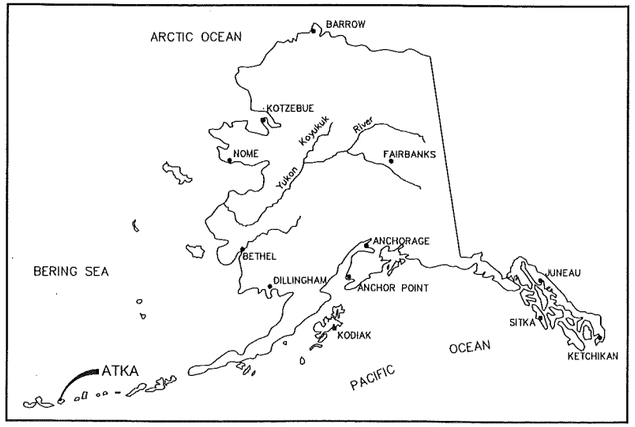
ATKA, ALASKA
2010 WATER STORAGE TANK

- 130,300 (163,000 GAL. NOMINAL) GALLON WATER STORAGE TANK

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

ISSUED FOR AGENCY APPROVAL OCTOBER 2010



LOCATION MAP

CE2 ENGINEERS, INC.

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

STATE OF ALASKA 49TH
Lloyd A. Persson NO. CE 9692
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT

