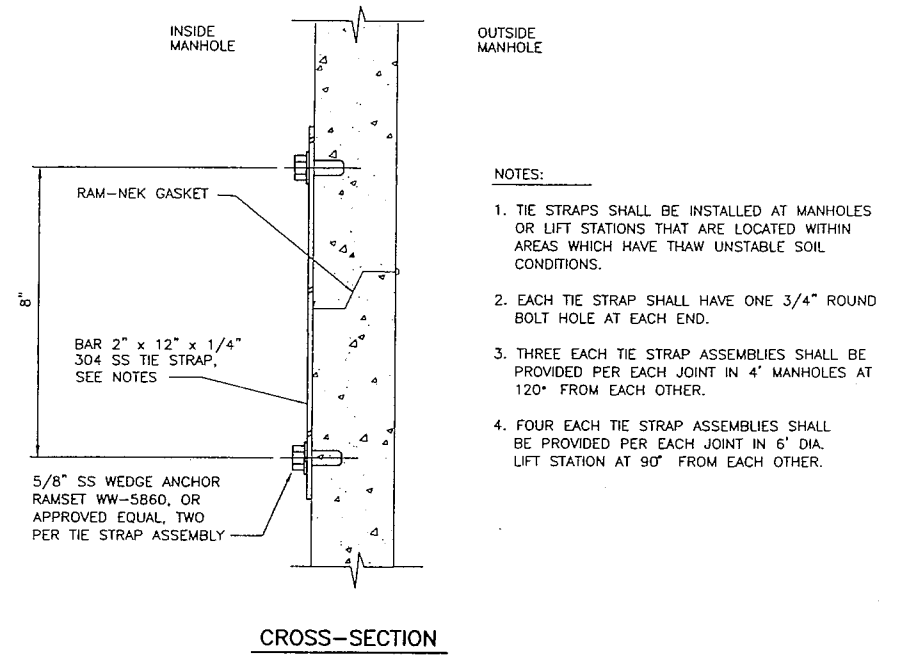
MANHOLE DETAIL

NOT TO SCALE



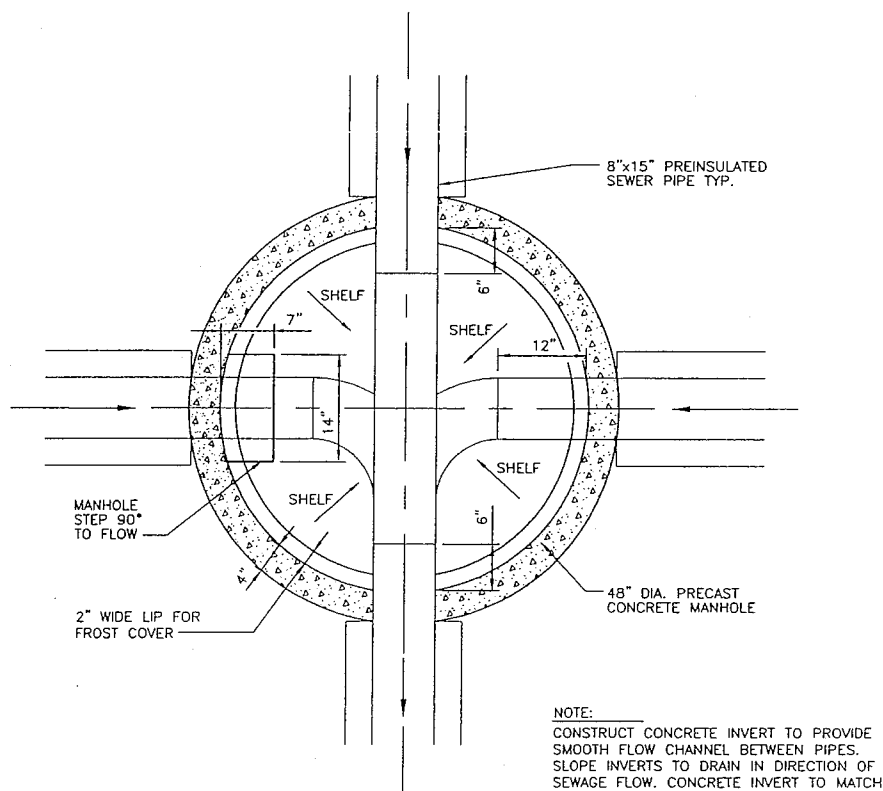
MANHOLE COVER AND FRAME

NOT TO SCALE



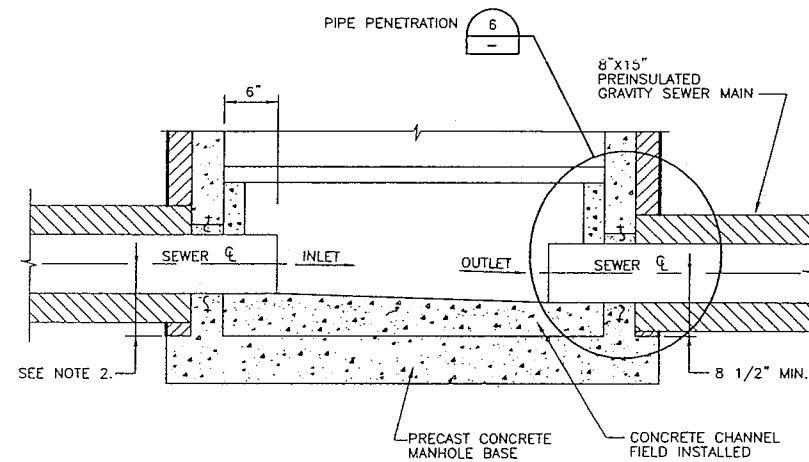
MANHOLE TIE STRAPS DETAIL

NOT TO SCALE



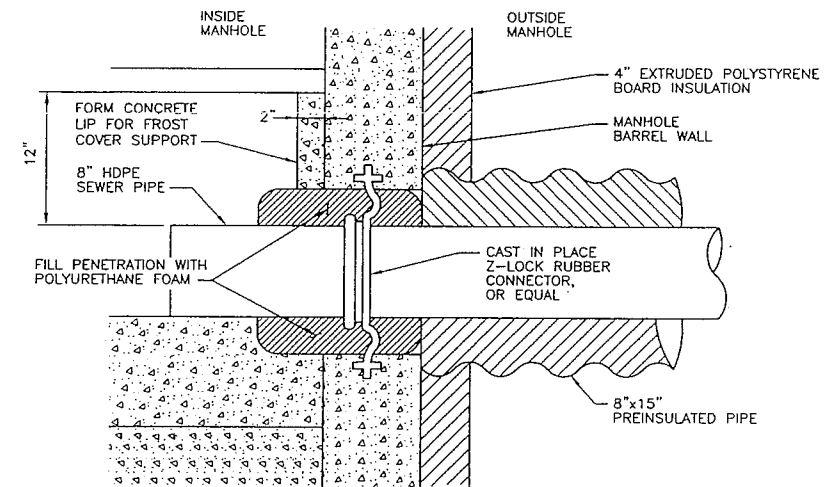
MANHOLE BASE PLAN

NOT TO SCALE



MANHOLE CHANNEL

NOT TO SCALE



PIPE PENETRATION DETAIL

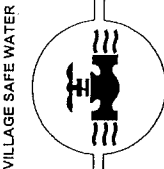
NOT TO SCALE

SANITARY MANHOLE NOTES:

1. PRECAST MANHOLE SECTIONS SHALL CONFORM TO ASTM C-478
2. PRECAST SECTIONS SHALL BE SELECTED TO PROVIDE THE CORRECT TOTAL HEIGHT WITH THE FEWEST JOINTS
3. RAM-NEK SEALANT, OR APPROVED EQUAL RUBBER GASKET SHALL BE INSTALLED AT ALL PRECAST JOINTS
4. MANHOLE STEPS SHALL BE 1/2" GRADE 60 STEEL REINFORCEMENT ROD ENCASED IN POLYPROPYLENE COPOLYMER PLASTIC. STEPS SHALL HAVE TREAD WIDTH OF 14"
5. MANHOLE SHALL BE WRAPPED WITH 2 LAYERS OF 6 MIL PLASTIC SHEETING PRIOR TO BACKFILL
6. ALL BACKFILL SHALL BE PLACED IN 6" LIFTS AND COMPACTED TO 95% MAX. DENSITY

ISSUED FOR CONSTRUCTION

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Too gha Inc.
Tanana Water and Sewer Extension

