

CE2 ENGINEERS, INC.

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PROJECT NAME: ATKA 2009 OLD VILLAGE WASTEWATER SYSTEM IMPROV. PHASE I & II
TO: SUSAN RANLETT
VILLAGE SAFE WATER
555 CORDOVA STREET
ANCHORAGE, AK 99501

Monday, August 24, 2009

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please inform us immediately.

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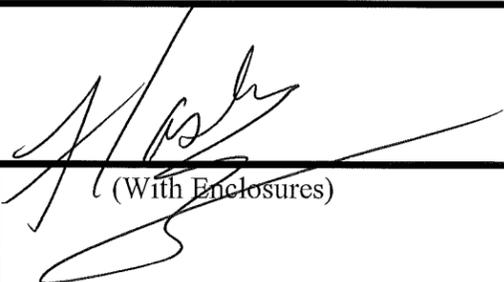
THE FOLLOWING:

Drawings Shop Drawing Prints Samples
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1 PDF	8/24/2009	ATKA 2009 OLD VILLAGE WASTEWATER SYSTEM IMPROV. PHASE I & II
3 HARD COPIES	8/24/2009	ATKA 2009 OLD VILLAGE WASTEWATER SYSTEM IMPROV. PHASE I & II

Remarks:

Copies To: 1 PDF SUSAN RANLETT
3 HARD COPIES TO ATKA
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(With Enclosures)

By:

ATKA, ALASKA

2009 OLD VILLAGE

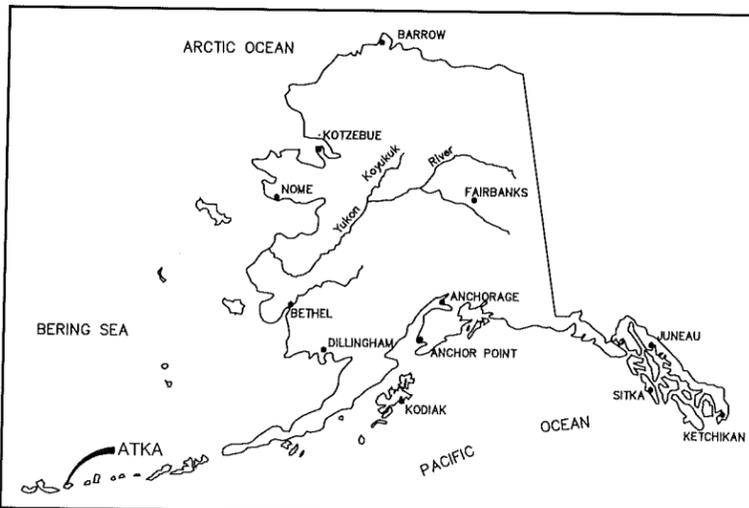
WASTEWATER SYSTEM IMPROVEMENTS

- PHASE 1**
- 2 EACH FIBERGLASS SEPTIC TANKS (PRIMARY AND FUTURE)
 - 600 LF 6" SOUTH OUTFALL

- PHASE 2**
- 1,100 LF 8" GRAVITY SEWER MAIN
 - 13 EACH SANITARY MANHOLES
 - 1 EACH PACKAGED LIFT STATION AND 2" FORCEMAIN

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

ISSUED FOR CONSTRUCTION
AUGUST 24, 2009



LOCATION MAP



PO BOX 232946 ANCHORAGE, AK 99523 PH: 907-349-1010 FAX: 907-349-1015



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) 610801 (VSW) _____

VSW Project Engineer SUSAN RANDLETT, P.E.

Construction Foreman _____

Final Design (Date) _____

ADEC Approval (Date) _____

Construction Period (From) _____ (To) _____

As-Builts (Date) _____

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SCOPE OF THE PROJECT

THIS PROJECT WILL INSTALL APPROXIMATELY 1,100 LF OF NEW 8" GRAVITY SEWER MAIN ALONG ATXAX ROAD TO REDIRECT WASTEWATER FROM THE EXISTING NORTHERLY OUTFALL AREA TO THE EXISTING SOUTH OUTFALL AREA. NEW PRIMARY TREATMENT AND OUTFALL PIPING ARE PROPOSED. A PACKAGED LIFT STATION WILL ALSO SERVE THREE EXISTING HOMES ALONG AGISAX ROAD. THE FORCEMAIN WILL BE ROUTED THROUGH THE EXISTING SEWER MAIN ACROSS A SMALL CREEK AND INTO THE NEW SEWER MAIN.

GENERAL NOTES

GENERAL

THE PROJECT SUPERINTENDENT SHALL MAINTAIN A CLEAN SET OF 'AS-BUILT' DRAWINGS SHOWING THE LOCATIONS AND SWING TIES TO ALL MANHOLES, CLEANOUTS, SERVICE CONNECTIONS AND BENDS. ALL ELEVATIONS SHALL BE MARKED ASB (AS-BUILT) WITH THE CORRECT VALUE INSERTED. DRAWINGS SHALL BE KEPT CURRENT IN RED PENCIL ON A DAILY BASIS IN A NEAT, LEGIBLE FASHION. A COPY OF THE AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE CITY OF ATKA UPON COMPLETION OF CONSTRUCTION.

AS-BUILT DRAWINGS WILL BE VERIFIED BY A PROFESSIONAL ENGINEER AND SUBMITTED TO THE STATE OF ALASKA WITH A CERTIFICATE OF CONSTRUCTION.

SEWER MANHOLE TOP OF CASTING (TOC) ELEVATIONS SHALL BE SET SIX (6) INCHES BELOW FINAL GRADE IN ALL ROADS AND TRAVELED WAYS. SEWER MANHOLE TOC ELEVATIONS SHALL BE SET 18-INCHES ABOVE FINISHED GRADE IN ALL NON-DEVELOPED, UNTRAVELED AREAS.

THE BASIS OF BEARINGS FOR HORIZONTAL CONTROL IS SHOWN ON SHEET G3.1

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. CONTACTS FOR LOCAL UTILITIES INCLUDE:

ELECTRICAL:	CITY OF ATKA	(907) 839-2233
SEWER AND WATER	CITY OF ATKA	(907) 839-2233
TELEPHONE:	AT&T ALASCOM	(800) 252-7266
TELEVISION:	ATXAM VILLAGE CORP.	(907) 839-2237
GAS:	N/A	

SEWER SERVICE LINE MINIMUM GRADE SHALL BE 2%, MINIMUM DEPTH OF BURY AT HOUSE CONNECTION SHALL BE 2 FEET TO PIPE INVERT.

THE SUPERINTENDENT SHALL VERIFY SERVICE LINE ROUTING WITH PROPERTY OWNER PRIOR TO CONSTRUCTION.

ABANDONMENT OF EXISTING PIPING

THE EXISTING GRAVITY SEWER MAIN WILL BE ABANDONED IN PLACE OR REMOVED IN AREAS THAT CONFLICT WITH INSTALLATION OF THE NEW SEWER MAIN. EXISTING MANHOLES SHALL BE REMOVED AND ANY OPEN OR CUT END OF THE OLD SEWER MAIN PLUGGED WITH CEMENT GROUT AND INDICATED ON THE AS-BUILT CONSTRUCTION DRAWINGS.

PIPING (GENERAL)

CARRIER PIPE

1. PVC GRAVITY SEWER
THE GRAVITY SEWER MAIN SHALL BE 8"Ø PVC, SDR 35. PIPE AND FITTINGS SHALL CONFORM TO ASTM D 3034 WITH FACTORY INSTALLED RUBBER GASKETS AND JOINTS IN ACCORDANCE WITH ASTM F477 AND ASTM D 3212

2. FORCEMAIN

THE SEWAGE FORCEMAINS SHALL BE 2"Ø HDPE, SDR 11.
ALL HDPE PIPING SHALL BE LISTED BY THE PPI WITH A DESIGNATION OF PE3408 AND A CELL CLASSIFICATION OF 345434C OR BETTER IN ACCORDANCE WITH ASTM D3350.

3. OUTFALL - STEEL PORTION

ALL PIPE SHALL BE SEAMLESS EXTRA-EXTRA STRONG, IN CONFORMANCE WITH THE REQUIREMENTS OF ASTM A106. ALL FITTINGS SHALL BE EXTRA-EXTRA STRONG AND CONFORM TO ASTM A-234 AND ASA B16.9. ALL FLANGES SHALL BE EXTRA-EXTRA HEAVY BORE, CLASS 150, RAISED FACE, IN CONFORMANCE WITH ASTM A-105.

4. OUTFALL - HDPE PORTION

6" HDPE PIPE, SDR 11, IRON PIPE SIZE, PE3408 HDPE RESIN MEETING ALL REQUIREMENTS OF AWWA C906 OR C901.

TRENCHING AND BACKFILL

SIDE WALLS OF TRENCHES AND 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. TRENCH BOXES SHALL BE USED WHEN TRENCH EXCAVATIONS THREATEN THE STRUCTURAL INTEGRITY OF ADJACENT STRUCTURES. ALL TRENCHES SHALL BE BACKFILLED BEFORE STOPPING WORK EACH DAY. 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. TRENCH BACKFILL ABOVE THE PIPE ZONE AND WITHIN ROADS OR OTHER TRAVELED AREAS SHALL BE COMPACTED IN MAXIMUM 12" LIFTS TO 95% OF THE MAXIMUM MODIFIED PROCTOR DRY DENSITY. BACKFILL IN OTHER AREAS SHALL BE COMPACTED TO 90% OF THE MAXIMUM MODIFIED PROCTOR DRY DENSITY.

IF EXCAVATIONS ENCOUNTER GROUNDWATER, DEWATERING SHALL BE IMPLEMENTED AND TEMPORARY SHORING WILL BE REQUIRED TO STABILIZE THE WALLS WHILE EXCESS WATER IS PUMPED OUT OF THE EXCAVATION.

TESTING

SEWER MAIN, OUTFALL AND SEWER SERVICE LINE TESTING

THE CONSTRUCTION CREW SHALL CLEAN AND FLUSH ALL SANITARY SEWER MAINS PRIOR TO VISUAL INSPECTION (LAMPING) AND PRESSURE TESTING.

EACH REACH OF SEWER MAIN SHALL BE LAMPED, MANHOLE TO MANHOLE, WITH A HIGH INTENSITY LIGHT AND LARGE MIRROR. SEGMENTS NOT LAMPING TO 7/8 OF A FULL MOON SHALL BE REALIGNED AND/OR REGRADED AS NECESSARY TO MEET THE 7/8 MOON REQUIREMENT.

ALL SEGMENTS OF COMPLETED SEWER MAIN AND OUTFALL SHALL BE PRESSURE TESTED FROM MANHOLE TO MANHOLE OR TERMINUS TO TERMINUS WITH AIR AT THE END OF CONSTRUCTION (PRIOR TO CONNECTING SEWER SERVICE LINES). AIR SHALL BE SLOWLY SUPPLIED TO THE PLUGGED PIPE INSTALLATION UNTIL THE INTERNAL AIR PRESSURE REACHES 4.0 POUNDS PER SQUARE INCH (PSI) GREATER THAN THE AVERAGE BACK PRESSURE OF ANY GROUNDWATER THAT MAY SUBMERGE THE PIPE. AT LEAST TWO (2) MINUTES SHALL BE ALLOWED FOR TEMPERATURE STABILIZATION BEFORE PROCEEDING WITH THE TEST. AT THE END OF THE STABILIZATION PERIOD THE AIR PRESSURE SHALL BE ADJUSTED TO THE TEST PRESSURE AND THE 10 MINUTE TEST PERIOD SHALL BEGIN.

THE MAXIMUM ALLOWABLE PRESSURE DROP FOR ANY SEWER MAIN SEGMENT DURING THE 10 MINUTE TEST PERIOD SHALL BE 2.7 PSI.

SEWER SERVICE LINES SHALL BE VISUALLY INSPECTED FOR GRADE AND JOINT INTEGRITY PRIOR TO BACKFILLING TRENCH. PRESSURE TESTING OF SEWER SERVICE LINES IS NOT PERMITTED.

SEWER MANHOLE TESTING

THE INLET AND OUTLET MANHOLE PENETRATIONS SHALL BE SEALED WITH WATERTIGHT PLUGS OR BULKHEADS AND THE MANHOLE FILLED WITH WATER UNTIL THE ELEVATION OF THE WATER IS NEAR THE INTERFACE OF THE CONCRETE AND THE CASTING. THE TEST LEVEL SHALL BE CLEARLY MARKED IN THE MANHOLE. THE MANHOLE SHALL BE FILLED AND MAINTAINED FULL OF WATER FOR A PERIOD OF 24-HOURS PRIOR TO THE START OF THE TEST. ADJUST THE WATER LEVEL TO THE TEST LEVEL MARK PRIOR TO START OF TEST. ALL VENT HOLES IN THE LID SHALL BE PLUGGED AND THE LID INSTALLED PRIOR TO START OF TEST. TEST PERIOD SHALL LAST 24-HOURS. EXFILTRATION SHALL BE MEASURED AS THE DROP IN WATER LEVEL DURING THE TEST PERIOD. A MAXIMUM ALLOWABLE LEAKAGE IS 0.25 GALLONS. ANY FAILED MANHOLE MUST BE RETESTED.