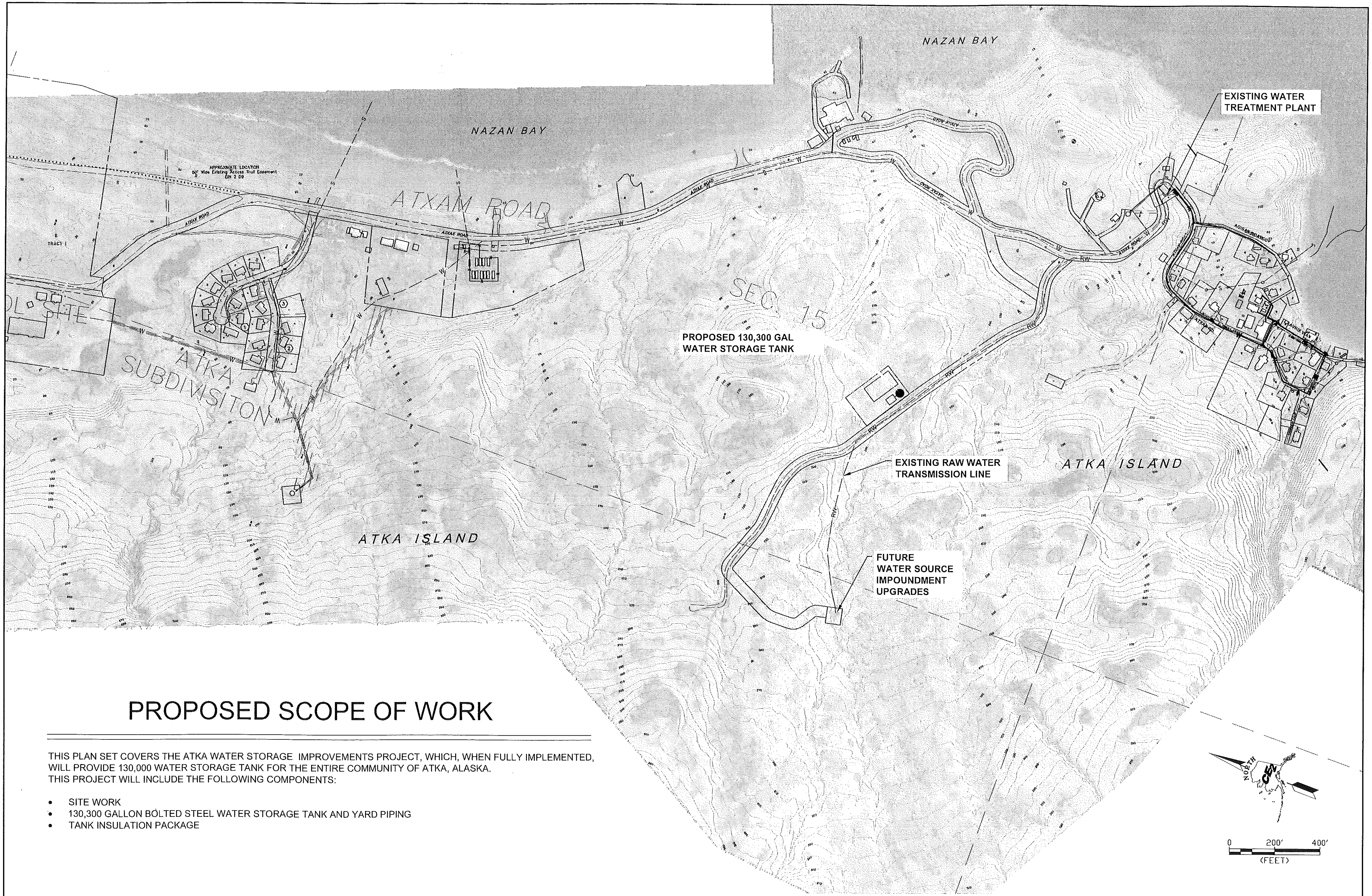
RECORD DRAWING CERTIFICATE

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) _____

SHEET INDEX



PROPOSED SCOPE OF WORK

THIS PLAN SET COVERS THE ATKA WATER STORAGE IMPROVEMENTS PROJECT, WHICH, WHEN FULLY IMPLEMENTED, WILL PROVIDE 130,000 WATER STORAGE TANK FOR THE ENTIRE COMMUNITY OF ATKA, ALASKA.
THIS PROJECT WILL INCLUDE THE FOLLOWING COMPONENTS:

- SITE WORK
- 130,300 GALLON BOLTED STEEL WATER STORAGE TANK AND YARD PIPING
- TANK INSULATION PACKAGE

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NAME DATE

SCALE:

CONSTRUCTION RECORD
FIELD BOOK
STAKING
FOREMAN
AS-BUILT
INSPECTOR

2010 WATER STORAGE TANK
VICINITY MAP AND PROJECT LOCATIONS
ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 232946 ANCHORAGE, AK 99523 PH: 907-349-1010 FAX: 907-349-1015

REVISION	BY	DATE

Project No.
Date SEPT 2010
Designed LAP
Drawn LAW
Approved LAP

Sheet No. G1.1

G:\ACAD\ATKA\2010 Water Storage Tank\G1.1 Vicinity Map.dwg, 10/5/2010 9:44:21 AM, Flash, HP LaserJet 5100 Series PCL6.pc3