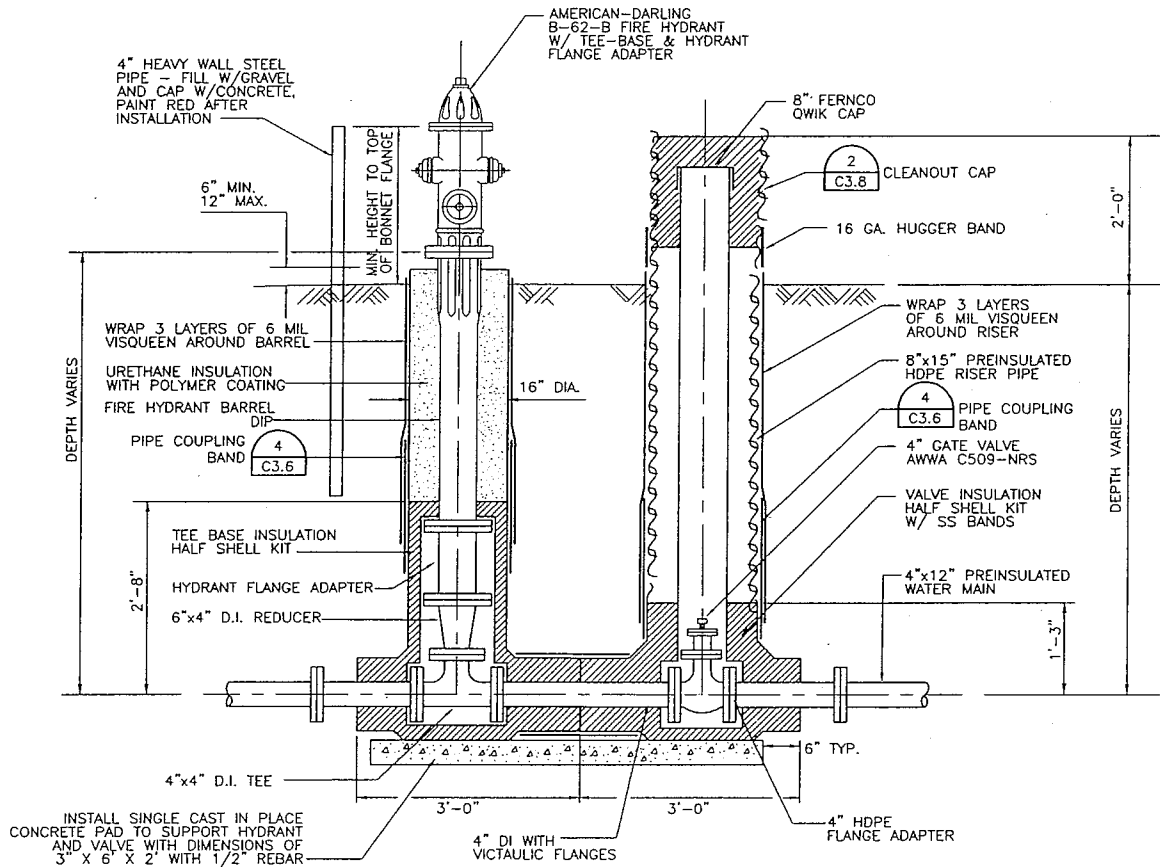
SEWER MANHOLE
DETAILS

REVISION	BY	DATE

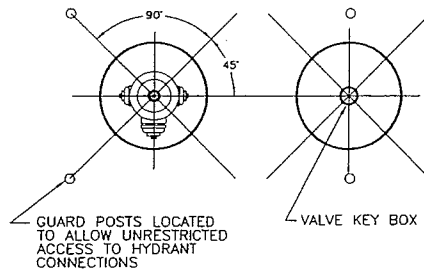
Project No. 13806	Date JULY 2006	Designed JG	Drawn JJ	Approved TB
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Sheet No.

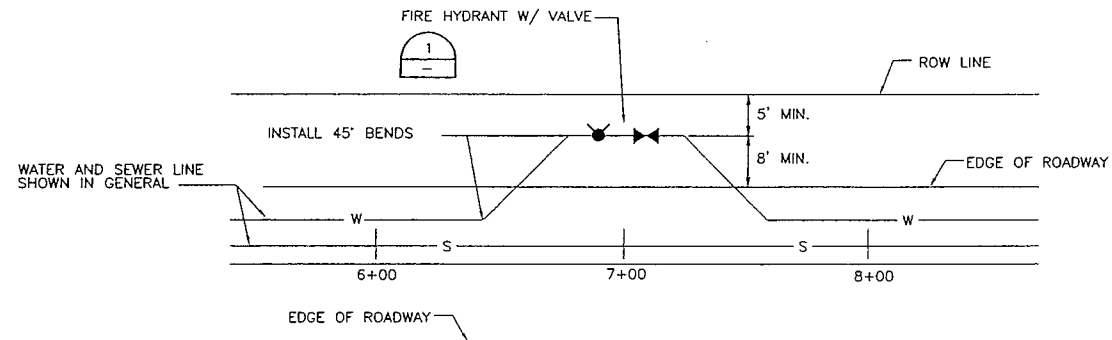
C3.9
SHEET 25 OF 29



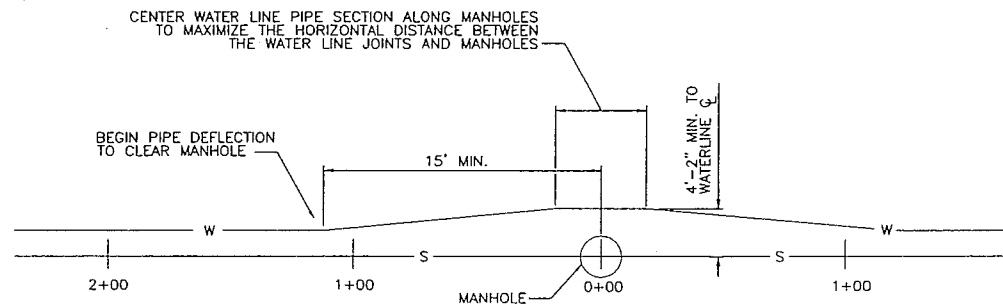
FIRE HYDRANT WITH GATE VALVE DETAIL 1
NOT TO SCALE



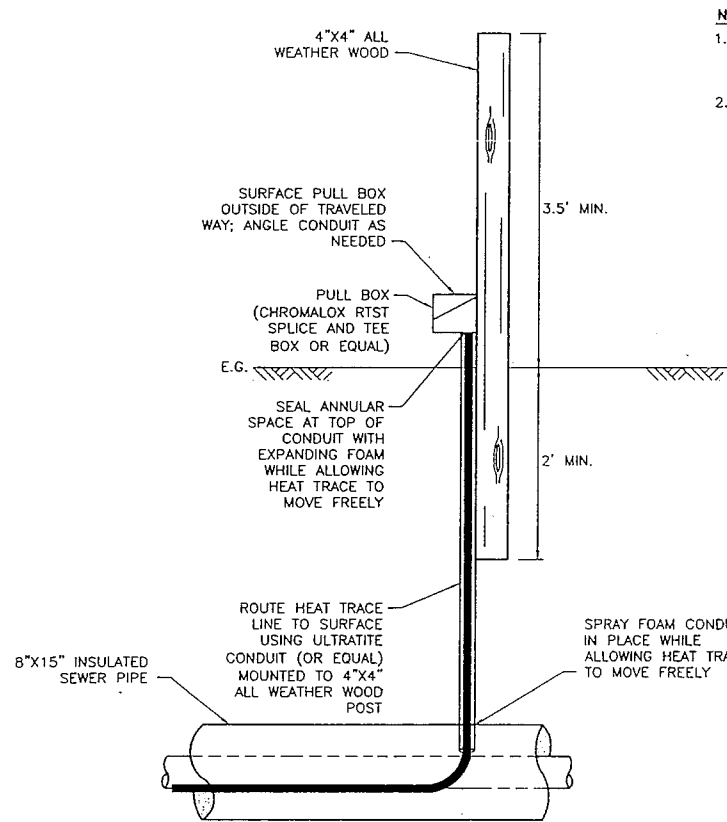
PLAN



HYDRANT LOCATION PLAN (TYP.)
NOT TO SCALE

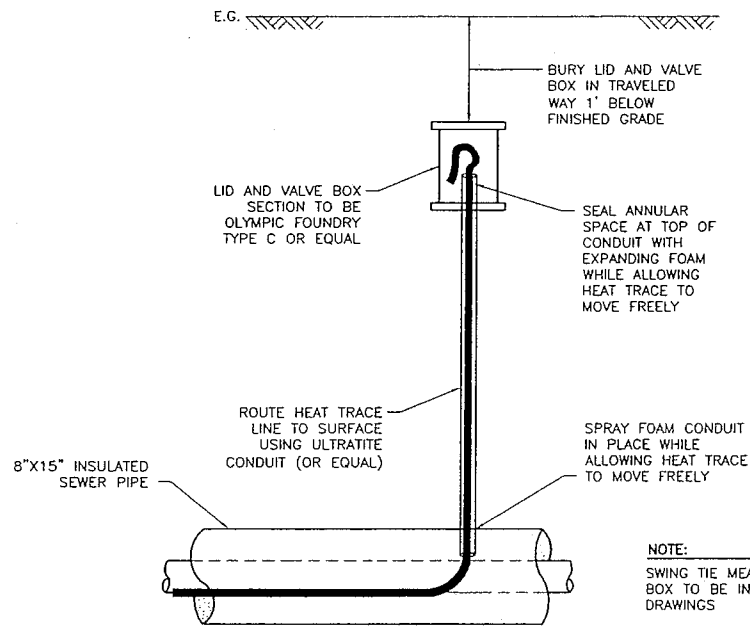


WATER LINE AROUND MANHOLE PLAN (TYP.)
NOT TO SCALE



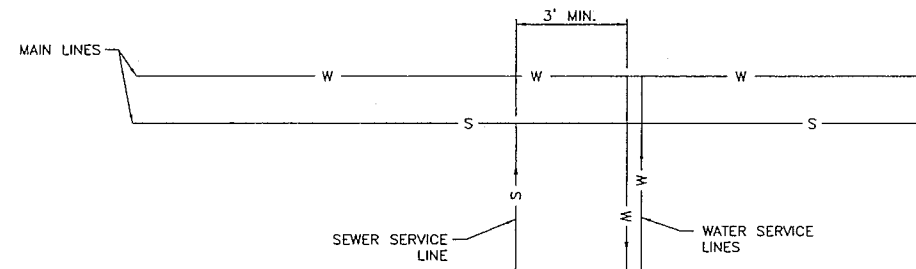
OUTSIDE OF TRAVELED WAY

- NOTE:
1. HEAT TRACE PULL BOXES TO BE INSTALLED FOR EACH SEWER SERVICE LINE AT THE CONNECTION POINT TO THE SEWER MAIN
 2. FIELD SUPERVISOR TO FIELD LOCATE PULL BOX LOCATION. PULL BOX MAY BE LOCATED IN OR OUT OF TRAVELED WAY TO BEST MEET SITE AND UNDERGROUND UTILITY CONDITIONS.