FORCEMAIN TESTING

PERFORM HYDROSTATIC TESTING OF ALL FORCEMAIN PIPING. FILL THE LINES WITH POTABLE WATER AND REMOVE AIR POCKETS PRIOR TO STARTING THE TEST. PRESSURIZE TO 100 PSI AND LEAVE FOR A MINIMUM OF 1 HOUR. AFTER THIS INITIAL PERIOD, ADD WATER TO BRING THE PRESSURE UP TO 100 PSI AND BEGIN A ONE HOUR TEST. DURING THE TEST PERIOD THERE SHALL BE LESS THAN 0.3 GALLONS PER 100 LF OF FORCEMAIN OF MAKE-UP WATER REQUIRED TO RETURN TO THE INITIAL TEST PRESSURE.

LIFT STATION STARTUP

AFTER INSTALLATION OF ALL NEW LIFT STATION EQUIPMENT, THE PROJECT SUPERINTENDENT SHALL START AND FIELD TEST EACH PUMP UNIT TO DEMONSTRATE ITS ABILITY TO PUMP WITHOUT EXCESSIVE VIBRATION, MOTOR OVERLOADING OR OVERHEATING. EACH PUMP SHALL BE OPERATED FOR A SUFFICIENT PERIOD OF TIME TO PERMIT THOROUGH OBSERVATION OF ALL PUMP COMPONENTS. THE PROJECT SUPERINTENDENT SHALL VERIFY THE PROPER SEQUENCING AND OPERATION OF ALL CONTROLS.

AFTER THE LIFT STATION INSTALLATION IS COMPLETE BUT PRIOR TO DRAWING WASTEWATER INTO THE WET WELL, THE SUPERINTENDENT SHALL DETERMINE THE DISCHARGE RATE OF EACH OF THE SUBMERSIBLE WASTEWATER PUMPS, INDEPENDENTLY AND IN TANDEM. THESE MEASUREMENTS SHALL BE RECORDED ON THE RECORD DRAWINGS FOR FUTURE REFERENCE.

THE DISCHARGE PUMPING RATE SHALL BE DETERMINED BY MEASURING DRAWDOWN OF POTABLE WATER PLACED IN THE WET WELL. ALL LIFT STATION TESTING SHALL BE PERFORMED WITH POTABLE WATER.

PROJECT DESCRIPTION (PHASE 1 AND PHASE 2)

GENERAL

THIS SET OF CONSTRUCTION DRAWINGS COVERS TWO PHASES OF CONSTRUCTION. THESE PHASES INCLUDE:

PHASE 1:

INSTALLATION OF A 6,000 GALLON TWO COMPARTMENT PRIMARY TREATMENT TANK, VALVE VAULT AND 600 LINEAR FOOT OCEAN OUTFALL ASSEMBLY. PROVISIONS HAVE ALSO BEEN MADE FOR THE FUTURE INSTALLATION OF AN ADDITIONAL 3,000 TREATMENT TANK.

PHASE 2:

INSTALLATION OF APPROXIMATELY 1,100 LF OF NEW 8" GRAVITY SEWER MAIN ALONG ATXAX ROAD TO REDIRECT WASTEWATER FROM THE EXISTING NORTHERLY OUTFALL AREA TO THE PROPOSED SOUTHERLY SEPTIC TANKS AND OCEAN OUTFALL (INSTALLED IN PHASE 1). SEVERAL WASTEWATER SERVICE LINES, DETAILED IN TABLE 1 BELOW, WILL ALSO BE UPGRADED.

A PACKAGED LIFT STATION WILL ALSO SERVE THREE EXISTING HOMES ALONG AGISAX ROAD. THE FORCE MAIN WILL BE ROUTED THROUGH THE EXISTING SEWER MAIN ACROSS A SMALL CREEK AND INTO THE NEW GRAVITY SEWER MAIN THAT DRAINS TO THE PROPOSED TREATMENT TANKS.

TABLE 1: PHASE 2 - SEWER SERVICE UPGRADES

HOUSE NUMBER	LOT	LAND OWNER	OCCUPANT	STATION/SHT.
(A)	33	VASHA NEVZOROFF	VASHA NEVZOROFF	2+12 / C2.2
(B)	11	CITY OF ATKA	HANK ANELON	5+00 / C2.2
(C)	13	IN PROBATE	NO OCCUPANT	10+70 / C2.3
(D)	8	STEVEN HOLIKOFF	VACANT	7+28 / C2.3
(E)	-	JOHN GOLODOFF	JOHN GOLODOFF	8+00 / C2.4
(F)	36	GREG GOLODOFF	GREG GOLODOFF	12+00 / C3.1
(G)	35	DENNIS GOLODOFF	DENNIS GOLODOFF	12+00 / C3.1
(H)	34	GEORGE NEVZOROFF	GEORGE NEVZOROFF	12+00 / C3.1

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	13 lbs/acre	Broadcast
Bering Hairgrass	Norcoast	21 lbs/acre	Broadcast
Rye Grass	Annual	9 lbs/acre	Broadcast
FERTILIZER	20-20-10	220 lbs/acre	Broadcast

RECORD DRAWING CERTIFICATE
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SCALE: AS SHOWN
DATE: NOV. 2008

CONSTRUCTION RECORD
FIELD BOOK
STAKING
FOREMAN
AS-BUILT
INSPECTOR



2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS
GENERAL NOTES
ATKA, ALASKA



REVISION BY DATE

Project No. _____ Date: NOV. 2008
Designed _____ Drawn _____ Approved _____

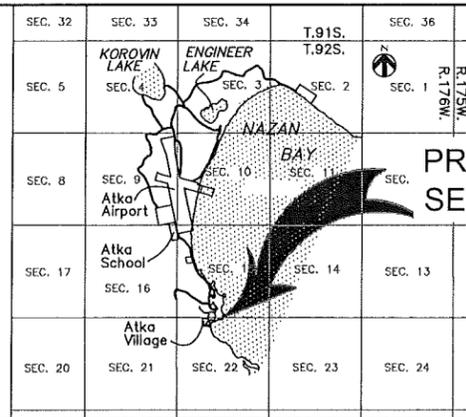
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VICINITY MAP

Scale: 1" = 1 Mile

Source:
U.S.G.S. Quadrangle Atka
1:250,000
Located within partially
surveyed T92S, R176W
Seward Meridian Alaska,
Aleutian Islands Recording
District



PROJECT AREA
SEWER IMPROVEMENTS

VICINITY MAP - ATKA
WASTEWATER TREATMENT DESIGN CRITERIA

INITIAL SYSTEM OPERATION

Sewer Main, South Area	Sht. #	Qty	Vol/Day/Svc. (65 GPCD)	Avg Daily Flow
Residential Service Lines	5	260	1,300	
Commercial Service Lines	1	500	500	
		Total Daily Flow	1,800	
		Average Hour	75	
		Peak Hour Flow (5 x Avg)	375	
		Peak Hour Flow (GPM)	6	
Sewer Main, North Area				
Residential Service Lines	3	195	585	
Commercial Service Lines	0	0	0	
		Total Daily Flow	585	
		Average Hour	10	
		Peak Hour Flow (5 x Avg)	49	
		Peak Hour Flow (GPM)	1	
Sewer Main, Lift Station				
Residential Service Lines	2	130	260	
Commercial Service Lines	0	0	0	
		Total Daily Flow	260	
		Average Hour	10.8	
		Peak Hour Flow (5 x Avg)	54.2	
		Peak Hour Flow (GPM)	1	
		TOTAL PEAK HOUR FLOW, PROPOSED OLD ATKA SINGLE OUTFALL (GPM)	8.0	
		TOTAL DAILY FLOW, PROPOSED OLD ATKA SINGLE OUTFALL (GALLONS)	2,645	
		AVERAGE DAILY FLOW RATE (GPM)	1.8	
Receiving Sewer Information				
Diameter (in)	8	Capacity (GPM)	433	
Approx. Increase in Flow (GPM)	N/A			
Proposed Septic Tank Sizing (for flows between 1,500 - 15,000 gallons per day)				
V = 1125 + 0.75Q				
where:				
V = net volume of the tank (Gal)				
Q = daily wastewater flow (Gal) = 2,645				
V = 3,109				
For smaller systems, additional volume or extra sludge storage may be desired to minimize the frequency of pumping. Normally this may be 1.5 times the normal daily wastewater flow.				
V_(1.5 Day) = 3,968				
Conclusion:				
Install only a 6,000 gallon septic tank and reserve space for an additional 3,000 gallon tank that can be added as wastewater flows or if required level of treatment increases. The 6" outfall has sufficient capacity to receive the proposed wastewater loading.				

OPERATION AT FULL SYSTEM BUILD-OUT

Sewer Main, South Area	Sht. #	Qty (at full build out)	Vol/Day/Svc. (65 GPCD)	Avg Daily Flow
Residential Service Lines	8	260	2,080	
Commercial Service Lines	2	500	1,000	
		Total Daily Flow	3,080	
		Average Hour	128	
		Peak Hour Flow (5 x Avg)	642	
		Peak Hour Flow (GPM)	11	
Sewer Main, North Area				
Residential Service Lines	7	260	1,820	
Commercial Service Lines	1	500	500	
		Total Daily Flow	2,320	
		Average Hour	39	
		Peak Hour Flow (5 x Avg)	193	
		Peak Hour Flow (GPM)	3	
Sewer Main, Lift Station				
Residential Service Lines	3	260	780	
Commercial Service Lines	0	0	0	
		Total Daily Flow	780	
		Average Hour	32.5	
		Peak Hour Flow (5 x Avg)	162.5	
		Peak Hour Flow (GPM)	3	
		TOTAL PEAK HOUR FLOW, PROPOSED OLD ATKA SINGLE OUTFALL (GPM)	16.6	
		TOTAL DAILY FLOW, PROPOSED OLD ATKA SINGLE OUTFALL (GALLONS)	6,180	
		AVERAGE DAILY FLOW RATE (GPM)	4.3	
Receiving Sewer Information				
Diameter (in)	8	Capacity (GPM)	433	
Approx. Increase in Flow (GPM)	2.5			
Proposed Septic Tank Sizing (for flows between 1,500 - 15,000 gallons per day)				
V = 1125 + 0.75Q				
where:				
V = net volume of the tank (Gal)				
Q = daily wastewater flow (Gal) = 6,180				
V = 5,760				
For smaller systems, additional volume or extra sludge storage may be desired to minimize the frequency of pumping. Normally this may be 1.5 times the normal daily wastewater flow.				
V_(1.5 Day) = 9,270				
Conclusion:				
Use both a 6,000 gallon plus 3,000 gallon wastewater treatment tanks to meet the required volume. The 6" outfall has sufficient capacity to receive the proposed wastewater loading.				

DESIGN NOTES

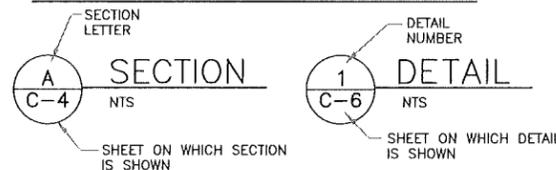
AT FULL BUILD-OUT, THIS SERVICE AREA IS ESTIMATED TO REQUIRE APPROXIMATELY 9,000 GALLONS OF PRIMARY WASTEWATER TREATMENT CAPACITY. DIVIDING THIS BY A 2/3 & 1/3 BAFFLING FACTOR, RESULTS IN 6,000 & 3,000 GALLON TREATMENT CHAMBERS. USE OF A SINGLE 9,000 GALLON BAFFLED TANK WAS CONSIDERED BUT WAS DETERMINED TO BE TOO LARGE TO HANDLE AND PLACE WITH THE EXISTING CONSTRUCTION EQUIPMENT IN ATKA. TWO TANKS ARE PROPOSED.

SINCE IT IS UNCERTAIN WHEN THE AREA WILL BE DEVELOPED* ONLY THE 6,000 GALLON TREATMENT CHAMBER IS PROPOSED BE INSTALLED AT THIS TIME. THIS TANK IS MORE THAN ADEQUATE TO TREAT THE EXISTING WASTEWATER FLOWS AND NORMAL GROWTH FOR MANY YEARS. THIS PRIMARY TANK, OPERATING ALONE FOR MANY YEARS, SHALL BE EQUIPPED WITH A BAFFLE.