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE DONE IN A SAFE WORKMANLIKE MANNER TO INDUSTRY STANDARDS AND IN CONFORMANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS.
2. MATERIALS
   A. WATERMAIN - 6 INCH OR 8 INCH HDPE, SDR 11 CARRIER PIPE WITH BUTT FUSED JOINTS.
   B. YARD PIPING - 6, 8 AND 10 INCH HDPE, SDR 11 CARRIER PIPE WITH BUTT FUSED JOINTS.
   C. MECHANICAL ROOM PROCESS PIPING -SCH 80 PVC UNLESS OTHERWISE NOTED
3. THE BASIS OF VERTICAL CONTROL SHALL BE AS SHOWN ON THIS SHEET G1.4
4. THE BASIS OF HORIZONTAL CONTROL SHALL BE AS SHOWN ON THIS SHEET G1.4
5. EXISTING UTILITIES ARE SHOWN IN APPROXIMATE LOCATION TO THE BEST KNOWLEDGE OF THE ENGINEER AT THE TIME OF DESIGN. UTILITY RECORDS MAY NOT BE COMPLETELY ACCURATE. THE PROJECT SUPERINTENDENT SHALL VERIFY HORIZONTAL AND VERTICAL LOCATION OF UTILITIES WITHIN EACH CONSTRUCTION REACH PRIOR TO CONSTRUCTION. ALL UTILITIES ARE BURIED UNLESS OTHERWISE NOTED.
6. THE PROJECT SUPERINTENDENT SHALL BE RESPONSIBLE FOR MAINTAINING A CLEAN SET OF AS-BUILT "RED LINE" RECORD DRAWINGS SHOWING LOCATION AND SWING TIES TO ALL MANHOLES, CLEANOUTS, VALVES, BENDS, HEAT TRACE END SEALS, AND SERVICE LINE TAPS. ALL ELEVATIONS SHALL BE MARKED ASB (AS-BUILT) OR F.C. (FIELD CHANGED) WITH THE CORRECT VALUE INSERTED. DRAWINGS SHALL BE KEPT CURRENT IN RED PENCIL AND UPDATED DAILY IN A NEAT AND LEGIBLE FASHION. A COPY OF THE AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE CITY OF ATKA UPON COMPLETION OF CONSTRUCTION.
7. HORIZONTAL SEPARATION DISTANCE BETWEEN WATER AND SEWER MAINS SHALL BE TEN (10) FEET MINIMUM, AS MEASURED BETWEEN THE OUTSIDE OF THE CARRIER PIPES, UNLESS OTHERWISE NOTED. VERTICAL SEPARATION DISTANCE BETWEEN WATERMAINS AND SEWER MAINS, STORM DRAINS AND SERVICE LINES SHALL BE EIGHTEEN (18) INCHES MINIMUM. WHERE WATERMAINS CROSS SEWER MAINS OR STORM DRAINS, THE PROJECT SUPERINTENDENT SHALL STAGGER THE JOINTS FOR THE WATER PIPE SUCH THAT NO JOINT SHALL BE CLOSER THAN NINE (9) FEET FROM THE CENTERLINE CROSSING OF THE LINES. IT SHALL BE THE PROJECT SUPERINTENDENT'S RESPONSIBILITY TO MAINTAIN THESE SEPARATION DISTANCES AND TO NOTIFY THE ENGINEER IF EXTRAORDINARY MEASURES WILL BE REQUIRED TO ACHIEVE THE REQUIRED MINIMUM SEPARATION.
8. SEWER MANHOLE TOP-OF-CASTING ELEVATIONS SHALL BE SET SIX (6) INCHES BELOW FINAL GRADE IN ALL UNPAVED ROADS. SEWER MANHOLE TOP-OF-CASTING ELEVATIONS SHALL BE SET SIX (6) INCHES ABOVE FINISHED GRADE IN ALL UNDEVELOPED, UNTRAVELED AREAS.
9. EXISTING UTILITIES (WATER, SEWER, STORM, ECT.) THAT CONFLICT WITH THE PROPOSED PIPING SHALL BE REMOVED. ANY EXISTING UTILITIES TO BE ABANDONED IN PLACE SHALL HAVE OPEN END(S) PLUGGED WITH CEMENT GROUT PRIOR TO CLOSURE OF THE DITCH. THE UPPER 3-FEET OF ALL MANHOLES TO BE ABANDONED IN PLACE SHALL BE REMOVED, TWO 6-INCH DIAMETER DRAIN HOLE PENETRATIONS INSTALLED NEAR THE BASE AND THE BARREL SECTION AND BACKFILLED WITH PIT RUN MATERIAL PLACED IN 12-INCH LIFTS AND COMPACTED TO 95% OF THE MATERIALS RELATIVE DENSITY.