INSIDE OF TRAVELED WAY

HEAT TRACE PULL BOX DETAILS 2
NOT TO SCALE



- NOTE:
- A MINIMUM OF 3' FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE MUST BE MAINTAINED BETWEEN WATER SERVICE CONNECTION POINTS AND SEWER SERVICE CONNECTION POINTS TO ALLOW ROOM FOR EXCAVATION FOR FUTURE MAINTENANCE.

WATER AND SEWER SERVICE PAN VIEW (TYP.)
NOT TO SCALE

User: JEFFER Jul 17, 2006 - 4: Drawing: C:\PWORKING\SEA\JEFTEL... 4521955\TANANA-C3_1-10_VSW_STANDARDS.DWG - Layout: C3.10NEW Cels: 22X34-VDWG - Images: TODD B 5611P

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DATE

VILLAGE SAFE WATER

NAME

Project No. 13806

Date JULY 2006

Designed JG

Drawn JJ

Approved TB

Sheet No. C3.10

SHEET 26 OF 29

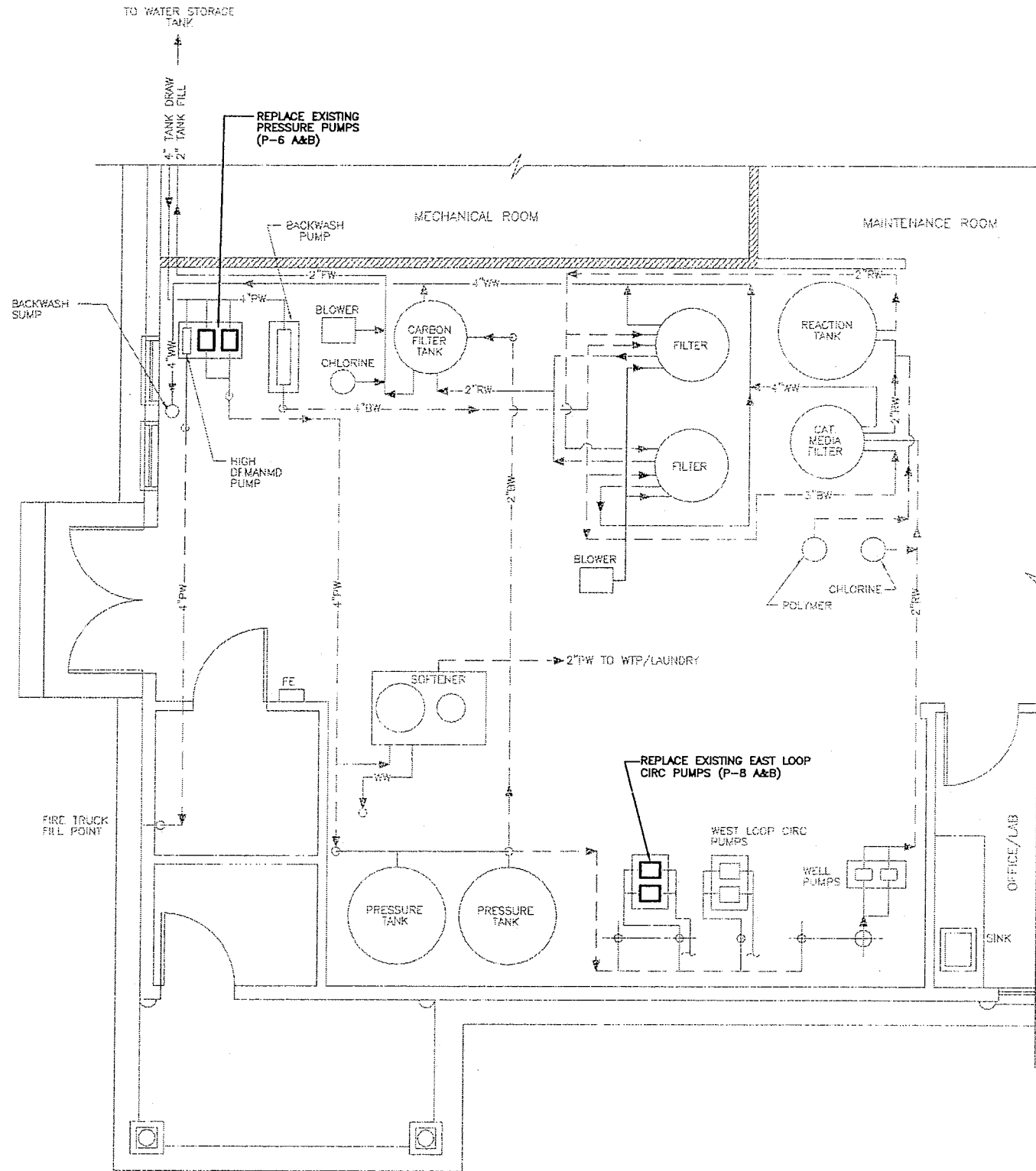
USER: JAEFFER Jul 17, 2006 -
Drawing: C:\PWORKING\SEA\JEFFER\TANANA-C1_0.C2_1-8.&C4_0.DWG - Layout: C4.0 (WTP)
XREF: TANANA_BASE.DWG 22X34-V.DWG X-EXISTING UTILITIES.DWG WTP PIPING.DWG - Images: TANANA-26-93-2.5.PIXEL.TIF TANANA-26-93-2.5.PIXEL.TIF TODD B SIG.TIF TODD B SIG.TIF

LEGEND

	FLOOR PIPING
	OVERHEAD PIPING

ABBREVIATIONS

BW	BACKWASH WATER
FW	FILTERED WATER
PW	POTABLE WATER
RW	RAW WATER
WW	WASTE WATER

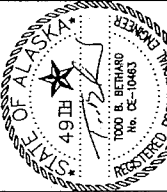


WTP EQUIPMENT LAYOUT

NOT TO SCALE

REPLACEMENT PUMPS			
PUMP	HORSEPOWER	DESIGN CAPACITY	PUMP SELECTION
P-6 A&B	5	54 GPM @ 185'	GRUNDFOS CR10 5 STAGE OR EQUAL
P-8 A&B	1.5	47 GPM @ 81'	GRUNDFOS CR10 2 STAGE OR EQUAL

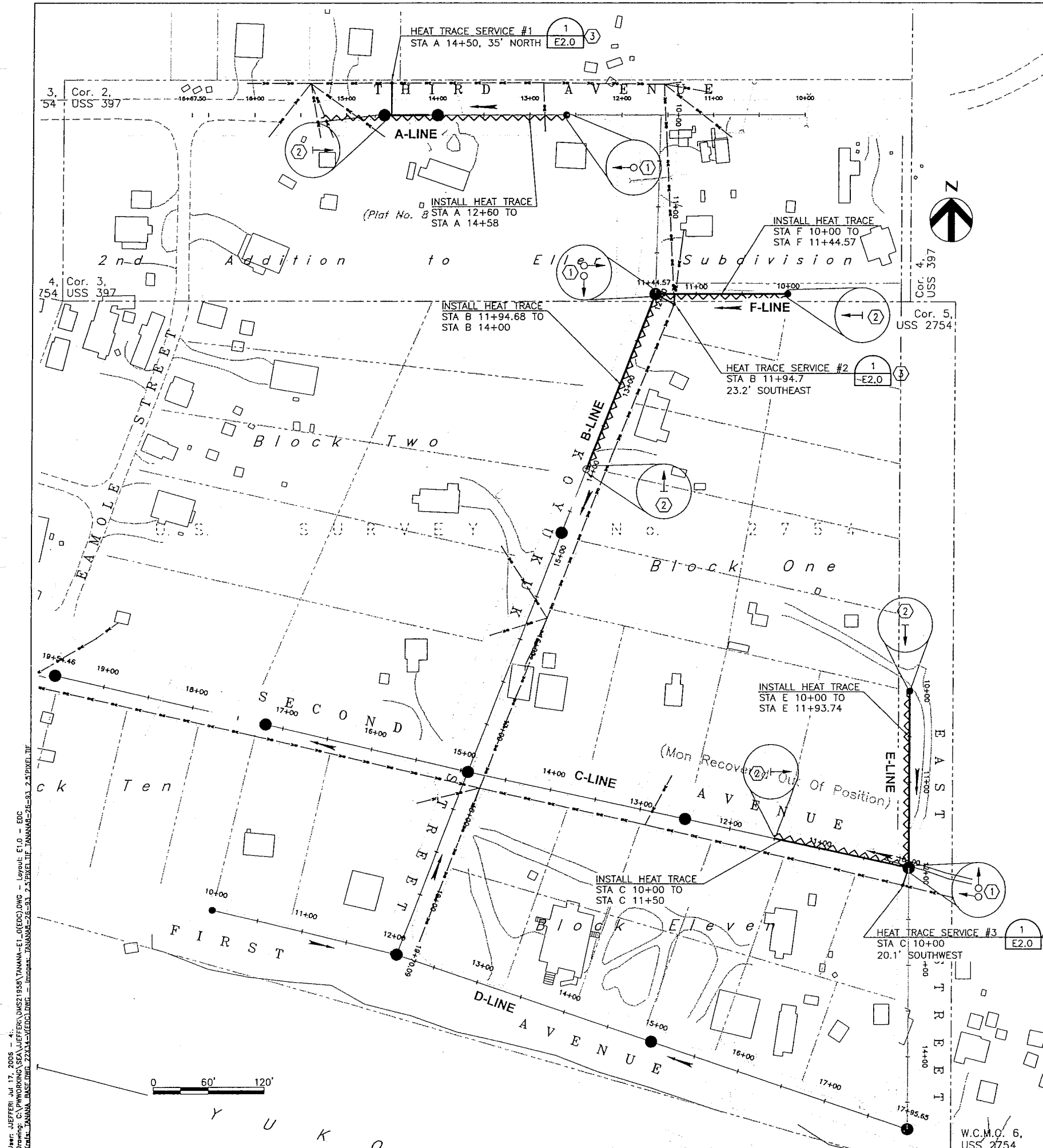
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INFORMATION PROVIDED. HEREIN
IS ACCURATE TO THE BEST OF
MY KNOWLEDGE.