SPACE WILL BE PROVIDED TO "DROP IN" THE SECONDARY 3,000 GALLON TREATMENT TANK WHEN WASTEWATER FLOW RATES (OR INCREASED LEVEL OF TREATMENT) INCREASE. ONCE THIS IS INSTALLED, THE FINAL TREATMENT SYSTEM WILL INCLUDE A 6,000 GALLON PRIMARY BAFFLED TREATMENT TANK (4,000 & 2,000 CHAMBERS) AND A SECONDARY 3,000 GALLON TANK.

* THE OLD VILLAGE AREA SERVED BY THIS TREATMENT SYSTEM IS EXPECTED TO BE REDEVELOPED ONCE THE FISH PROCESSING PLANT IS EXPANDED. IT IS UNKNOWN WHEN THIS WILL OCCUR BUT WILL LIKELY BE MORE THAN TEN YEARS BEFORE ADDITIONAL TREATMENT WILL BE REQUIRED MAKING IT NECESSARY TO INSTALL THE SECONDARY 3,000 GALLON TANK.

SECTION AND DETAIL DESIGNATIONS



LEGEND

EXISTING		PROPOSED		DESCRIPTION
PLAN VIEW	PROFILE VIEW	PLAN VIEW	PROFILE VIEW	
				GROUND PROFILE
				SLOPE
				SEWER MAIN, ECCENTRIC CONE MANHOLE AND CLEANOUT
				(BUILT FROM ANOTHER SHEET)
				WATERMAIN, GATE VALVE AND FIRE HYDRANT (HYDRANT NOT SHOWN IN PROFILE VIEW)
				(BUILT FROM ANOTHER SHEET)
				PROPOSED STORM DRAIN, CATCH BASIN AND STORM DRAIN MANHOLE (SLOTTED OR SOLID COVER)
				EXISTING SEWERAGE SYSTEM TO BE ABANDONED
				PROPOSED BY OTHERS, HOT WATER OR WATER
				SEWER SERVICE CONNECT/ LINE AND HOME TO BE SERVED
				CURTAIN DRAIN
				CULVERT
				UNDERGROUND ELECTRICAL LINE
				UNDERGROUND FUEL OIL LINE
				UNDERGROUND TELEPHONE LINE
				UTILITY POLE
				RELOCATE EXISTING UTILITY POLE
				GUARDRAIL
				FENCE
				EXISTING ASPHALT PAVEMENT
				CONTOUR LINE
				SHORELINE
				TRAVELED WAY
				STRUCTURE
				NATURAL GROUND OR COMPACTED SOIL
				DIRECTION OF DRAINAGE
				PROPERTY LINE
				EDGE OF WATER
				STATE BOUNDARY LINE/ RIGHT OF WAY
				EASEMENT LINE
				ALL WEATHER WOOD
				CORPS OF ENGINEERS
				CORRUGATED METAL PIPE
				WASTEWATER TREATMENT TANK
				WASTEWATER TREATMENT TANK, FUTURE INSTALLATION
				POINT OF COMPOUND CURVE
				POINT OF TANGENT
				TOP OF PIPE
				TOP OF CASTING
				TOP OF PIPE JACKET
				STATION
				LINEAR FEET
				INVERT
				MANHOLE
				SHEET
				REFERENCE TO COORDINATE TABLE
				ABANDON IN PLACE
				REMOVE AND REPLACE
				MONUMENT AS NOTED
				BENCH MARK
				TEMPORARY BENCH MARK
				TEST HOLE
				SPOT ELEVATION
				WITNESS POST
				BLOCK NUMBER
				LOT NUMBER
				IRON PIPE SIZE (INDUSTRY STANDARD OUTSIDE PIPE DIA.)
				GATE VALVE
				VALVE BOX
				STEEL
				STAINLESS STEEL
				G.V.
				V.B.
				STL.
				SS

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2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS

LEGEND AND VICINITY MAP

ATKA, ALASKA



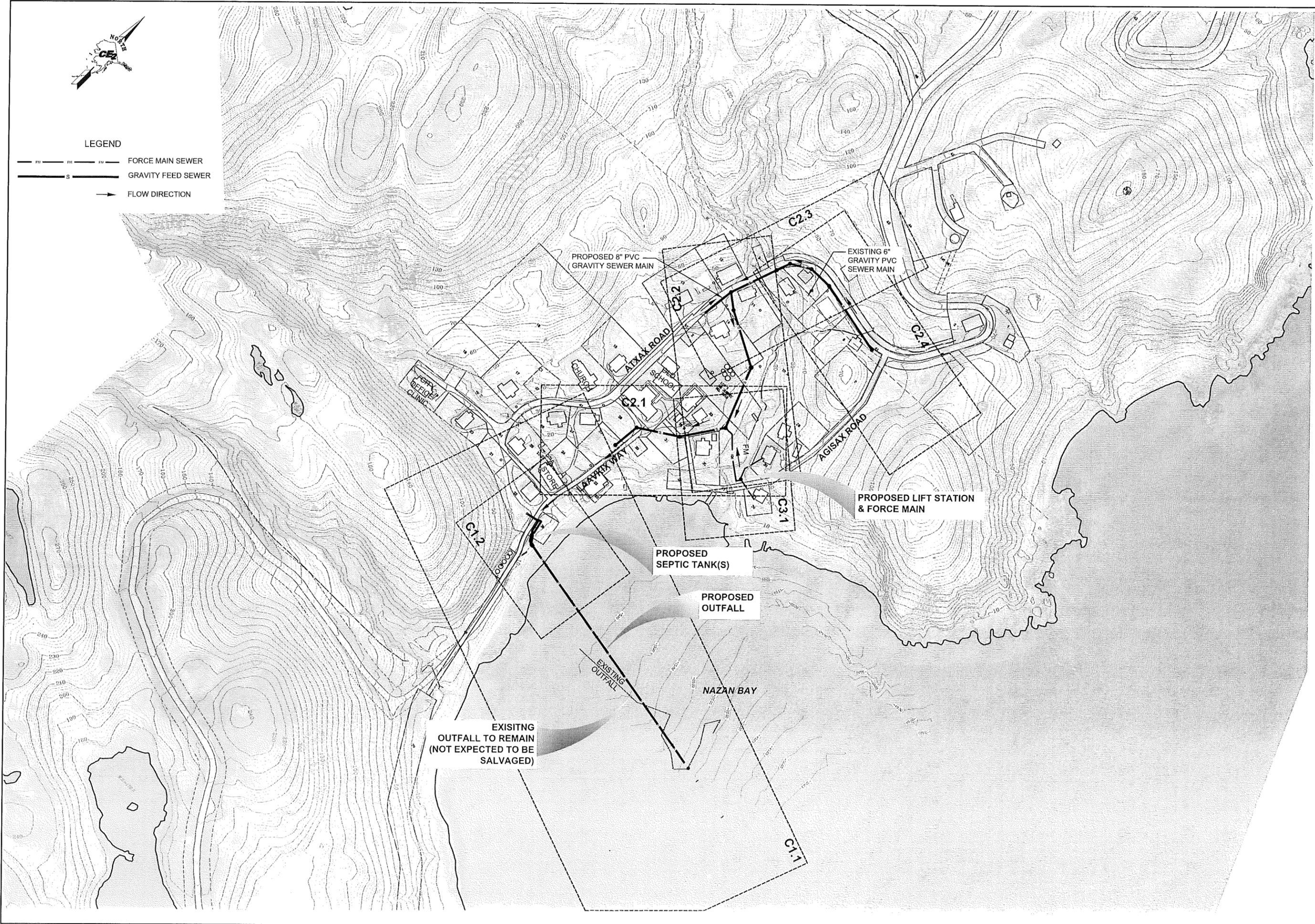
REVISION	DATE

Project No. _____ Date: NOV 2008

Designed by: _____ JPK

Drawn by: _____ LAM

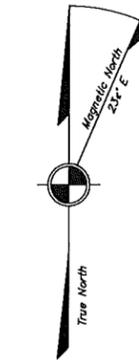
Approved by: _____ LAP



LEGEND

- FM — FM — FM — FORCE MAIN SEWER
- S — GRAVITY FEED SEWER
- FLOW DIRECTION

<p>Project No. _____</p> <p>Date NOV. 2008</p> <p>Designed _____</p> <p>Drawn DDR</p> <p>Approved _____</p>	<p>REVISION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td> </td><td> </td></tr> </table>											<p>BY DATE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td> </td><td> </td></tr> </table>											<p style="text-align: center;">CE2 ENGINEERS, INC.</p> <p style="font-size: small;">PO BOX 222946 ANCHORAGE, AK 99523 PH 907-348-1010 FAX 907-348-1015</p>
<p>2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS SHEET INDEX</p> <p style="text-align: right;">ATKA, ALASKA</p>																							
<p>CONSTRUCTION RECORD</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>FIELD BOOK</td><td> </td></tr> <tr><td>STAKING</td><td> </td></tr> <tr><td>FOREMAN</td><td> </td></tr> <tr><td>AS-BUILT</td><td> </td></tr> <tr><td>INSPECTOR</td><td> </td></tr> </table>				FIELD BOOK		STAKING		FOREMAN		AS-BUILT		INSPECTOR											
FIELD BOOK																							
STAKING																							
FOREMAN																							
AS-BUILT																							
INSPECTOR																							
<p>SCALE: 1" = 40'</p> <p style="font-size: x-small;">IF NOT SHOWN ON SCALE ACCORDINGLY</p>																							
<p>RECORD DRAWING CERTIFICATE</p> <p style="font-size: x-small;">THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.</p>																							
			<p>NAME _____</p> <p>DATE _____</p>																				



MAGNETIC DECLINATION
PER USGS QUADRANGLE
MAP SHUNGNAK (D-2)

LEGEND

- FOUND BLM BRASS CAP MONUMENT
- SET PK NAIL
- BOLLARD
- WATER VALVE
- LIGHT POLE
- GUY ANCHOR
- SATELLITE ANTENNA
- BOULDER
- WELL CASINGS
- MANHOLE, SANITARY SEWER
- VENT, SEWER
- PUBLIC SIGN
- PEDESTAL, CABLE TV
- PEDESTAL, ELECTRIC
- CLEANOUT, SEWER
- RECORD MEANDER
- RECORD PROPERTY LINE



SURVEYOR'S CERTIFICATE

I CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA, AND THAT THIS DRAWING REPRESENTS A SURVEY MADE UNDER MY SUPERVISION.

WILLIAM MCINTOCK
REGISTERED LAND SURVEYOR
LS-5480

DATE

NEW ATKA SUBDIVISION
Area

Water Tank
Area

ATKA ISLAND

Water Impoundment
Area

Water Treatment Area

North Outfall, Old Atka Area

South Outfall, Old Atka Area

SEC 16 SEC 15
SEC 21 SEC 22



VICINITY MAP

Scale: 1" = 1 Mile

Source:
U.S.G.S. Quadrangle Atka
1:250,000
Located within partially
surveyed T92S, R176W
Seward Meridian Alaska,
Aleutian Islands Recording
District

SEC. 32	SEC. 33	SEC. 34	T.91S. T.92S.	SEC. 36
SEC. 5	SEC. 4	SEC. 3	SEC. 2	SEC. 1 R.176W. R.175W.
SEC. 8	SEC. 9 Atka Airport	SEC. 10 NAZAN BAY	SEC. 11	SEC. 12
SEC. 17	Atka School	SEC. 6	SEC. 14	SEC. 13
SEC. 20	Atka Village	SEC. 22	SEC. 23	SEC. 24

Horizontal Control

A local surface plane coordinate system based on a series of least square adjusted static GPS observations performed by McClintock Land Associates in 2001.

NGS Station "BOB", a 3 1/2" Brass Tablet in a 6" x 9" concrete post has a NAD83(CORS96) geodetic position of Latitude 52°12'5.8182" North, Longitude 174°11'46.9733" West, determined using multiple static GPS observations and an averaged NGS OPUS solution. Local coordinates for station "Bob" (pt 9000), are: N. 41340.44'; E. 152612.54'.

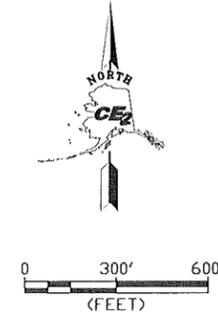
NGS Station "Graham", a 3 1/2" Brass Cap bears North 09°54'27" West, 11342.56' and has local coordinates of N. 52513.85; E. 150660.94'.

These points establish the Basis of Bearings. All bearings shown are local bearings as oriented to this Basis of Bearings and the distances shown are local horizontal ground distances.

Vertical Control

The vertical datum is NAVD88, expressed in feet, as established by the post processed GPS position of station "Bob" as described in the Horizontal Control Statement (NAVD88 elevation of 193.81'); the RTK GPS survey data shown hereon contains orthometric heights determined with a geoid model ("GEOID99").