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	

10. GENERAL RESTORATION - THE AREAS IMPACTED BY CONSTRUCTION SHALL BE RETURNED TO PRECONSTRUCTION CONDITIONS OR BETTER. CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE AREA AND DISPOSED OF IN AN APPROVED MANNER. DUE CARE AND CAUTION SHALL BE TAKEN TO AVOID DISTURBING PERSONAL PROPERTY.
11. THE ENTIRE EXCAVATION SITE SHALL BE ADEQUATELY PROTECTED, RESTRICTED, AND BARRICADED IN THE BEST PUBLIC INTERESTS OF HEALTH, SAFETY, AND WELFARE WITH VISIBLE AND STABLE BARRIERS, FLASHING YELLOW WARNING LIGHTS IN GOOD WORKING ORDER, UNDERSTANDABLE, LARGE-PRINT WARNING SIGNS, AND OTHER PRECAUTIONARY EQUIPMENT AND MEASURES AS THE CITY MAY REQUIRE. ALL SAFETY MEASURES SHALL BE IN CONFORMANCE WITH APPLICABLE STATE OF ALASKA DOT AND OSHA SAFETY REQUIREMENTS.
12. EARTHWORK
    A. SAFETY CONSIDERATIONS - SIDEWALLS 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 TO PROVIDE A SAFE WORKING ENVIRONMENT. ALL TRENCHES SHALL BE BACKFILLED BEFORE WORK IS STOPPED FOR THE DAY. IF IT BECOMES NECESSARY TO LEAVE A PORTION OF THE EXCAVATION OPEN AND UNATTENDED, THE OPEN EXCAVATIONS SHALL BE ADEQUATELY SIGNED AND BARRICADED TO WARN RESIDENTS OF THE HAZARD.
    B. COMPACTION - COMPACTION SHALL TYPICALLY BE ACCOMPLISHED BY USE OF A MECHANICAL DEVICE SUCH AS A VIBRATORY PLATE COMPACTOR OR SELF-PROPELLED VIBRATORY DRUM COMPACTOR. TRENCH ZONE BACKFILL ABOVE THE PIPE ZONE AND WITHIN ROADS OR OTHER TRAVELED WAYS SHALL BE COMPACTED IN 12 INCH MAXIMUM LIFTS TO THE DENSITY AS SHOWN ELSEWHERE IN THESE PLANS.
    C. BACKFILL MATERIAL - MATERIAL WITHIN 6 INCHES OF THE PIPE SHALL BE 2" MINUS GRANULAR, COMPACTIBLE PIT RUN MATERIAL AND SHALL CONTAIN NO FROZEN OR ORGANIC MATERIAL. EXCEPT FOR THE MAXIMUM PARTICLE SIZE, THE REMAINING BACKFILL MATERIAL SHALL BE SIMILARLY RESTRICTED, AND AS SHOWN IN THE PLANS.
13. SITE PREPARATION
    A. ALL FILL PLACED BELOW FOOTINGS SHALL BE NON-FROST SUSCEPTIBLE GRANULAR MATERIAL FREE OF ORGANIC MATTER AND DEBRIS PLACED IN LIFTS NOT EXCEEDING 12" IN LOOSE THICKNESS AND COMPACTED TO 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D-1557-6". ALL ORGANIC MATERIAL, FROZEN SOIL, LOOSE FILL, DEBRIS, AND REMNANTS OF PREVIOUS IMPROVEMENTS (FOUNDATIONS, SEPTIC TANKS, ETC.) SHALL BE REMOVED FROM THE WORK SITE PRIOR TO PLACING ANY STRUCTURAL FILL, MATS, SLABS OR FOOTINGS.
    B. SOIL CONDITIONS AT THIS SITE CONSIST OF A LAYER OF SURFACE ORGANICS AND SILT OVER SILTY GRAVELS. SURFACE ORGANICS AND SILTS ARE TO BE REMOVED AND REPLACED (IF NECESSARY) WITH COMPACTED GRAVEL.
    C. BASED ON DUANE MILLER ASSOCIATES INVESTIGATION, A SOIL BEARING PRESSURE OF 2500 PSF WAS USED FOR DESIGN PURPOSES. IF SOIL CONDITION OTHER THAN THOSE REPORTED ARE ENCOUNTERED, CONTACT THE STRUCTURAL ENGINEER FOR EVALUATION.

    UTILIZE A MINIMUM OF THREE PASSES OF A VIBRATORY PLATE COMPACTOR FOR BEST COMPACTION EFFORT. FOUNDATION FILL SHALL BE TESTED BY CONE PENETROMETER TO VERIFY COMPACTION CONSISTENCY

14. CONCRETE
    A. CODE - CONCRETE WORK AND REINFORCEMENT SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE (IBC) 2006 EDITION AND TO ALL REQUIREMENTS OF THE AMERICAN CONCRETE INSTITUTE (ACI) 318-95, SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS, EXCEPT AS MODIFIED BY THE FOLLOWING SUPPLEMENTAL REQUIREMENTS.
    THE IBC SHALL GOVERN IN ALL MATTERS PERTAINING TO CONCRETE WORK WHENEVER THE IBC IS IN CONFLICT WITH THE REQUIREMENTS OF OF ACI 318-95.
    B. CEMENT - ASTM C150, TYPE 3, HIGH EARLY STRENGTH.
    C. AGGREGATE - SHALL MEET THE REQUIREMENTS OF ASTM C33.
    D. CONCRETE STRENGTH - 28-DAY, 3,000 PSI COMPRESSIVE STRENGTH
    E. MAXIMUM AGGREGATE SIZE: 1-1/2"
    F. SLUMP: 2" TO 4"
    G. AIR ENTRAINMENT: 6% (±1%)
    H. MIX DESIGN - MIX DESIGN IS REQUIRED UNLESS OTHERWISE APPROVED.
    I. TESTING - TWO CONCRETE TEST CYLINDERS SHALL BE TAKEN DURING EACH CONCRETE POUR. CONCRETE STRENGTHS SHALL BE VERIFIED BY STANDARD 7 DAY AND 28 DAY CYLINDER TESTS UNLESS OTHERWISE APPROVED. PERFORM SLUMP WHENEVER CYLINDERS ARE TAKEN.
    J. REINFORCING STEEL - ASTM A615 GRADE 60
    K. REINFORCING STEEL COVER - (UNLESS OTHERWISE NOTED)