Too gha Inc.
Tanana Water and Sewer Extension
WATER TREATMENT PLANT
PUMP REPLACEMENT

REVISION	BY	DATE

Project No. 13806	Date JULY 2006
Designed JG	Drawn JJ
Approved TB	



- NOTES**
- 1 SEE SHEET E2.0, DETAILS 1 & 2
 - 2 SEE SHEET E2.0, DETAIL 3
 - 3 SERVICE LOCATION SHOWN IS APPROXIMATE. COORDINATE EXACT LOCATION WITH YUKON POWER & TELEPHONE. LOCATE SERVICE POLES & GUY WIRES WITHIN EXISTING EASEMENTS. DO NOT ENCROACH UPON TRAVELED WAYS OR PRIVATE PROPERTY.

- LEGEND**
- MOLDED CASE CIRCUIT BREAKER, X = AMPERE RATING, Y = NO. OF POLES
 - GROUND
 - CONDUIT RUN - CHANGE IN ELEVATION
 - LIQUID-TIGHT FLEXIBLE CONDUIT
 - KILOWATT-HOUR METER
 - MAN HOLE
 - HEAT TRACE POWER POINT
 - HEAT TRACE END KIT. SEE DETAIL ON DWG E2.
 - HEAT TRACE, SELF-REGULATING, 240V, 10 WATTS/FOOT, NELSON MODEL # LT210-J OR EQUAL
 - JUNCTION BOX OR FITTING
 - CONTROL OR LIGHTING PANELBOARD

- ABBREVIATIONS**
- BCU BARE COPPER
 - C CONDUIT
 - G GROUND CONDUCTOR
 - GRC GALVANIZED RIGID (STEEL) CONDUIT
 - H HOT CONDUCTOR
 - LTF LIQUID TIGHT FLEXIBLE CONDUIT (METALLIC)
 - N NEUTRAL CONDUCTOR
 - TYP TYPICAL
 - V VOLTS

GENERAL
ALL WIRING SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE NATIONAL ELECTRICAL CODE - NFPA 70 (NEC) AND THE NATIONAL ELECTRICAL SAFETY CODE (NESC) BY OR UNDER THE SUPERVISION OF STATE OF ALASKA LICENSED JOURNEYMEN ELECTRICIANS AND/OR LINEMEN.

ALL WIRING SHALL BE IN GALVANIZED RIGID METAL CONDUIT OR LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT.

CONDUIT SUPPORT SHALL BE PROVIDED WITH 2-HOLE STRAPS.

CONDUCTORS FOR USE ON THIS PROJECT SHALL BE STRANDED COPPER WITH XHHW-2 INSULATION FOR EXTERIOR USE. COLOR CODE AS FOLLOWS: 120/240V WIRING- PHASE A=BLACK, PHASE B=RED, NEUTRAL=WHITE, GROUND=GREEN OR BARE COPPER.

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

AN EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC ARTICLE 250.122 SHALL BE PROVIDED IN ALL CONDUIT RUNS.

FITTINGS - ALL NON-HUB CONDUIT TERMINATIONS SHALL BE BUSHED EITHER WITH NON-METALLIC BUSHINGS ON THREADED CONDUITS OR INSULATED THROAT CONNECTORS ON FLEXIBLE CONDUITS.

BOXES SHALL BE NEMA 4 WITH GASKETED COVER.

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

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

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

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

SUBMITTALS
SUBMIT FOR APPROVAL MANUFACTURER'S CATALOG DATA ON ALL ELECTRICAL MATERIAL INTENDED FOR USE ON THIS PROJECT. SUBMITTALS SHALL CLEARLY IDENTIFY THE MODEL, PROPERTIES, OPTIONAL ACCESSORIES, ETC. OF THE COMPONENT BEING PROVIDED.

HEAT TRACE
PERFORM CONTINUITY AND INSULATION RESISTANCE (MEGGER) TESTS ON ALL HEAT TRACE CABLES BEFORE AND AFTER INSTALLATION PER MANUFACTURER'S INSTRUCTIONS. RECORD AND SUBMIT RESULTS. ANY CABLE WITH A RESISTANCE OF LESS THAN 1,000 MEGOHMS SHALL BE REJECTED AND REPLACED. AFTER INSTALLATION, ENERGIZE EACH CABLE AND AFTER 10 MINUTES RECORD THE VOLTAGE, CURRENT AND TOTAL LENGTH OF CABLE. SUBMIT RESULTS.

RECORD DRAWING CERTIFICATE

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

VILLAGE SAFE WATER

EDC, Inc.
310 W. Franklin
Anchorage, AK 99503

HDR Alaska, Inc.