To convert from this datum to the Mean Lower Low Water (MLLW) datum, add 3.0 feet to the surveyed elevations. Mean High Water (MHW) is approximately 3.3 feet above MLLW. Conversion from the NAVD88 datum to MLLW was determined with a series of GPS tidal observations from June 30 through July 2, 2005 and a comparison of these with the published MLLW values for the corresponding shoreline.



RECORD DRAWING CERTIFICATE

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NAME _____ DATE _____

SCALE: AS SHOWN

CONSTRUCTION RECORD

FIELD BOOK	STAKING	FOREMAN	ASBUILT	INSPECTOR
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2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS SURVEY CONTROL

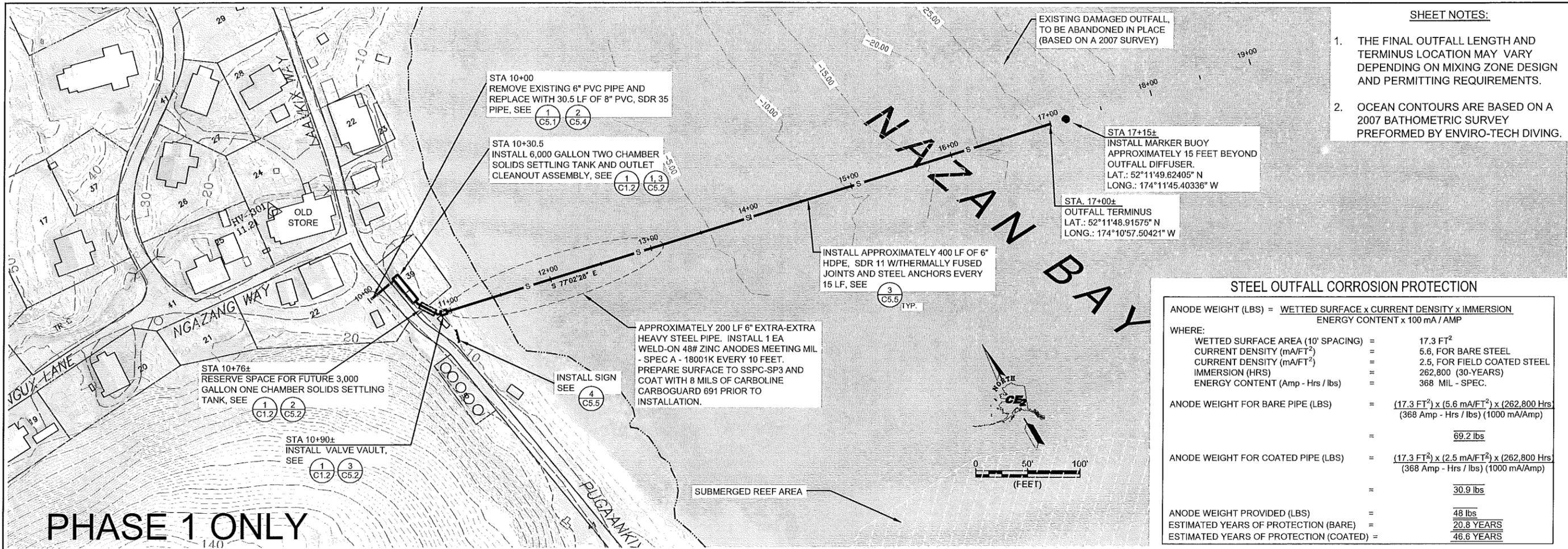
ATKA, ALASKA

CEI ENGINEERS, INC.
PO BOX 22946 ANCHORAGE, AK 99522 PH: 907-348-1010 FAX: 907-348-1015

REVISION	BY	DATE

Project No. _____ Date AUG 2008
Designed by JFK
Drawn by DDR
Approved by LAP

Sheet No. G3.1



PHASE 1 ONLY

- SHEET NOTES:**
1. THE FINAL OUTFALL LENGTH AND TERMINUS LOCATION MAY VARY DEPENDING ON MIXING ZONE DESIGN AND PERMITTING REQUIREMENTS.
 2. OCEAN CONTOURS ARE BASED ON A 2007 BATHOMETRIC SURVEY PERFORMED BY ENVIRO-TECH DIVING.

STEEL OUTFALL CORROSION PROTECTION

ANODE WEIGHT (LBS) = $\frac{\text{WETTED SURFACE} \times \text{CURRENT DENSITY} \times \text{IMMERSION ENERGY CONTENT} \times 100 \text{ mA / AMP}}{\text{CURRENT DENSITY}}$

WHERE:

WETTED SURFACE AREA (10' SPACING) =	17.3 FT ²
CURRENT DENSITY (mA/FT ²) =	5.6, FOR BARE STEEL
CURRENT DENSITY (mA/FT ²) =	2.5, FOR FIELD COATED STEEL
IMMERSION (HRS) =	262,800 (30-YEARS)
ENERGY CONTENT (Amp - Hrs / lbs) =	368 MIL - SPEC.

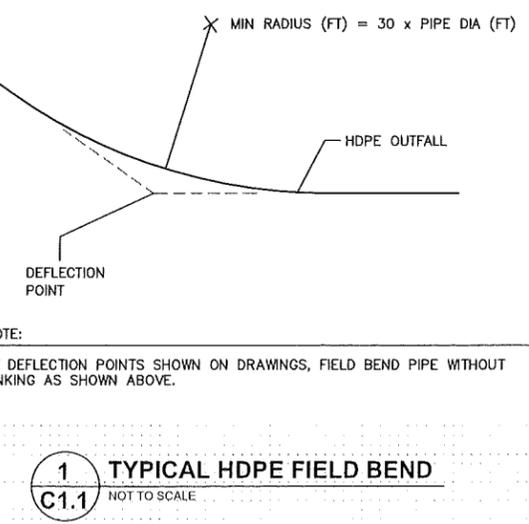
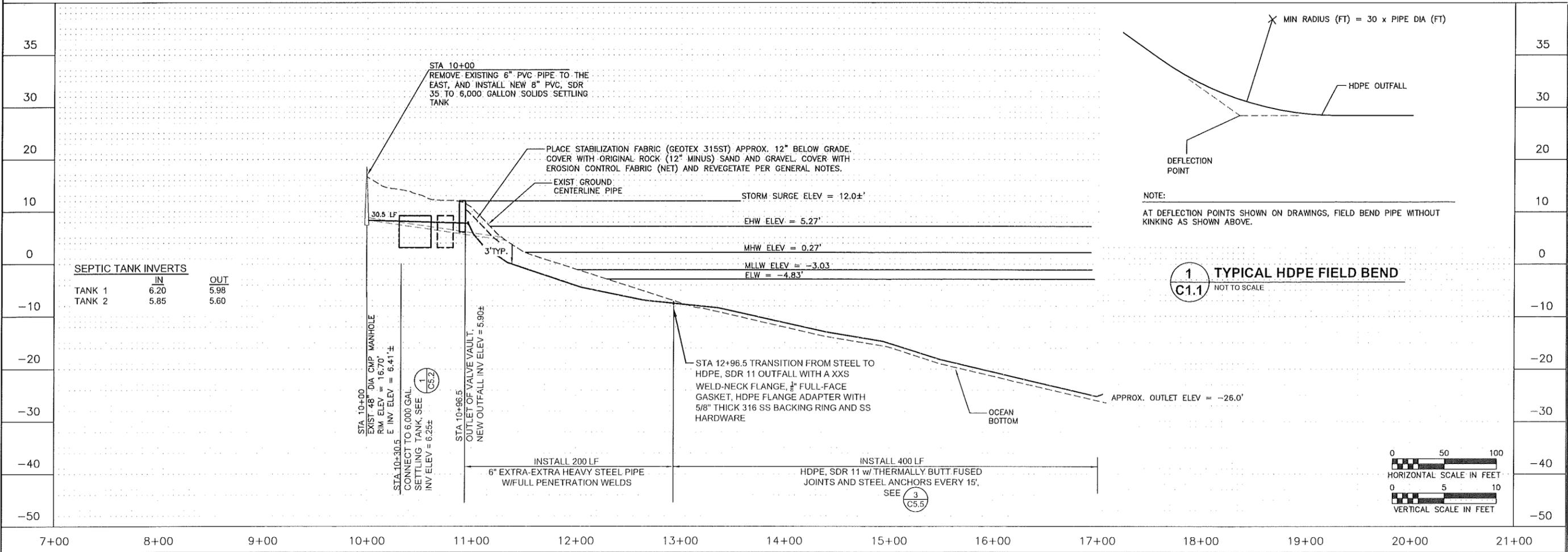
ANODE WEIGHT FOR BARE PIPE (LBS) = $\frac{17.3 \text{ FT}^2 \times (5.6 \text{ mA/FT}^2) \times (262,800 \text{ Hrs})}{368 \text{ Amp - Hrs / lbs} (1000 \text{ mA/Amp})}$ = 69.2 lbs

ANODE WEIGHT FOR COATED PIPE (LBS) = $\frac{17.3 \text{ FT}^2 \times (2.5 \text{ mA/FT}^2) \times (262,800 \text{ Hrs})}{368 \text{ Amp - Hrs / lbs} (1000 \text{ mA/Amp})}$ = 30.9 lbs

ANODE WEIGHT PROVIDED (LBS) = 48 lbs

ESTIMATED YEARS OF PROTECTION (BARE) = 20.8 YEARS

ESTIMATED YEARS OF PROTECTION (COATED) = 46.6 YEARS



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NAME: _____ DATE: _____

SCALE: AS SHOWN

CONSTRUCTION RECORD

FIELD BOOK

STAKING

FOREMAN

AS-BUILT

INSPECTOR

STATE OF ALASKA

2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS

SOUTH OUTFALL PLAN AND PROFILE

ATKA, ALASKA

CE2 ENGINEERS, INC.