USE OF STEEL REINFORCEMENT	MINIMUM COVER REQUIRED (INCHES)
SLAB BARS	1-1/2"
FOOTINGS AND SLAB BARS CAST ON GROUND	3"

    L. CHAMFERS - EXCEPT AS OTHERWISE REQUIRED, EXPOSED CONCRETE CORNERS AND EDGES SHALL HAVE 3/4" CHAMFERS. RE-ENTRANT CORNERS SHALL NOT HAVE FILLETS UNLESS OTHERWISE SHOWN.
15. STEEL
    STEEL WORK SHALL BE PREFORMED AS DESCRIBED IN CHAPTER 22 OF THE INTERNATIONAL BUILDING CODE.
    A) STEEL SHALL BE OF THE GRADE NOTED BELOW:
       1) STRUCTURAL STEEL IS ASTM A36
       2) STEEL TUBE IS ASTM A500, GRADE B
    B) BOLTS NOTED AS A.B. (ANCHOR BOLTS) AND M.B. (MACHINE BOLTS) SHALL CONFORM TO ASTM A307. HIGH STRENGTH BOLTS NOTED AS A325 AND A490 SHALL CONFORM TO DIVISION IV OF THE UBC CHAPTER 22.
    C) WELDING SHALL CONFORM TO AWS D1.1-96. WELDS SHALL BE 3/16" MINIMUM UNLESS NOTED OTHERWISE. ELECTRODES SHALL BE AWS E70.
    D) METAL STUDS, JOISTS AND ACCESSORIES SHALL BE FORMED FROM GALVANIZED STEEL MEETING THE MINIMUM REQUIREMENTS OF ASTM A445 GRADE (Fy=50KSI) FOR 12, 14, AND 16 GAUGE, AND ASTM A446 GRADE A (Fy-33KSI) FOR 18 GAUGE AND LIGHTER. GALVANIZED COATINGS MUST MEET THE ASTM A525 SPECIFICATION.
    E) ALL SECTION PROPERTIES SHALL BE BASED ON AMERICAN IRON AND STEEL INSTITUTE (AISI) "SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS".
16. PRESSURE TESTING:
    A. ALL TESTS SHALL BE WITNESSED BY A REPRESENTATIVE DESIGNATED BY THE OWNER (CITY OF ATKA). UPON SUCCESSFUL COMPLETION OF A TEST THE RESULTS OF THE TEST SHALL BE DOCUMENTED ON A TEST FORM AND ACKNOWLEDGED BY SIGNATURE OF THE OWNER'S REPRESENTATIVE WITNESSING THE TEST AND BY THE CONTRACTOR. THE CONTRACTOR'S RED LINED AS-BUILT DRAWINGS AND DAILY FIELD REPORT SHALL ALSO NOTE, FOR EACH SEGMENT OF THE SYSTEM TESTED, THE TIME AND DATE OF THE TEST AND THE NAME OF THE OWNER'S WITNESS.
    B. WATERMAIN TESTING - PERFORM HYDROSTATIC TESTING OF WATERMAINS. HYDROSTATIC TESTS SHALL BE PERFORMED AFTER OPEN BORE FLUSHING AND BEFORE DISINFECTION (SEE ITEM 17 BELOW). FILL THE LINE WITH WATER AND REMOVE AIR PRIOR TO STARTING THE TEST. PRESSURIZE TO 1.5 X OPERATING PRESSURE (80 PSI) = 120 PSI AND LEAVE FOR A MINIMUM OF 1-HOUR. AFTER THIS INITIAL PERIOD, ADD WATER TO BRING THE PRESSURE UP TO 120 PSI AND BEGIN A 1-HOUR TEST. FOR THE WATERLINE TO BE ACCEPTED THE MAKE-UP WATER REQUIRED TO RETURN THE PRESSURE TO 120 PSI AT THE END OF THE TEST PERIOD SHALL NOT BE GREATER THAN 0.4 GALLONS PER 100 FEET OF 6" WATERMAIN PLUS 0.1 GALLONS PER 80 FEET OF CIRCULATING WATER SERVICE LINE.