Too'gha Inc.
Tanana Water and Sewer Extension

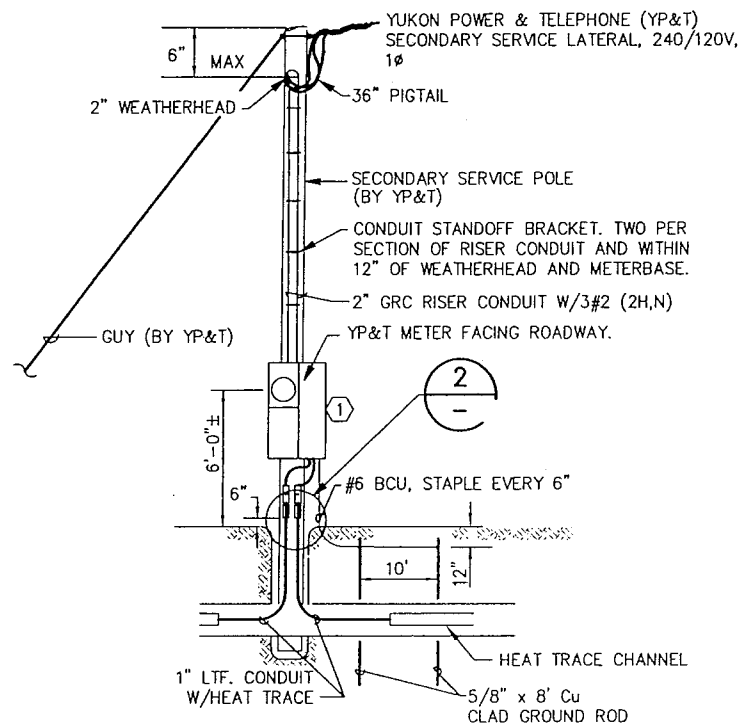
ELECTRICAL SERVICE AND
HEAT TRACE PLAN

Project No.	Date	Designed	Drawn	Approved
13806	JULY 2006	JH	ATN	TB

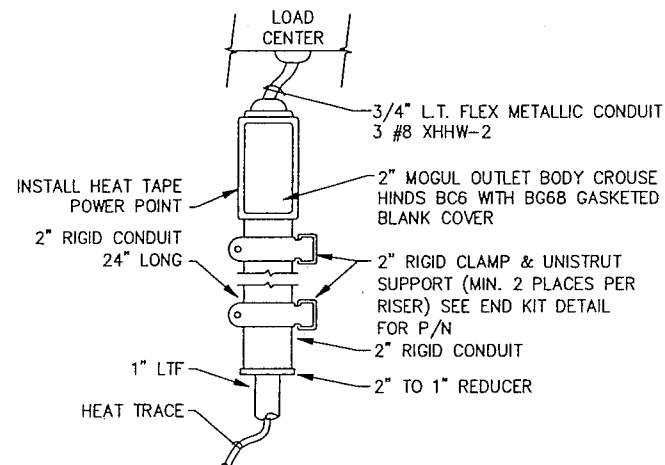
Sheet No. **E1.0**

SHEET 28 OF 29

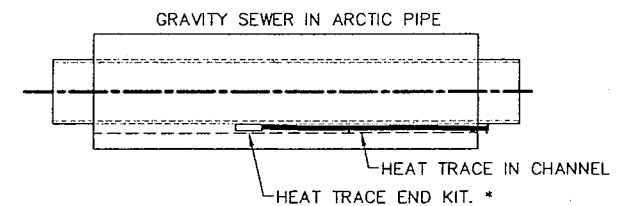
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SERVICE RISER DETAIL 1
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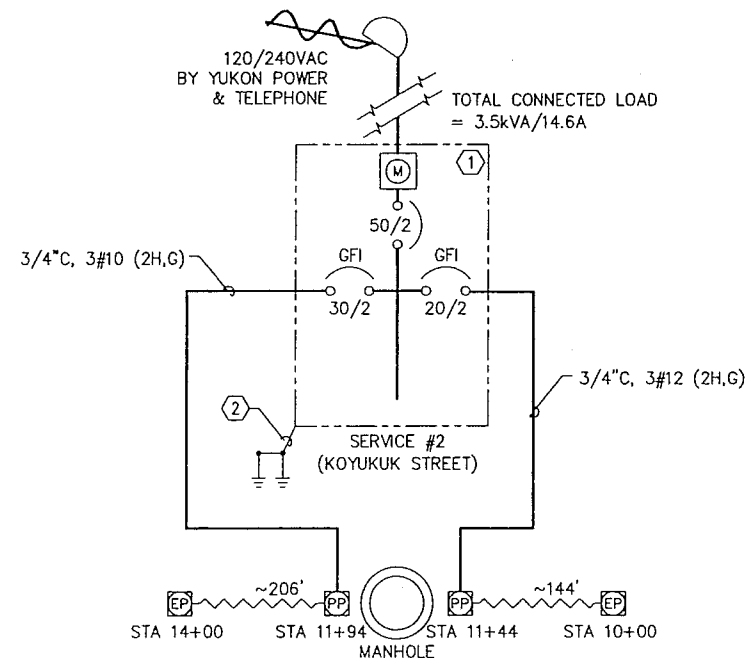
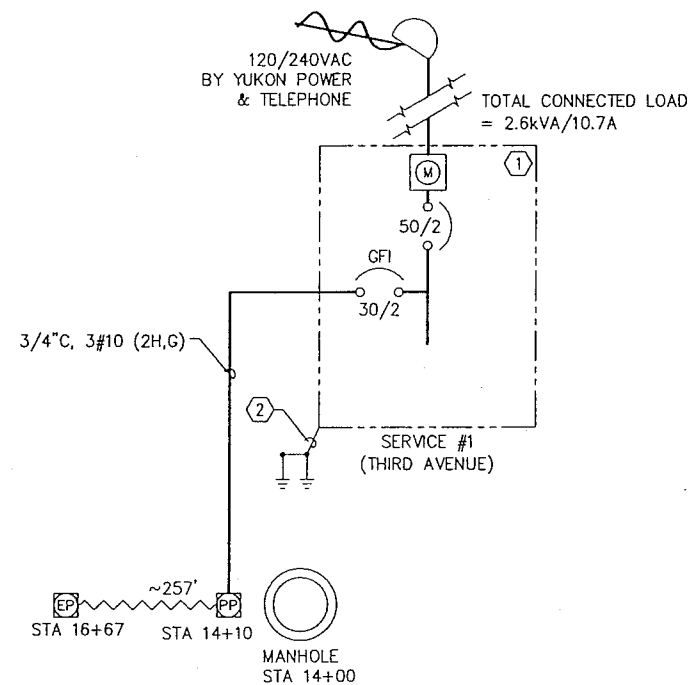


POWER POINT DETAIL 2
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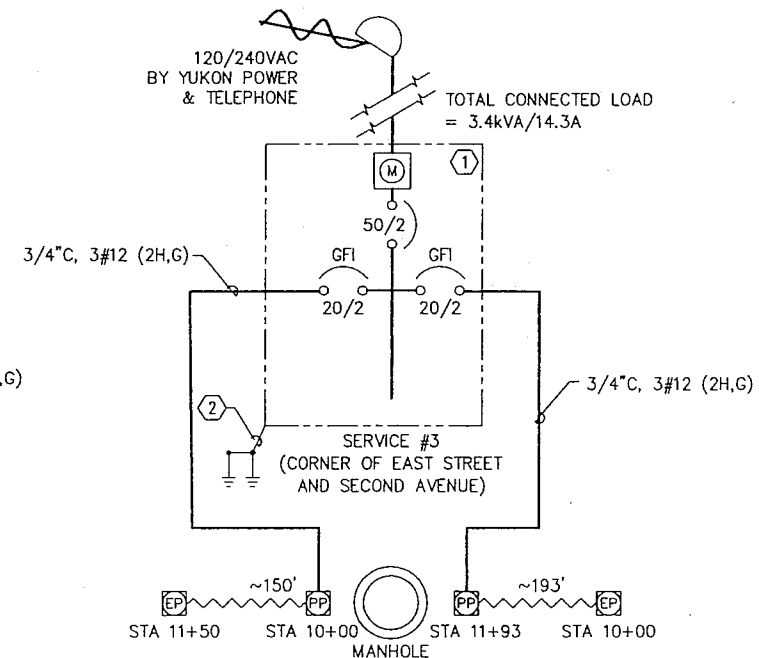


* PERFORM TESTING OF HEAT TRACE AFTER INSTALLATION OF THE END KIT AND PRIOR TO INSULATING AND BACKFILLING THE SEWER LINE.

HEAT TRACE END KIT DETAIL 3
NOT TO SCALE



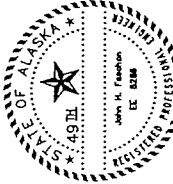
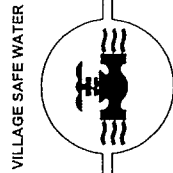
HEAT TRACE SERVICE POWER ONE-LINES



NOTES

- COMBINATION METER/MAIN LOAD CENTER 100A, 120/240V, 1Ø, 3-WIRE, NEMA 3R SQUARE D# SC1624M100S OR EQUAL.
- SEE DETAIL 1, THIS SHEET.

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Too'gha Inc.
Tanana Water and Sewer Extension
HEAT TRACE ONE-LINES
AND DETAILS

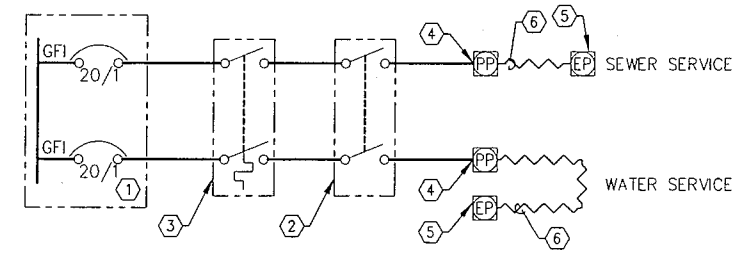
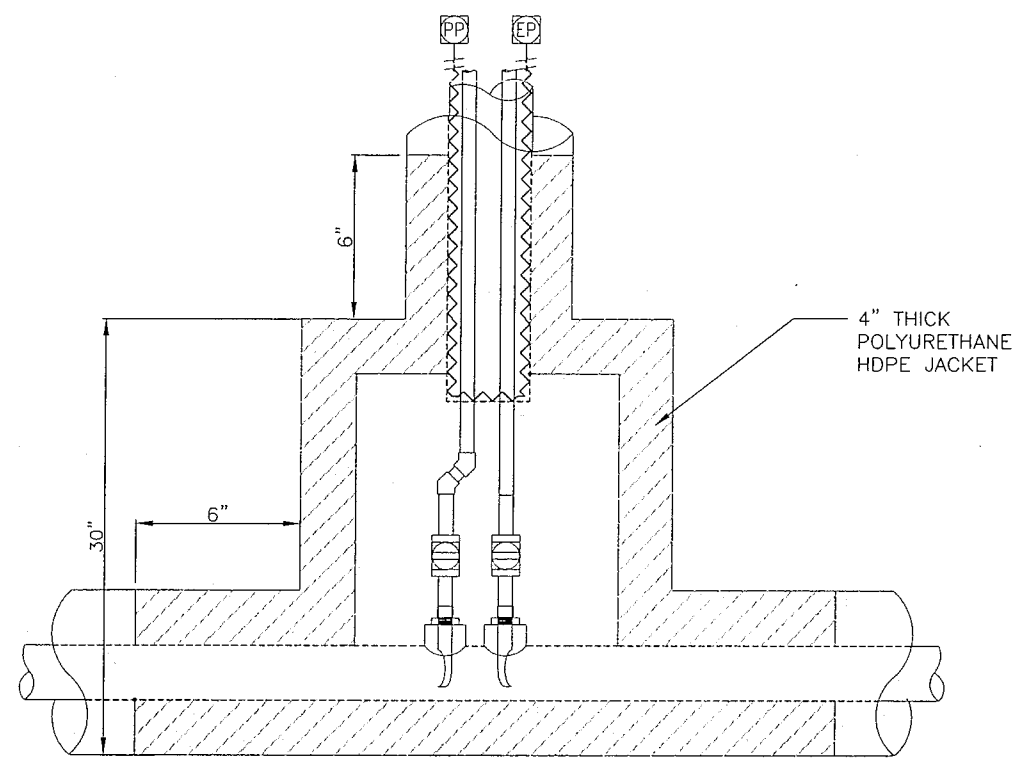
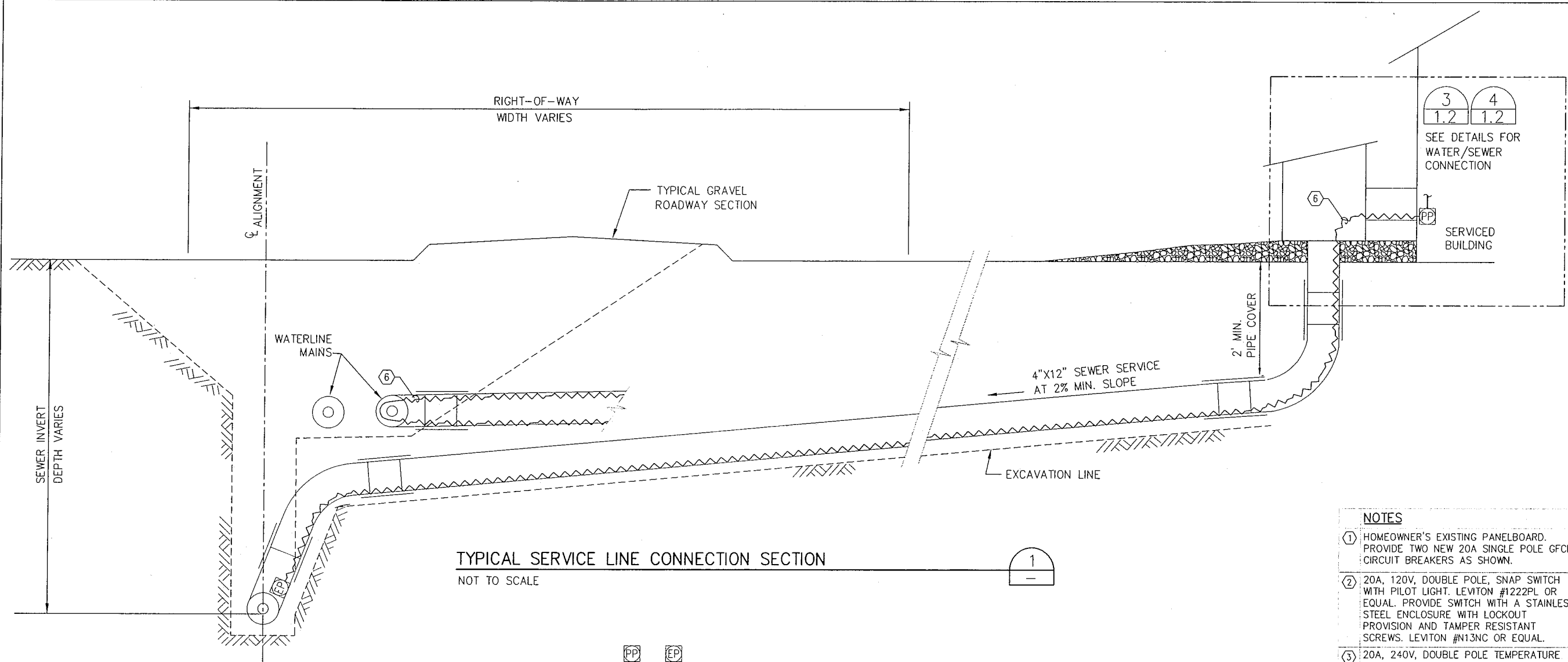
REVISION	BY	DATE