PO BOX 22294 ANCHORAGE, AK 99523 PH: 907-345-1010 FAX: 907-345-1015

BY DATE

REVISION

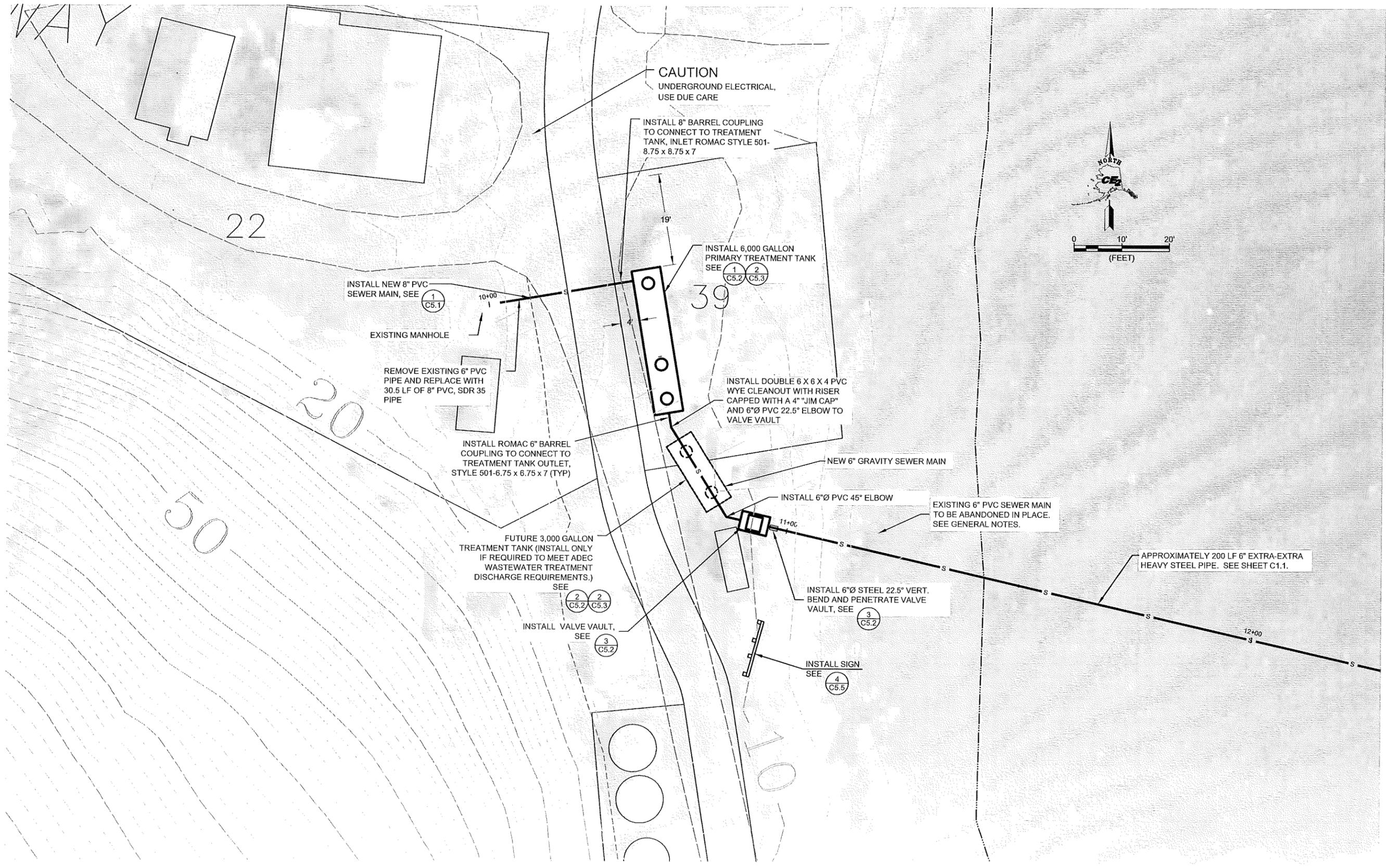
Project No. _____ Date: AUG 2008

Designed: LAP

Drawn: LAW

Approved: LAP

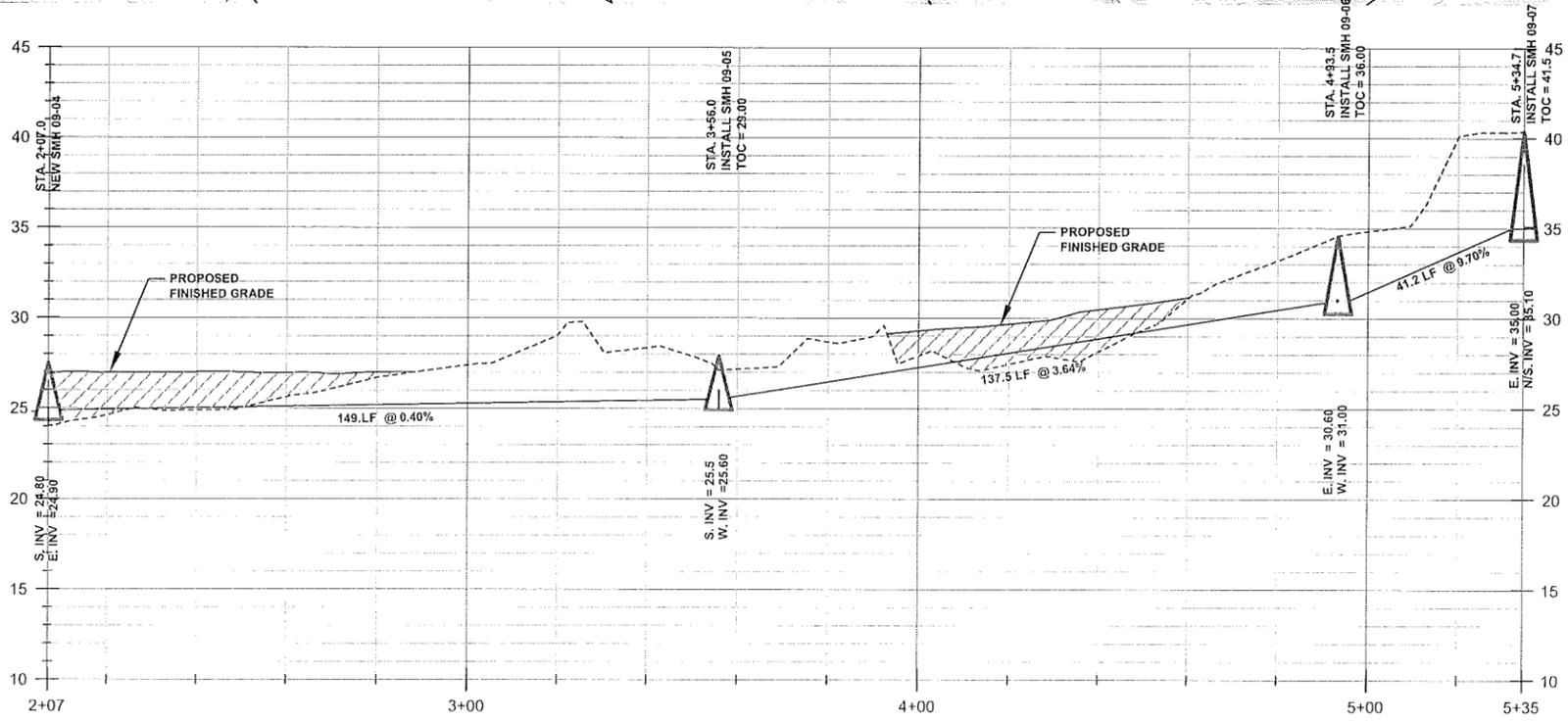
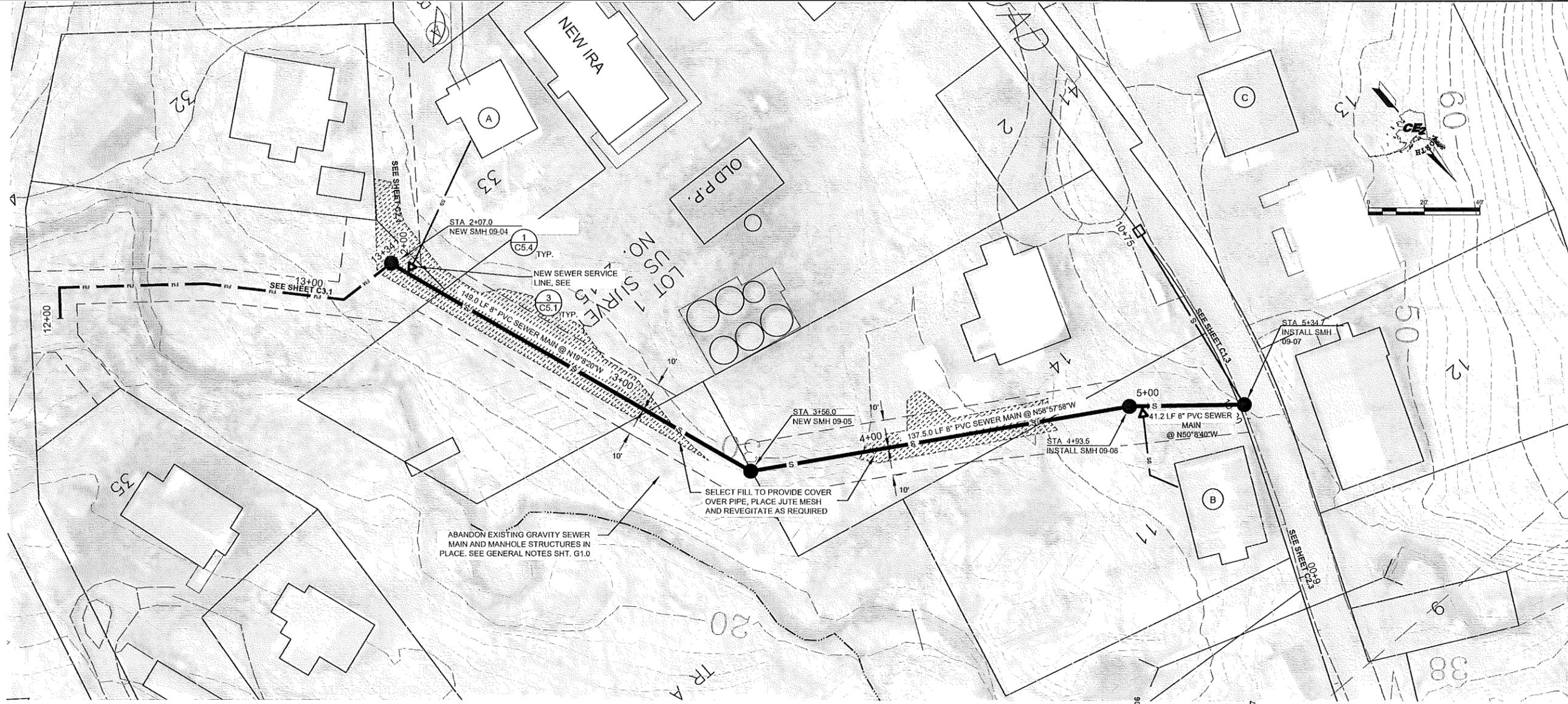
Sheet No. **C1.1**



1 TANK SITE PLAN

	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 REVISION ORIGINAL DRAWING	DATE OF REVISION THIS DRAWING DATE OF REVISION SCALE ACCURATELY	
CONSTRUCTION RECORD	FIELD BOOK	STAKING	INSPECTOR
2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS	SOUTH OUTFALL TANK SITE PLAN	ATKA, ALASKA	
	REVISION		BY DATE
Project No.	Date	Designed	LAW
Date	NOV. 2008	Drawn	LAW
Approved			
Sheet No. C1.2			

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CE2 ENGINEERS, INC.
 PO BOX 23296 ANCHORAGE, AK 99523 PH: 907-346-1010 FAX: 907-346-0115

Project No. _____ Date NOV. 2008
 Designed _____ Drawn LAWY Approved _____

Sheet No. **C2.2**

REVISION

NO.	DATE	DESCRIPTION

BY DATE

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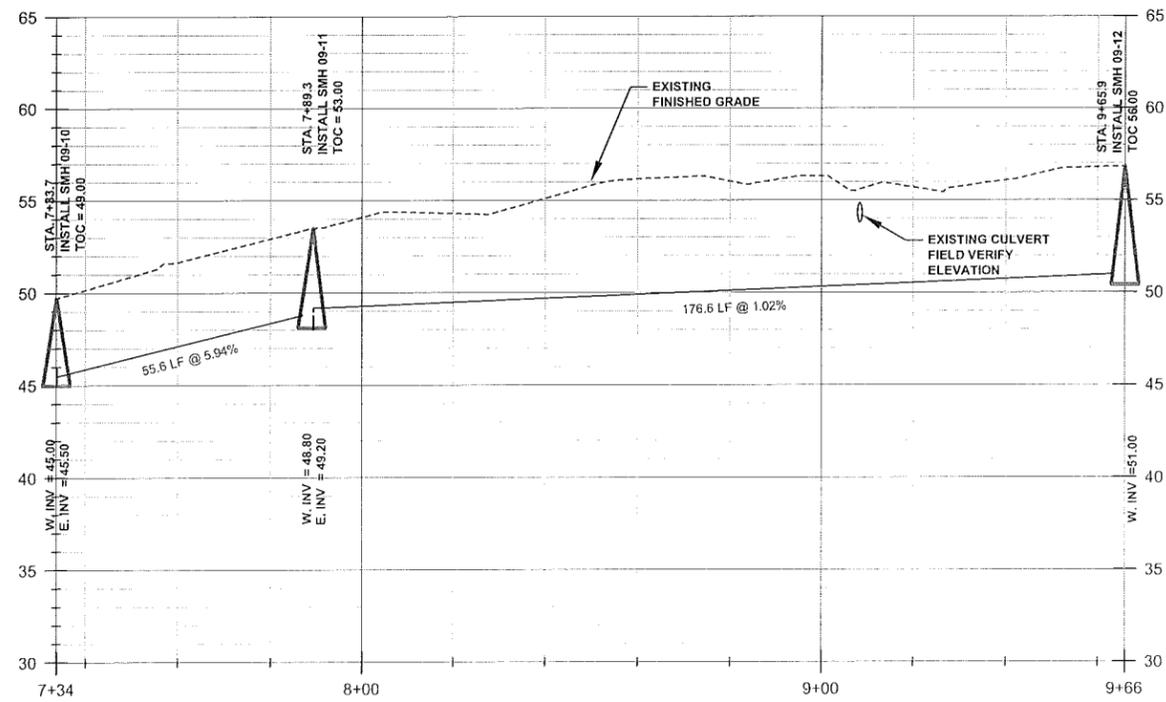
SCALE: 1" = 20'

CONSTRUCTION RECORD

FIELD BOOK	STAKING	FOREMAN	AS-BUILT	INSPECTOR

NAME _____ DATE _____

2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS
 SEWER PLAN & PROFILE
 ATKA, ALASKA



3

CE2

NORTH

0 20 40

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NAME _____ DATE _____

SCALE: 1" = 20'

IF NOT ONE INCH TO SCALE, ACCORDING TO _____

CONSTRUCTION RECORD

FIELD BOOK	STARTING
FOREMAN	AS-BUILT
INSPECTOR	

STATE OF ALASKA

2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS

SEWER PLAN & PROFILE

ATKA, ALASKA

CE2 ENGINEERS, INC.