16A. WATER STORAGE TANK TESTING
    A. PERFORM HYDROSTATIC TESTING OF WATER STORAGE TANK PRIOR TO INSULATION PACKAGE. NO LEAKS SHALL BE NOTED AFTER A 48 HOUR PERIOD

17. DISINFECTION PROCEDURES:
    A. WATER STORAGE TANK DISINFECTING -- THE WATER STORAGE TANK SHALL BE DISINFECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST EDITION OF AWWA C652. THE METHOD OF CHLORINATION SHALL BE WITH CHLORINATION METHOD 2, AS DESCRIBED IN SECTION 4.2 OF THE STANDARD. THIS METHOD INVOLVES THE APPLICATION OF A 200-mg/L s SOLUTION TO THE SURFACES OF ALL PARTS OF THE TANK TO THE LEVEL WHEN IT IS FILLED TO OVERFLOWING WITH WATER. HEAVILY CHLORINATED WATER IN DRAIN LINES FROM THE OPERATION SHALL BE NEUTRALIZED WITH A SOLUTION OF SODIUM BISULFITE OR SODIUM SULFITE IN A RATE TABULATED IN APPENDIX B OF THE STANDARD. THE SUPERINTENDENT IN CHARGE OF THE DISINFECTION AND FLUSHING OF THE LINES SHALL HAVE A COPY OF AWWA C652-92 ON SITE FOR READY REFERENCE.
18. STORMWATER MANAGEMENT
    A. CONSTRUCTION SHALL BE PLANNED AND EXECUTED TO EXPEDITIOUSLY COMPLETE THE PROJECT WHILE MAINTAINING THE CONSTRUCTION SITE IN A MANNER THAT REDUCES THE POTENTIAL FOR CONTAMINATED STORM RUNOFF. SPECIFIC STEPS ARE TO INCLUDE THE FOLLOWING:
       - PRIOR TO CONSTRUCTION DEVELOP A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) WHICH UTILIZES THE BEST MANAGEMENT PRACTICES (BMPS) AND IS IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) AND THE ALASKA CONSTRUCTION GENERAL PERMIT NO. AKR100000.
       - FILE A NOTICE OF INTENT (NOI) WITH THE STATE OF ALASKA A MINIMUM OF 7-DAYS PRIOR TO THE START OF CONSTRUCTION.
       - CONSTRUCTOR SHALL BE VIGILANT WITH IMPLEMENTATION OF THE PLAN.
       - INSPECTIONS SHALL BE COMPLETED BY AN ALASKA CESCL (CERTIFIED EROSION AND SEDIMENT CONTROL LEAD) IF POSSIBLE.
       - A NOTICE OF TERMINATION MUST BE FILED WITH THE STATE OF ALASKA WITHIN 30-DAYS OF REMOVAL OF TEMPORARY CONTROL DEVICES.
       - ALL RECORDS MUST BE KEPT FOR AT LEAST 3-YEARS.

RECORD DRAWING CERTIFICATE

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NAME DATE

SCALE:

CONSTRUCTION RECORD

FIELD BOOK	
STAKING	
FOREMAN	
AS-BUILT	
INSPECTOR	

2010 WATER STORAGE TANK

GENERAL NOTES

ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 232946 ANCHORAGE, AK 99523 PH: 907-349-1010 FAX: 907-349-1015

REVISION	BY	DATE

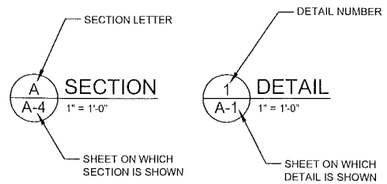
Project No.
Date SEPT 2010
Designed LAP
Drawn DDR
Approved LAP