Project No.	13806
Date	JULY 2006
Designed	JHF
Drawn	AYN
Approved	TB

Sheet No. **E2.0**
29 OF 29

ISSUED FOR CONSTRUCTION

User: JEFFERY Jul 20, 2006
Drawing: C:\PWORKING\SEAN
Xrefs: - Images:



- NOTES**
- ① HOMEOWNER'S EXISTING PANELBOARD. PROVIDE TWO NEW 20A SINGLE POLE GFCI CIRCUIT BREAKERS AS SHOWN.
 - ② 20A, 120V, DOUBLE POLE, SNAP SWITCH WITH PILOT LIGHT. LEVITON #1222PL OR EQUAL. PROVIDE SWITCH WITH A STAINLESS STEEL ENCLOSURE WITH LOCKOUT PROVISION AND TAMPER RESISTANT SCREWS. LEVITON #N13NC OR EQUAL.
 - ③ 20A, 240V, DOUBLE POLE TEMPERATURE SWITCH. NELSON #TH4X25 OR EQUAL.
 - ④ HEAT TRACE POWER POINT
 - ⑤ HEAT TRACE END KIT
 - ⑥ 3 WATTS/FOOT SELF-LIMITING HEAT TRACE. NELSON #LT3-J OR EQUAL.

3
1.2

4
1.2

SEE DETAILS FOR
WATER/SEWER
CONNECTION

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VILLAGE SAFE WATER

EDC, Inc.

213 W. Finesse Dr.
Anchorage, AK 99503

HDR Alaska, Inc.

Too'gha Inc.

Tanana Water and Sewer Extension

ELECTRICAL HEAT TRACE
SERVICE CONNECTION
SECTION AND DETAILS

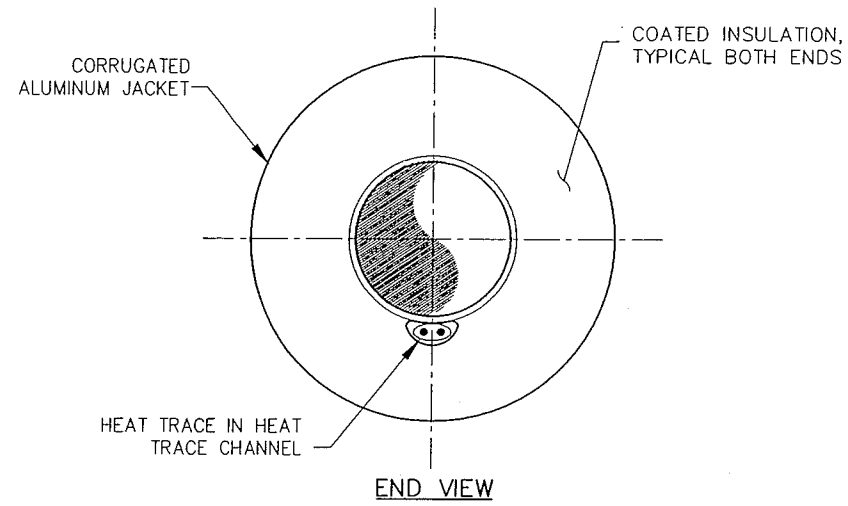
REVISION	BY	DATE

Project No. 13806	Date JULY 2006	Designed JHF	Drawn AYN	Approved TB
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Sheet No. **E3.1**

SHEET — OF 29

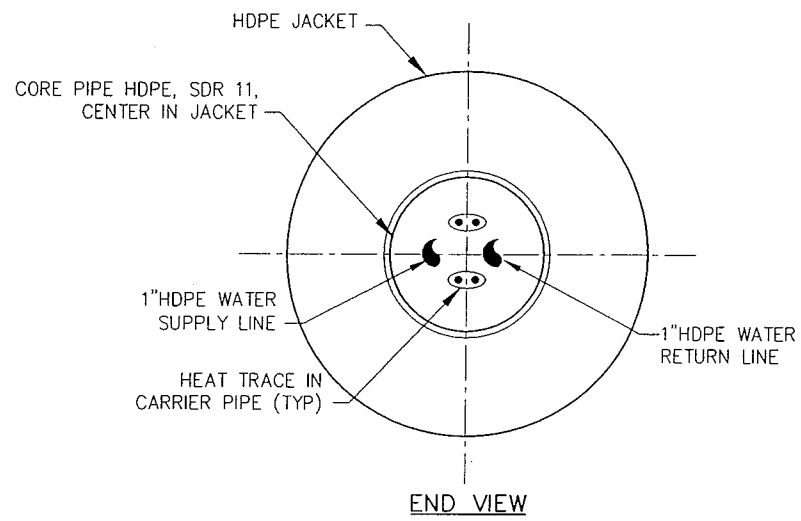
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INSULATED POLYETHYLENE GRAVITY SEWER PIPE WITH HEAT TRACE