PO BOX 22266 ANCHORAGE, AK 99523 PH: 907-349-1010 FAX: 907-345-1015

REVISION	BY	DATE

Project No. _____ Date NOV. 2008

Designed _____ Drawn LAW

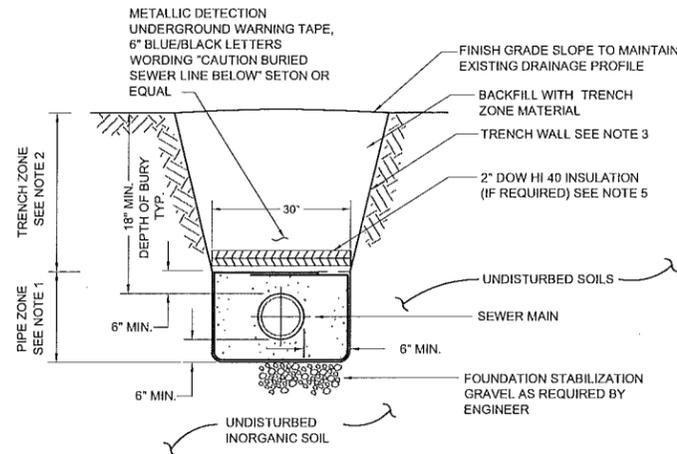
Approved _____

Sheet No. C2.4

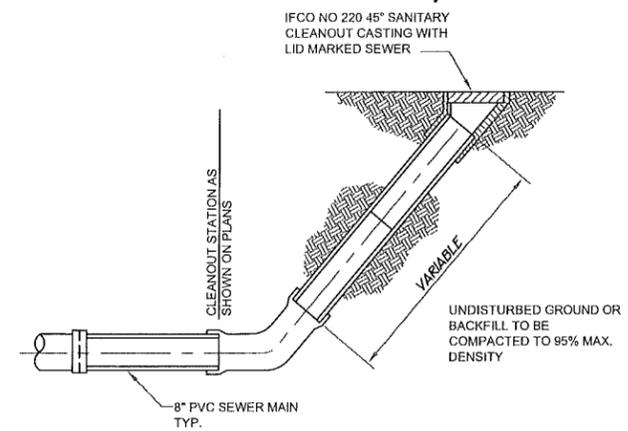
G:\ACAD\ATKA\2008 Wastewater System Improvements\C5.1 TRENCH DETAILS.dwg, 4/15/2009 10:46:43 AM, DavidB, \BIGGIG15100 PCL6

TRENCH NOTES

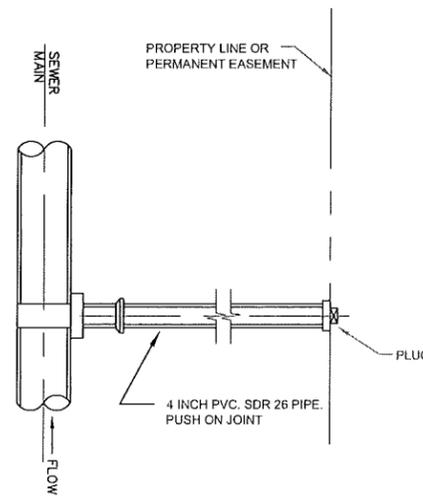
1. PIPE ZONE MATERIAL SHALL BE CLASS A BACKFILL. COMPACT TO 95% OF THE MATERIAL'S MAXIMUM DENSITY.
2. TRENCH ZONE MATERIAL SHALL NOT CONTAIN ORGANIC OR OTHER DELETERIOUS MATERIALS. COMPACT TO 95% IN TRAVELED WAYS AND 90% IN FIELD AREAS.
3. TRENCH WALL SHALL BE SLOPED OR SHORED IN CONFORMANCE WITH ALL APPLICABLE SAFETY STANDARDS.
4. REPLACE DISTURBED ROADWAY PER TYPICAL TRENCH /ROAD RESTORATION SECTION (SEE DETAIL 2, THIS SHEET)
5. IF DEPTH OF COVER IS LESS THAN 18", PROVIDE 2" OF INSULATION.



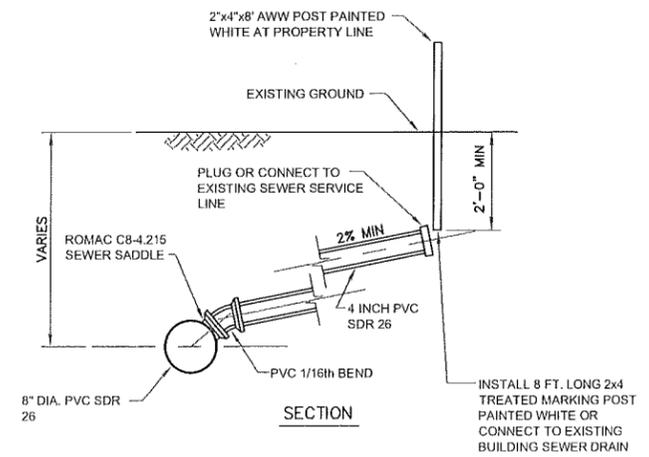
1 TYPICAL TRENCH SECTION
SCALE: NTS



2 SANITARY CLEANOUT
SCALE: NTS



PLAN



SECTION

3 SEWER SERVICE LATERAL CONNECTION DETAIL
SCALE: NTS

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NAME _____ DATE _____

SCALE: AS SHOWN
BASED ON ORIGINAL DRAWING
IF THIS SHEET IS NOT TO BE REPRODUCED, IT SHALL BE REPRODUCED AS SHOWN ON THIS SHEET, UNLESS OTHERWISE NOTED.

CONSTRUCTION RECORD
FIELD BOOK
STAKING
FOREMAN
ASBUILT
INSPECTOR



2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS
TRENCH SECTION AND SERVICE DETAILS
ATKA, ALASKA

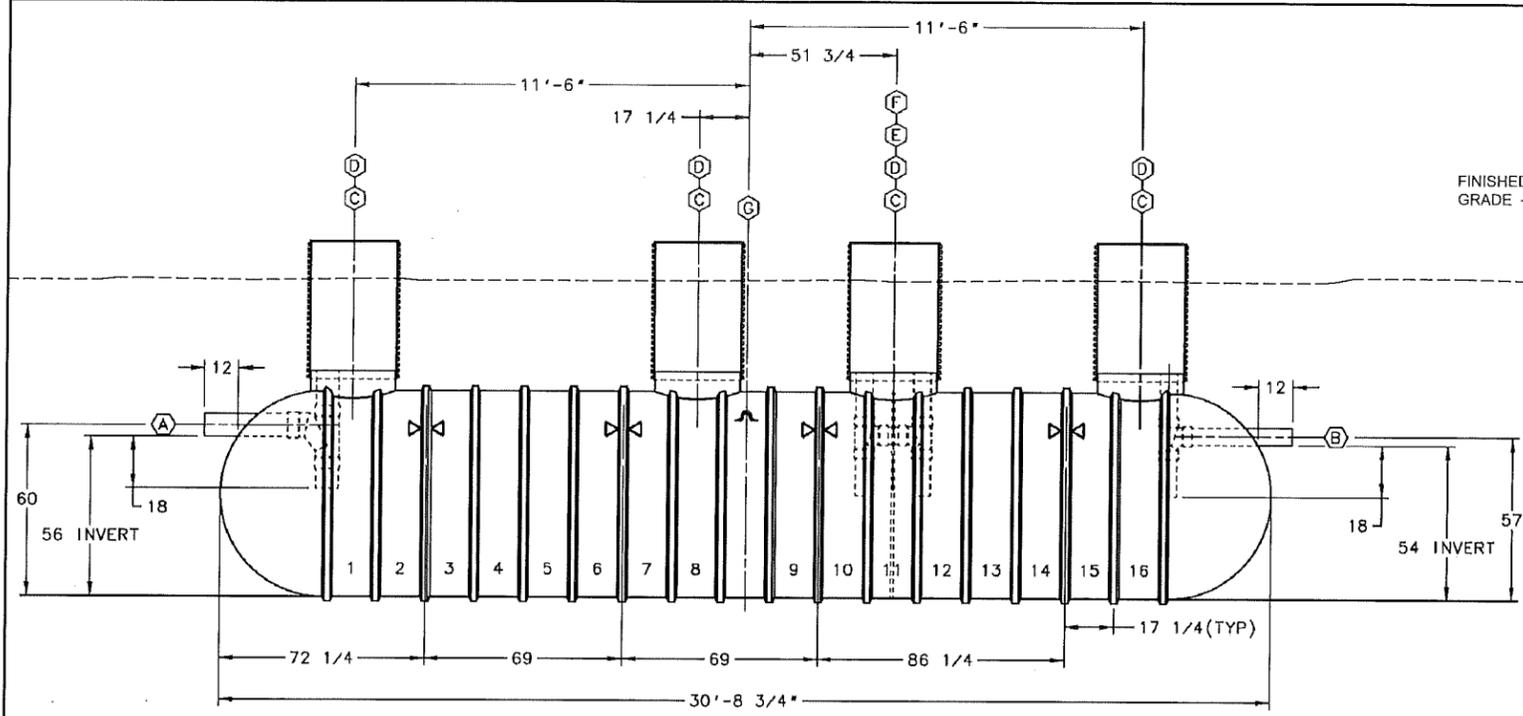


REVISION	BY	DATE

Project No. _____ Date: NOV 2008
Designed: LJP
Drawn: DDR
Approved: LJP

Sheet No. C5.1

G:\ACAD\ATKA\2008 Wastewater System Improvements\C5.2_4 SOUTH OUTFALL WASTEWATER TANK REV.dwg, 4/15/2009 10:40:47 AM, David, \BIGG\G5100 PCL6



(A)	8"DIA SCH 40 PVC INLET PIPE WITH INTERNAL SANITARY TEE & PIPES
(B)	6"DIA SCH 40 PVC OUTLET PIPE WITH INTERNAL SANITARY TEE & PIPES
(C)	RISER PIPE, FOR 30"(NOMINAL) ACCESS OPENING /CLEANOUT
(D)	30"DIA x 48"HIGH PVC RISER WITH FRP LID
(E)	FULL PLATE BAFFLE (54" INVERT) WITH 4 5/8"DIA HOLE
(F)	6"DIA SCH 40 PVC DOUBLE CROSS-OVER TEE & PIPES
(G)	LIFTING LUG (2 TOTAL) (1 EXTRA)
(X)	HOLD DOWN STRAP LOCATION

TREATMENT TANK SPECIFICATIONS

TANK: NOMINAL 6,000 GALLON CAPACITY, (APPROXIMATELY 30'-9" LONG X 6'-0" DIA.) FIBERGLASS TWO-COMPARTMENT (2/3 -1/3) SEPTIC TANK. INTERIOR BAFFLE/PARTITION WALL SHALL BE NON-METALLIC WITH TWO MINIMUM CROSS OVER SANITARY TEES ACCESSIBLE THROUGH A MANWAY ACCESS OPENING AND WITH AND 18" OF DOWN PIPE. XERXES CORP. OR EQUAL.

INLET/OUTLET CONNECTIONS: CONNECTIONS SHALL BE 8" DIA. SCH. 40 PVC WITH AN INVERT AT 56" ABOVE THE TANK BOTTOM, SANITARY TEE ACCESSIBLE THROUGH A MANWAY ACCESS OPENING AND 18" OF DOWN PIPE.

MANWAY AND RISERS: MANWAY AND RISERS SHALL BE 30" DIA. X 48" TALL WITH GASKETED FRP COVER BOLTED TO TOP FLANGE WITH SS HARDWARE. ALL ITEMS SHALL BE SUPPLIED BY TANK MANUFACTURER.

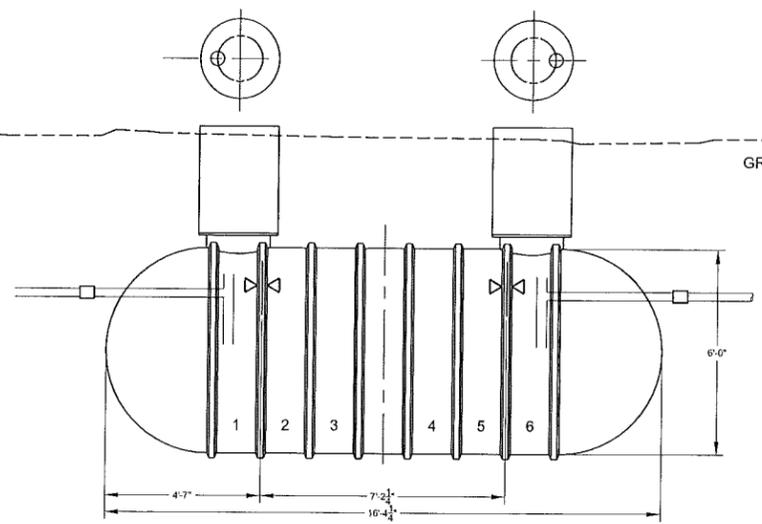
CLEANOUTS AND OTHER MINOR ACCESS PORTS: CLEANOUTS SHALL BE 30" DIA MOUNTED IN THE 12:00 O'CLOCK POSITION. LENGTH, APPROXIMATELY 48" LONG, SHALL BE SUFFICIENT TO MATCH EXISTING GRADE.