NOT TO SCALE

1

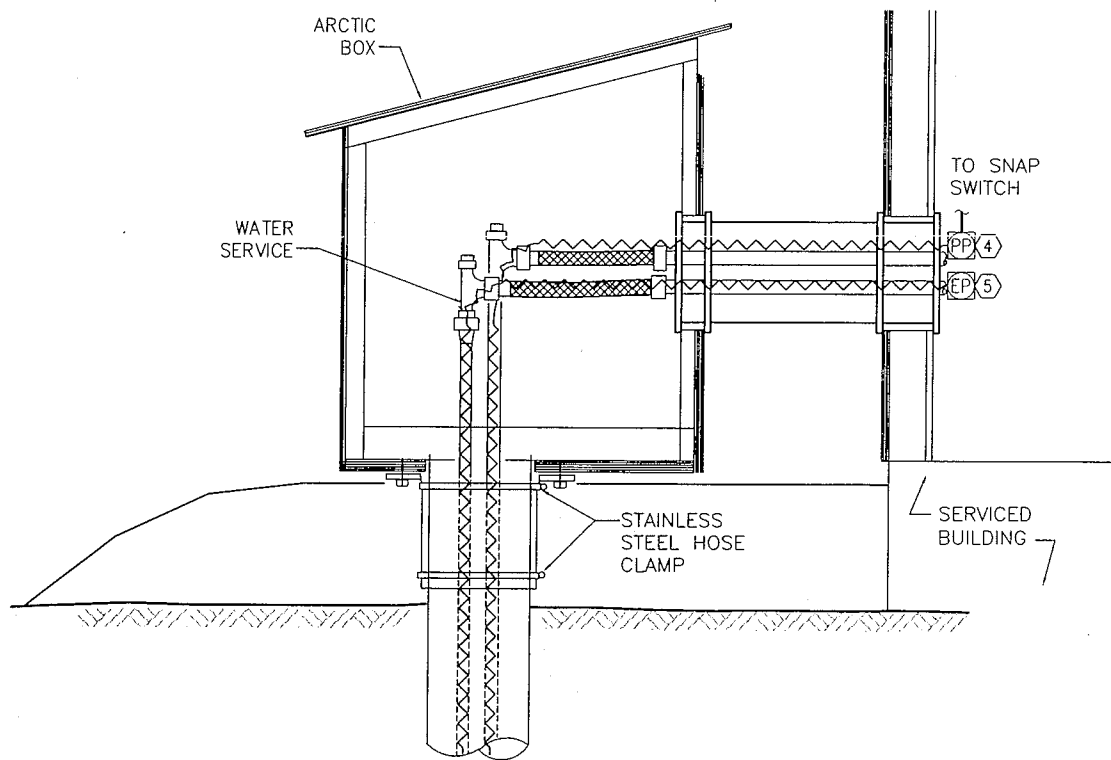


INSULATED POLYETHYLENE PRESSURE WATER PIPE WITH HEAT TRACE

NOT TO SCALE

2

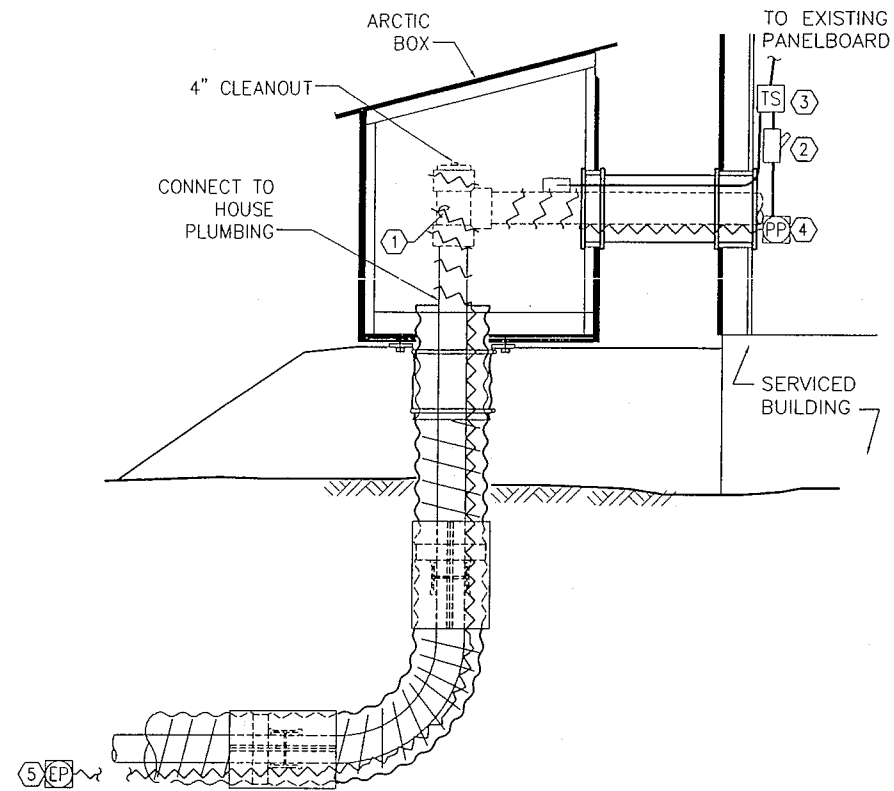
- NOTES**
- ① WRAP HEAT TRACE AROUND PIPING.
 - ② SNAP SWITCH. SEE SHEET E1.1, NOTE 2.
 - ③ TEMPERATURE SWITCH. SEE SHEET E1.1, NOTE 3.
 - ④ HEAT TRACE POWER POINT. SEE SHEET E1.1, NOTE 4.
 - ⑤ HEAT TRACE END KIT. SEE SHEET E1.1, NOTE 5.



WATER SERVICE BUILDING CONNECTION DETAIL

NOT TO SCALE

3

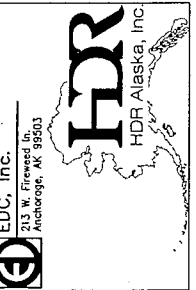
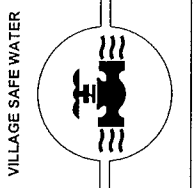


SEWER SERVICE BUILDING CONNECTION DETAIL

NOT TO SCALE

4

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Tanana Water and Sewer Extension
ELECTRICAL
HEAT TRACE SERVICE
CONNECTION DETAILS

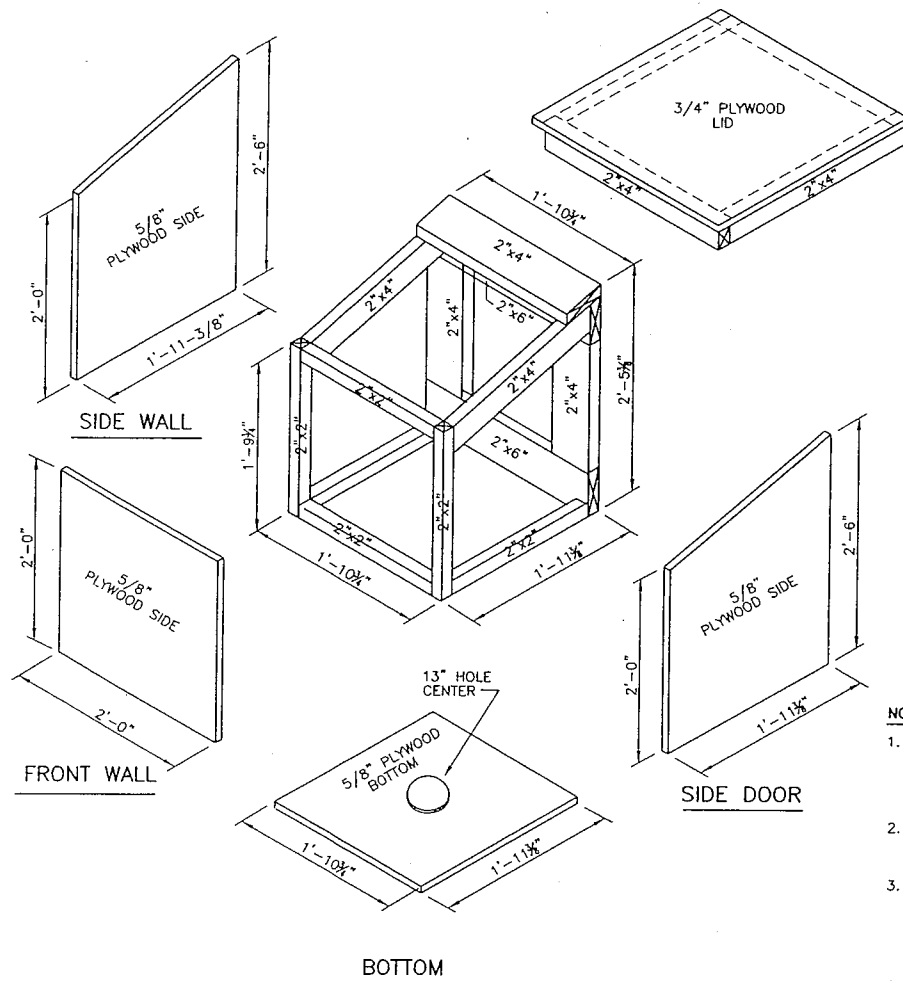
REVISION	BY	DATE

Project No. 13806	Date JULY 2006	Designed JHF	Drawn AYN	Approved TB
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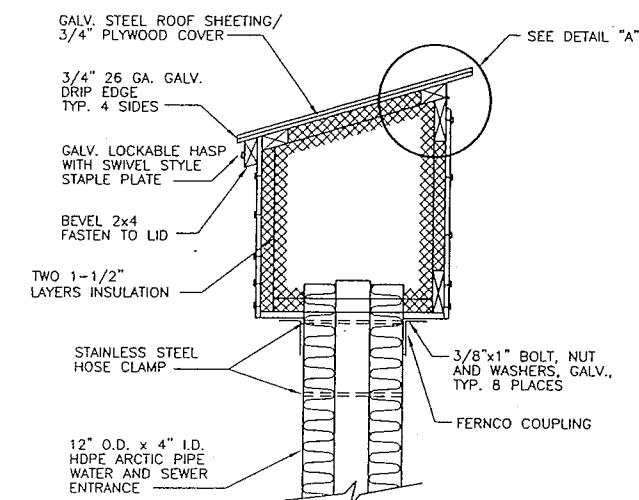
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SHEET 1 OF 29

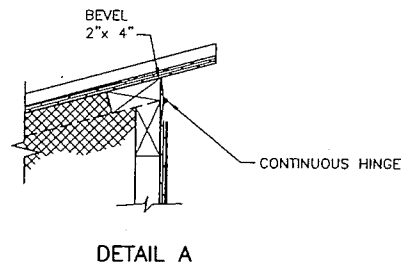
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EXPLODED VIEW