1 6,000 GALLON FIBERGLASS PRIMARY TREATMENT TANK
SCALE: NTS

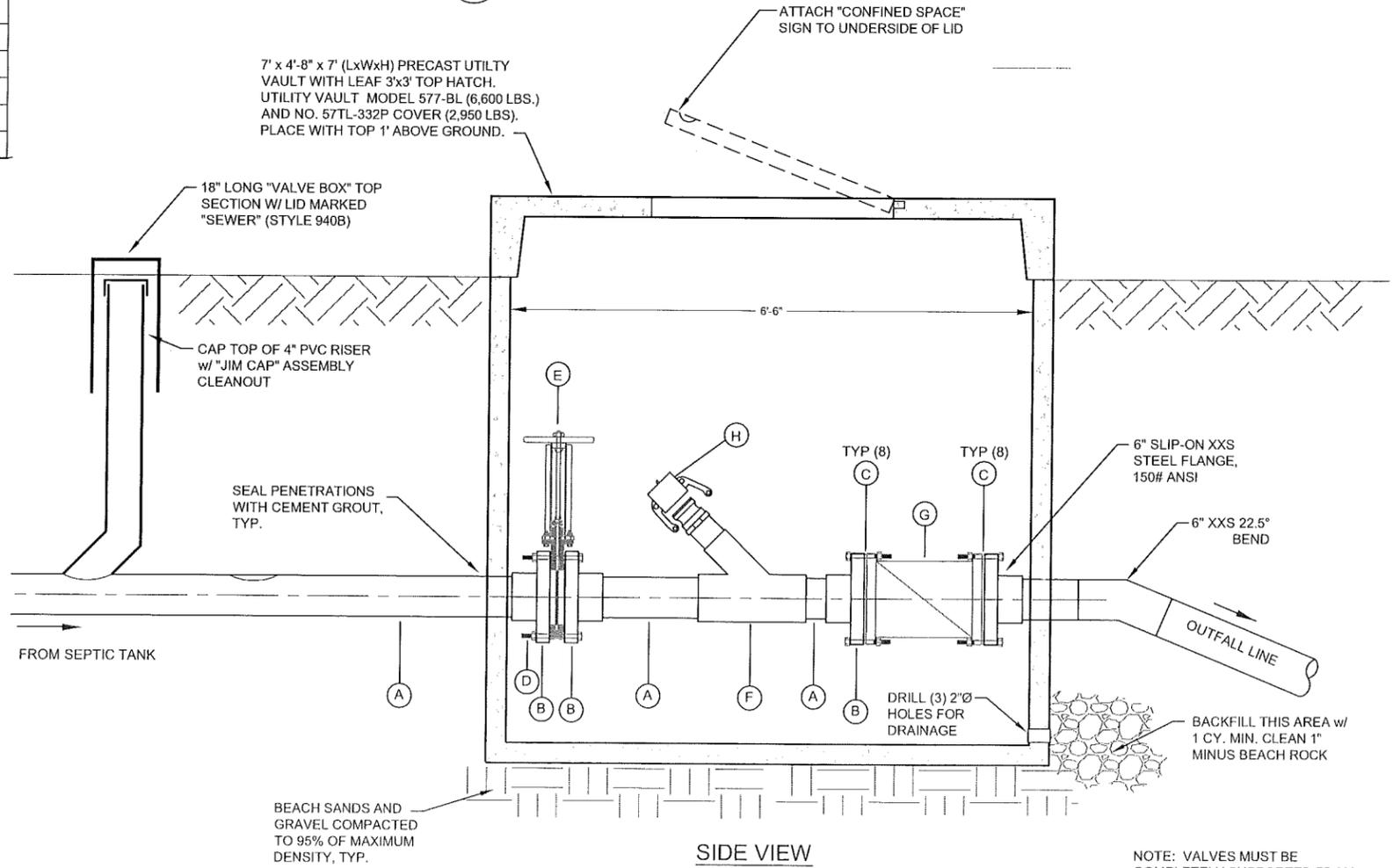
MATERIALS REQUIRED

- (A) 6-IN PVC SDR 26 SEWER MAIN
- (B) 6" PVC VANSTONE 150# FLANGE ADAPTER, SOC. X FL. AND 1/8" RED RUBBER FULL-FACE GASKET
- (C) 4-IN BY 0.75-IN DIA STAINLESS STEEL BOLTS FOR FLANGE CONNECTIONS- TYPICAL 8 EACH FLANGE CONNECTION
- (D) 8-IN BY 0.75-IN DIA STAINLESS STEEL BOLTS FOR FLANGE CONNECTIONS- TYPICAL 8 EACH FLANGE CONNECTION
- (E) FLEXGATE 6-IN SLURRY KNIFE GATE VALVE - FL. X FL. OR EQUAL
- (F) 6"x6"x4" PVC WYE, SOC.xSOC.xSOC.
- (G) 6" RUBBER FLAPPER SWING CHECK VALVE - FL. X FL. APCO WILLAMETTE OR EQUAL
- (H) 4" CLEAN OUT FITTING CONSISTING OF A 4" PVC MALE ADAPTER AND 4" MALE CAMLOCK ADAPTER (FIPT X CAM.) AND CAP

2 FUTURE 3,000 GALLON FIBERGLASS TREATMENT TANK
SCALE: NTS



7' x 4'-8" x 7' (LxWxH) PRECAST UTILITY VAULT WITH LEAF 3'x3' TOP HATCH. UTILITY VAULT MODEL 577-BL (6,600 LBS.) AND NO. 57TL-332P COVER (2,950 LBS). PLACE WITH TOP 1" ABOVE GROUND.



3 VALVE VAULT DETAIL
SCALE: 1" = 1'-0"

NOTE: VALVES MUST BE COMPLETELY SUPPORTED FROM THE BASE OF THE UTILITY VAULT WITH 3" FIBERGLASS CHANNEL AND 3/16" S.S. HARDWARE

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SCALE: AS SHOWN

CONSTRUCTION RECORD

FIELD BOOK

STAKING

FOREMAN

INSPECTOR

STATE OF ALASKA

2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS

SOUTH OUTFALL WASTEWATER TANK DETAILS

ATKA, ALASKA

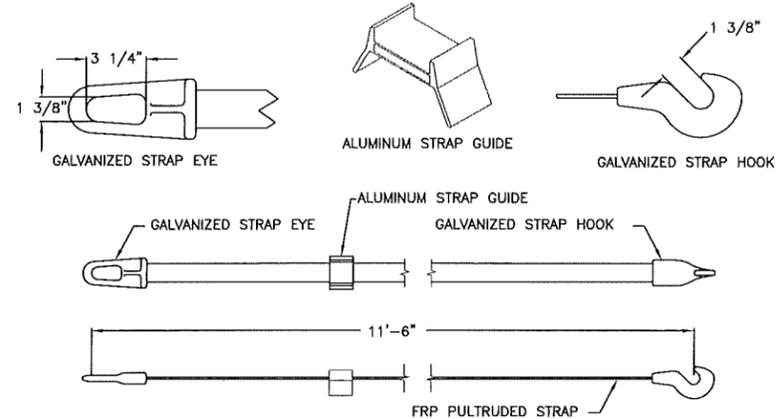
CE2 ENGINEERS, INC.

PO BOX 222946 ANCHORAGE, AK 99523 PH: 907-545-0100 FAX: 907-545-0115

REVISION	DATE	BY

Project No. _____ Date NOV. 2005 Designated _____ Drawn _____ Approved _____

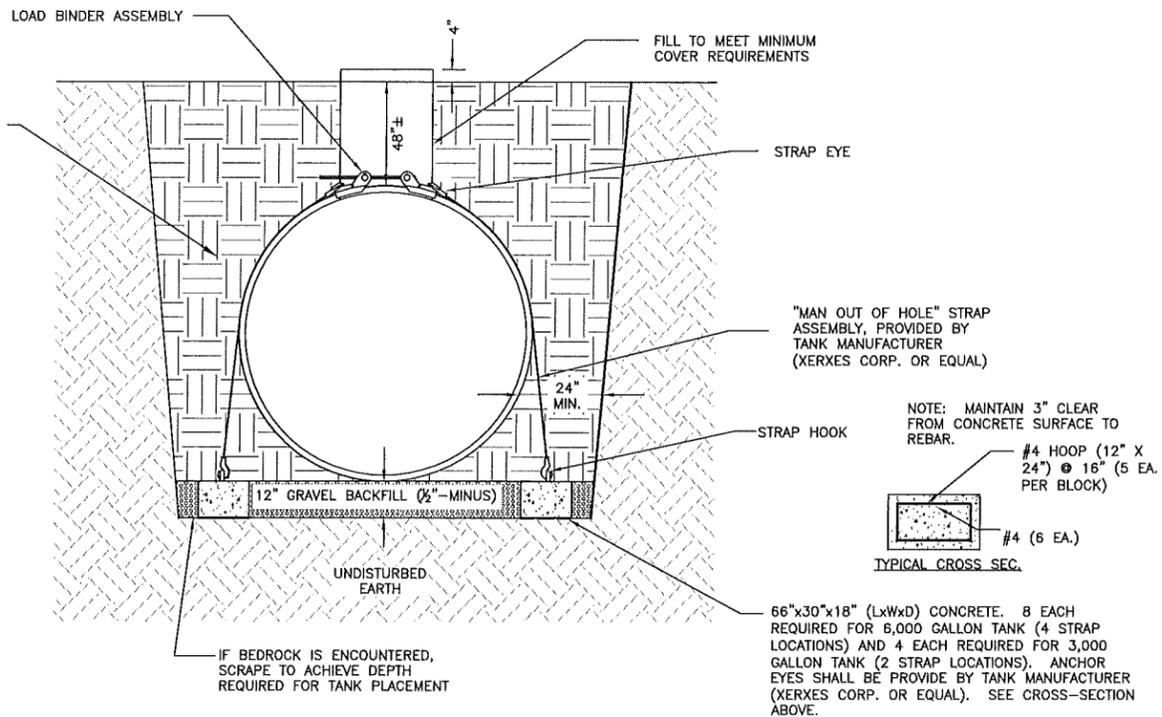
Sheet No. C5.2



NOTE: STRAPS, SUPPLIED BY TANK MANUFACTURER, ARE RATED AT MINIMUM 25,000 LBS

1 HOLD DOWN STRAP DETAIL
SCALE: NTS

BEACH SANDS AND 1/2" MINUS ROUNDED GRAVEL COMPACTED TO 95% OF MAXIMUM DENSITY, TYP. SELECT KOROVIN BEACH DEPOSITS OR EQUAL.

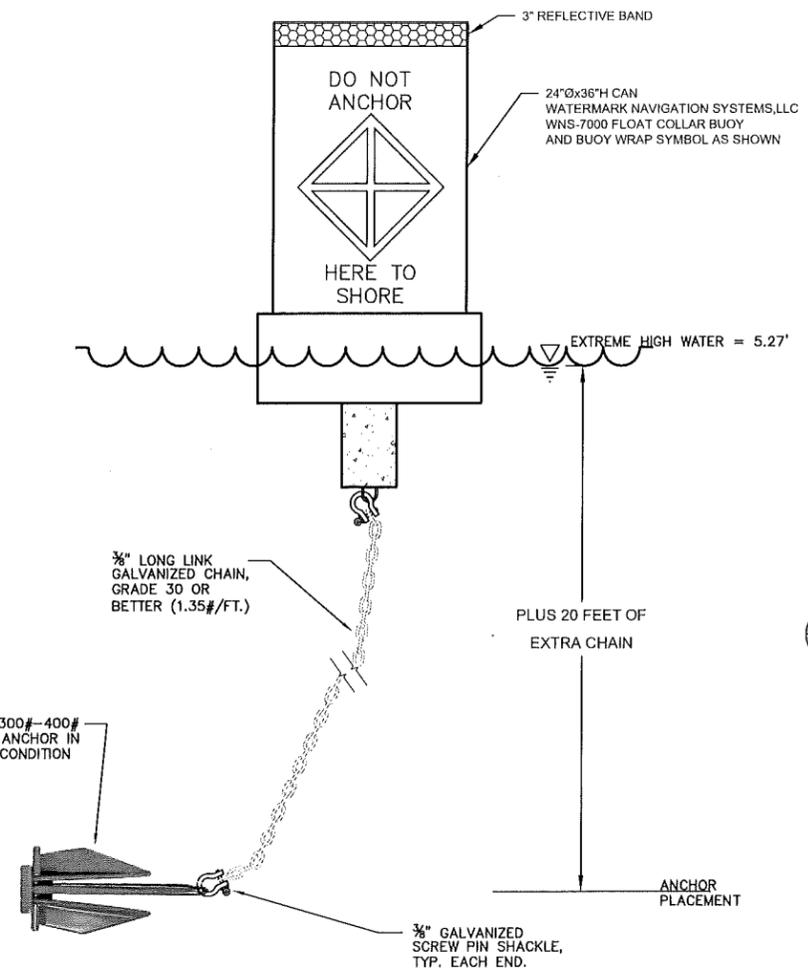


2 TANK STRAP INSTALLATION
SCALE: NTS

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SCALE: AS SHOWN	DATE OF RECORDING	DATE OF ORIGINAL DRAWING	DATE OF REVISION	DATE OF REVISION	DATE OF REVISION
CONSTRUCTION RECORD	FIELD BOOK	STAKING	FOREMAN	AS-BUILT	INSPECTOR
2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS SOUTH OUTFALL MISC TRENCH AND TANK DETAILS ATKA, ALASKA					
Project No.	Date	Designed	Drawn	Approved	
	NOV. 2008		LAW		
Sheet No.	C5.3				