CROSS SECTION



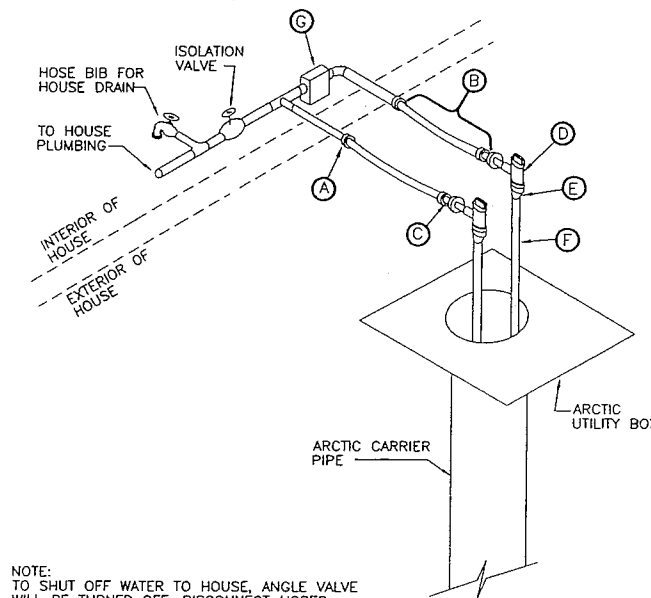
DETAIL A

NOTES:

1. ARCTIC BOX SHALL BE LINED WITH 2 EACH 1-1/2" LAYERS OF POLYSTYRENE BOARD INSULATION, WESTERN INSULFOAM II 35 PSI OR EQUAL, TYPICAL, COVER, BOTTOM, AND 4 SIDES.
2. SECURE GALV. STEEL ROOFING AND DRIP EDGE TO 3/4" PLYWOOD COVER WITH 3/4" SELF TAPPING ROOFING SCREWS.
3. ATTACH PLYWOOD SIDES AND BOTTOM TO 2"x 2" AND 2"x 4" FRAME WITH NO. 8 x 2-1/2" CORROSION RESISTANT DRY WALL SCREWS. PREDRILL AS NECESSARY TO AVOID SPLITTING OF FRAME.
4. CAULK ALL EXPOSED SEAMS WITH SILICONE CAULK, "G.E. 50 YEAR WINDOW AND DOOR SEALANT", OR EQUAL.
5. HOUSE PLUMBING CONNECTIONS WITHIN ARCTIC BOX ARE NOT SHOWN.
6. FILL ARCTIC BOX WITH UNFACED FIBERGLASS BATT INSULATION WHEN HOUSE PLUMBING CONNECTIONS ARE COMPLETE.
7. ARCTIC BOXES FOR WATER AND SEWER WILL BE INDIVIDUAL BOXES.

ARCTIC BOX DETAILS

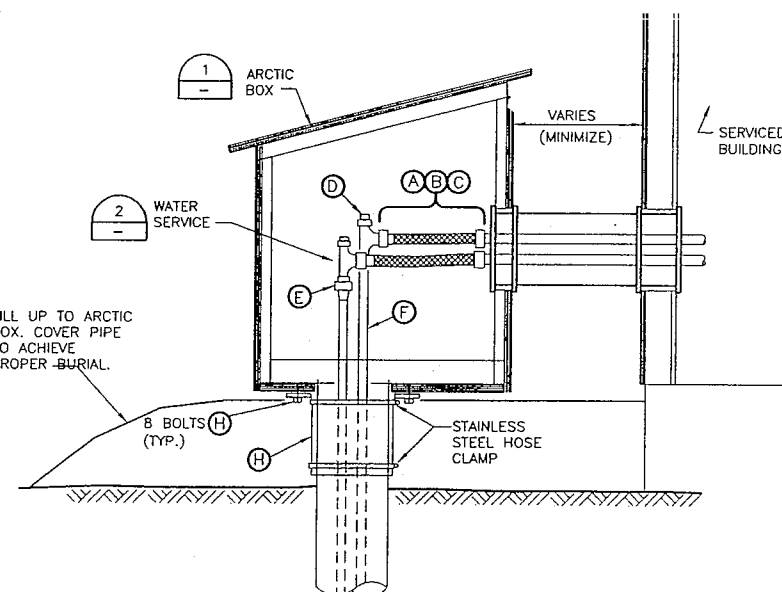
NOT TO SCALE



NOTE:
TO SHUT OFF WATER TO HOUSE, ANGLE VALVE WILL BE TURNED OFF. DISCONNECT HOSES FROM HOUSE PLUMBING, REMOVE ONE HOSE FROM ANGLE VALVE AND CONNECT REMAINING HOSE TO THE ANGLE VALVE (MAKE A LOOP). ANGLE VALVES ARE THEN TURNED BACK ON AND LOCKED IN OPEN POSITION.

WATER SERVICE PIPING DETAIL

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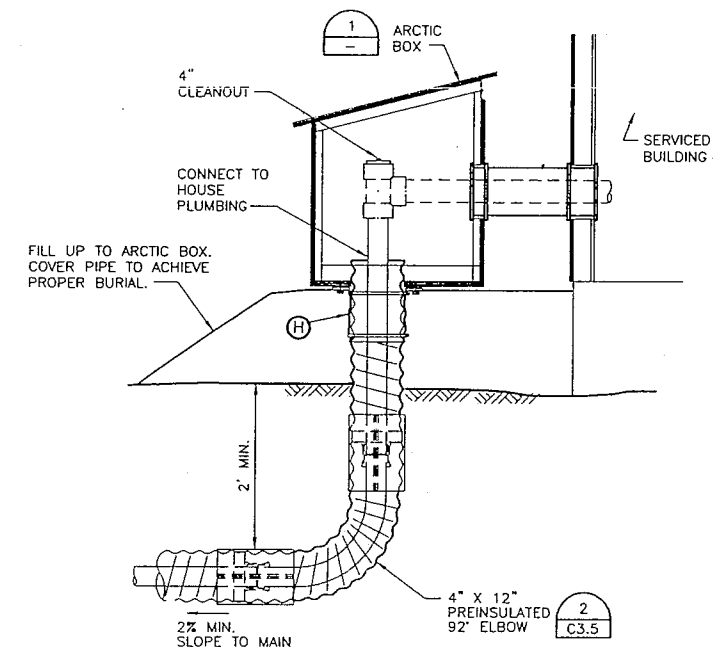


WATER SERVICE BUILDING CONNECTION

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MATERIALS REQUIRED

- HOUSE PIPING ADAPTER: 1" COPPER PIPE TYPICAL WITH QEST MALE COUPLING ADAPTER 1"x1" MIPT WITH BRASS BODY AND CONE AND RING. FOR COPPER PIPE A NIBCO SWEAT COPPER ADAPTER #604/704, 1" C x 1" MIPT MAY BE SUBSTITUTED FOR THE QEST FITTING.
- CONNECTION HOSE: 3/4" I.D. KURI TEC K6136 HIGH PURITY POTABLE WATER HOSE OR EQUAL, MUST BE NSF-61 CERTIFIED. CUT TO LENGTH IN FIELD.
BOTH ENDS SHALL BE FITTED WITH BRASS LONG SHANK INSERTS WITH 1" FIPT FEMALE SWIVEL NUT WITH GASKETS, DIXON #BLS848 OR EQUAL. EACH INSERT FITTING SHALL BE SECURED WITH 2 EA. ADJUSTABLE STAINLESS STEEL CLAMPS, DIXON #HS20 WORM GEAR CLAMPS, GRIP 13/16" TO 1-3/4", OR BAND-IT JR., TYPE 201, 1-1/2" x 1/2" x 0.30".
- BRASS NIPPLE: 1" MIPT x 1-1/2" MIPT.
- ANGLE BALL SERVICE VALVE: FORD ANGLE BALL VALVE AV11-444W, 1" FIPT x 1" FIPT, 150 PSI WORKING PRESSURE. "W" INDICATES PADLOCK WINGS ONLY.
- PACK JOINT COUPLING: FORD PACK JOINT C86-44, 1" PEP x 1" MIPT. PROVIDE FORD STAINLESS STEEL INSERT STIFFENER #72 FOR 1" SDR 11, IPS HDPE, 1.075" I.D.
- HDPE PIPE: DRISCOPIPE 8600 HDPE, 1" IPS, SDR 11, 160 PSI, 1.075 I.D., NSF APPROVED.
- INSTALL CIRCULATING PUMP IF LINE IS GREATER THAN 90 FEET, GRUNFOS UP15-42SU, OR EQUAL. ASSURE THAT PUMP IS INSTALLED SO THAT FLOW DIRECTION IS COMPATIBLE WITH MAIN LINE PITORIFICE CIRCULATION DIRECTION.
- ARCTIC DRAIN HOUSING - FERNCO OR PROCESS TECHNOLOGY MODEL 325. FIT INSIDE RUBATEX DONUTS, 1" x 13", 4-1/2" ID. REQUIRES 2 STAINLESS STEEL HOSE CLAMPS AND 8 GALVANIZED 3/8" BOLTS, WITH NUTS AND WASHERS.



SEWER SERVICE BUILDING CONNECTION

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VILLAGE SAFE WATER



Too'gha Inc.
Tanana Water and Sewer Extension

SERVICE CONNECT DETAILS

REVISION	BY	DATE

Project No.	13806
Date	JULY 2006
Designed	JG
Drawn	JJ
Approved	TB