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1 OUTFALL MARKER BUOY
SCALE: NTS

2 NOT USED
SCALE: NTS

STEEL ANCHOR ASSEMBLY CORROSION PROTECTION

ANODE WEIGHT (LBS) = $\frac{\text{WETTED SURFACE} \times \text{CURRENT DENSITY} \times \text{IMMERSION}}{\text{ENERGY CONTENT} \times 100 \text{ mA / AMP}}$

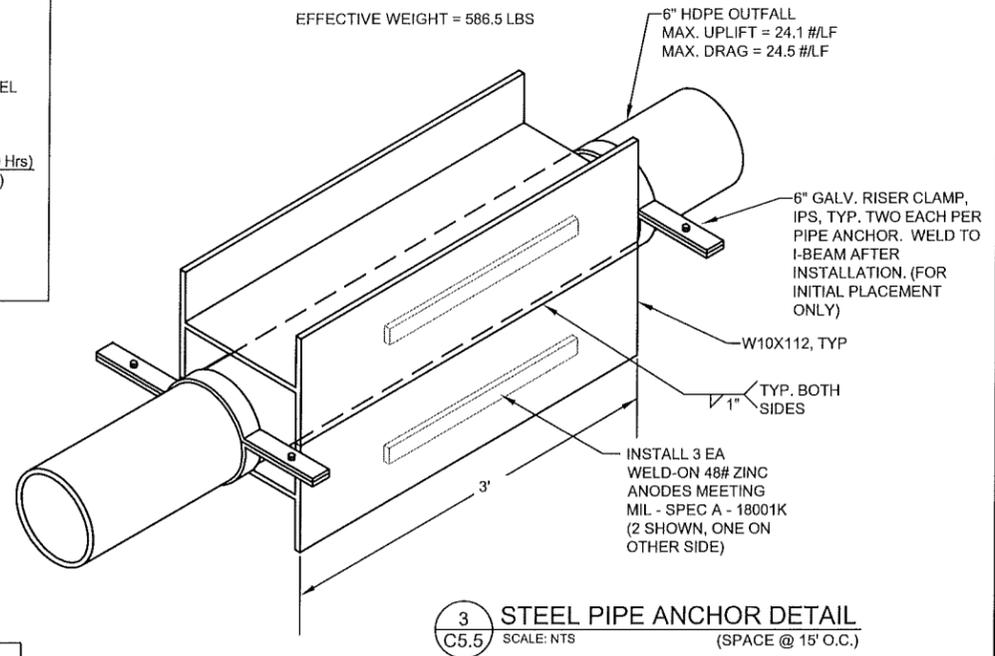
WHERE:

WETTED SURFACE AREA	=	32.25 FT ²
CURRENT DENSITY (mA/FT ²)	=	5.6, FOR BARE STEEL
CURRENT DENSITY (mA/FT ²)	=	2.5, FOR FIELD COATED STEEL
IMMERSION (HRS)	=	262,800 (30-YEARS)
ENERGY CONTENT (Amp - Hrs / lbs)	=	368 MIL - SPEC.

ANODE WEIGHT FOR BARE PIPE (LBS) = $\frac{(32.25 \text{ FT}^2) \times (5.6 \text{ mA/FT}^2) \times (262,800 \text{ Hrs})}{(368 \text{ Amp - Hrs / lbs}) (1000 \text{ mA/Amp})}$ = 129 lbs

ANODE WEIGHT PROVIDED (LBS) = 144 lbs

ESTIMATED YEARS OF PROTECTION (BARE) = 33.5 YEARS



3 STEEL PIPE ANCHOR DETAIL
SCALE: NTS (SPACE @ 15' O.C.)

DIFFUSER ASSEMBLY CORROSION PROTECTION

ANODE WEIGHT (LBS) = $\frac{\text{WETTED SURFACE} \times \text{CURRENT DENSITY} \times \text{IMMERSION}}{\text{ENERGY CONTENT} \times 100 \text{ mA / AMP}}$

WHERE:

WETTED SURFACE AREA	=	80 FT ²
CURRENT DENSITY (mA/FT ²)	=	5.6, FOR BARE STEEL
CURRENT DENSITY (mA/FT ²)	=	2.5, FOR FIELD COATED STEEL
IMMERSION (HRS)	=	262,800 (30-YEARS)
ENERGY CONTENT (Amp - Hrs / lbs)	=	368 MIL - SPEC.

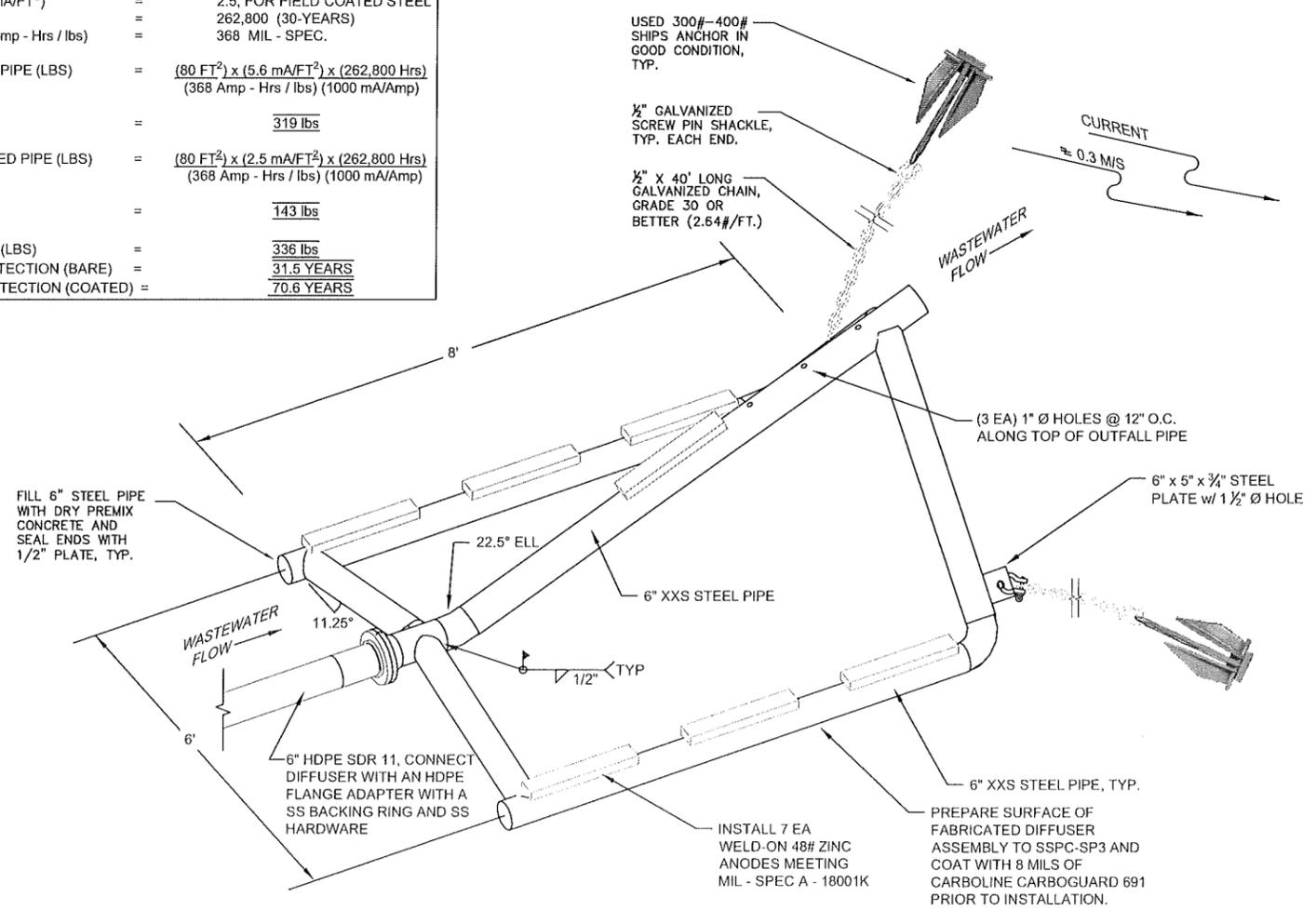
ANODE WEIGHT FOR BARE PIPE (LBS) = $\frac{(80 \text{ FT}^2) \times (5.6 \text{ mA/FT}^2) \times (262,800 \text{ Hrs})}{(368 \text{ Amp - Hrs / lbs}) (1000 \text{ mA/Amp})}$ = 319 lbs

ANODE WEIGHT FOR COATED PIPE (LBS) = $\frac{(80 \text{ FT}^2) \times (2.5 \text{ mA/FT}^2) \times (262,800 \text{ Hrs})}{(368 \text{ Amp - Hrs / lbs}) (1000 \text{ mA/Amp})}$ = 143 lbs

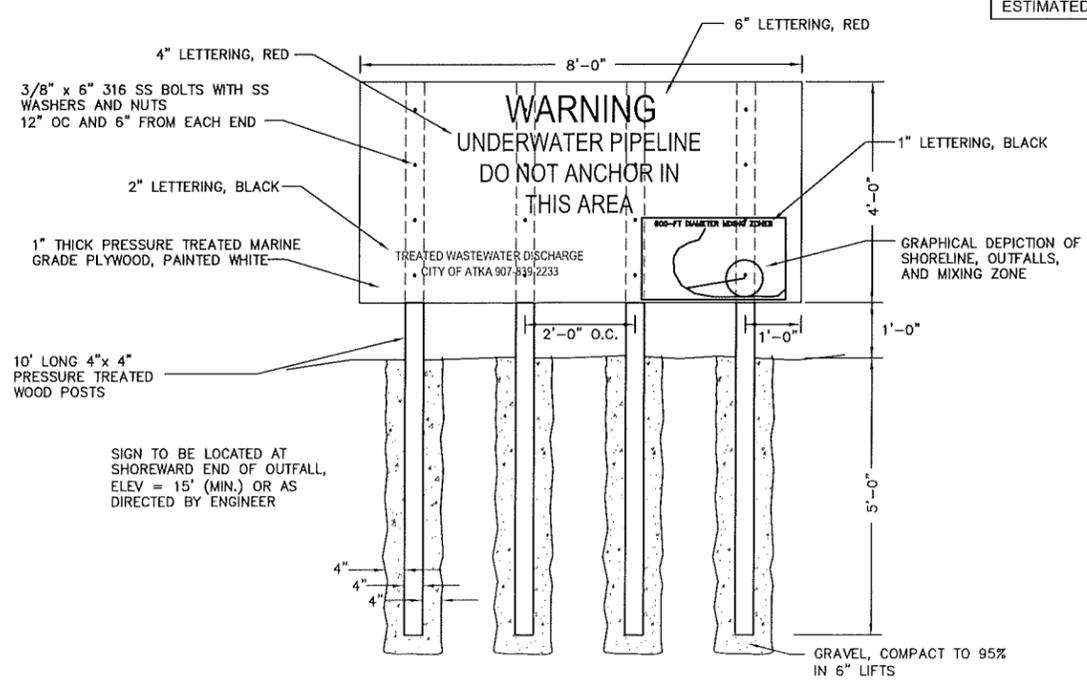
ANODE WEIGHT PROVIDED (LBS) = 336 lbs

ESTIMATED YEARS OF PROTECTION (BARE) = 31.5 YEARS

ESTIMATED YEARS OF PROTECTION (COATED) = 70.6 YEARS



5 DIFFUSER DETAIL
SCALE: NTS



4 SIGN DETAIL
SCALE: NTS

RECORD DRAWING CERTIFICATE

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

SCALE: AS SHOWN

CONSTRUCTION RECORD

FIELD BOOK	STAKING	FOREMAN	AS-BUILT	INSPECTOR
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STATE OF ALASKA

2008 OLD VILLAGE WASTEWATER SYSTEM IMPROVEMENTS SOUTH OUTFALL DETAILS

ATKA, ALASKA

CEE ENGINEERS, INC.

PO BOX 222946 ANCHORAGE, AK 99522 PH: 907-546-0110 FAX: 907-546-0105

Project No.	NOV. 2008
Date	
Designed	LAW
Drawn	
Approved	

Sheet No. C5.5