Sheet No. G1.2

LEGEND

EXISTING PLAN VIEW	EXISTING PROFILE VIEW	PROPOSED PLAN VIEW	PROPOSED PROFILE VIEW	DESCRIPTION
				GROUND SURFACE
				CREEK / DRAINAGE
W		W		WATERMAIN, GATE VALVE, HYDRANT (HYDRANT NOT SHOWN IN PROFILE VIEW)
				CULVERT
E E E E E				BURIED ELECTRICAL LINE
FO FO FO FO FO				BURIED FUEL OIL LINE
T T T T T				BURIED TELEPHONE LINE
OHE OHE				OVERHEAD ELECTRIC
				EASEMENT
U				UTILIDOR
FM				FORCE MAIN
				UTILITY POLE (EXISTING LOCATION)
				UTILITY POLE (PROPOSED LOCATION)
X X				FENCE
				PROPOSED OR FUTURE GRAVEL TRAVELED WAY
24				CONTOUR LINE
				R.O.W. (RIGHT- OF- WAY)
				SHORELINE
				TREES AND/OR BRUSH
MAJOR MINOR				STRUCTURE
				NATURAL GROUND OR COMPACTED SOIL
				DIRECTION OF DRAINAGE
				PROPERTY LINE
				SECTION LINE
				ABANDONED VEHICLE
				BENCH MARK
24.5				SPOT ELEVATION
#1012				REBAR - ABILITY SURVEY POINT NO.
				YELLOW PLASTIC CAP (REBAR)
TRACT 3				TRACT NUMBER
LOT 8				LOT NUMBER
				TELEPHONE PEDESTAL
				HEAT TRACE ACCESS VAULT
				HEAT TRACE POWER SUPPLY
WS/SS		WS		WATER SERVICE CONNECTION (1 INCH DIAMETER UNLESS OTHERWISE INDICATED) TO THE WATERMAIN. FINAL LOCATION TO BE DETERMINED IN THE FIELD AFTER COORDINATION WITH THE PROPERTY OWNER
WS/SS ABND				EXISTING WATER AND SEWER SERVICE LINE TO BE REMOVED FROM THE PUBLIC RIGHT-OF-WAY AND DISPOSED OF IN AN APPROVED MANNER.

SECTION AND DETAIL DESIGNATIONS



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	□	PLATE OR PROPERTY LINE
CL	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 OR POLYVINYL CHLORIDE
CY	CUBIC YARD	PVI	POINT OF VERTICAL INTERSECTION
		PVT	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
EVC	END VERTICAL CURVE	R/W	RIGHT-OF-WAY
EL	ELEVATION		
EXIST	EXISTING	S	SOUTH, SLOPE
		SCH	SCHEDULE
FDN	FOUNDATION	SECT	SECTION
FF	FINISH FLOOR	SHT	SHEET
FG	FINISH GRADE	SIM	SIMILAR
FPS	FEET PER SECOND	SS	STAINLESS STEEL OR SANITARY SEWER
FT	FOOT OR FEET	STA	STATION
FTG	FOOTING	STD	STANDARD
GA	GAGE	STL	STEEL
GALV	GALVANIZED		
GS	GROUND	TW	TREATED WATER
GND	GROUND	TYP	TYPICAL
GPD	GALLONS PER DAY	TP	TEST PIT
GPM	GALLONS PER MINUTE		
		UG	UNDERGROUND
HDPE	HIGH DENSITY POLYETHYLENE	USGS	UNITED STATES GEOLOGICAL SURVEY
HOR	HORIZONTAL		
HPM	HIGHWAY PRECONSTRUCTION MANUAL	VC	VERTICAL CURVE
		VER	VERTICAL
IE	INVERT ELEVATION	VPI	VERTICAL POINT OF INTERSECTION
ID	INSIDE DIAMETER		
IN	INCH OR INCHES	W/	WITH
IP	IRON PIPE	W/O	WITHOUT
		WS	WATER SURFACE
LB	POUND	WT	WEIGHT
LBS	POUNDS	WWF	WELDED WIRE FABRIC
LF	LINEAR FEET		
LL	LIVE LOAD	XS	EXTRA STRONG
		YD	YARD
MAX	MAXIMUM		
MGAL	MILLION GALLONS		
MG/L	MILLIGRAMS PER LITER		
MIN	MINIMUM OR MINUTE		
MISC	MISCELLANEOUS		
MPH	MILES PER HOUR		

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NAME
DATE

SCALE:
AMP IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

CONSTRUCTION RECORD
FIELD BOOK
STAKING
FOREMAN
AS-BUILT
INSPECTOR

2010 WATER STORAGE TANK

ABBREVEATIONS AND CALLOUTS

ATKA, ALASKA

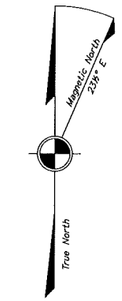
CE2 ENGINEERS, INC.
PO BOX 232246 ANCHORAGE, AK 99523 PH: 907-345-1015 FAX: 907-345-1015

REVISION	BY	DATE

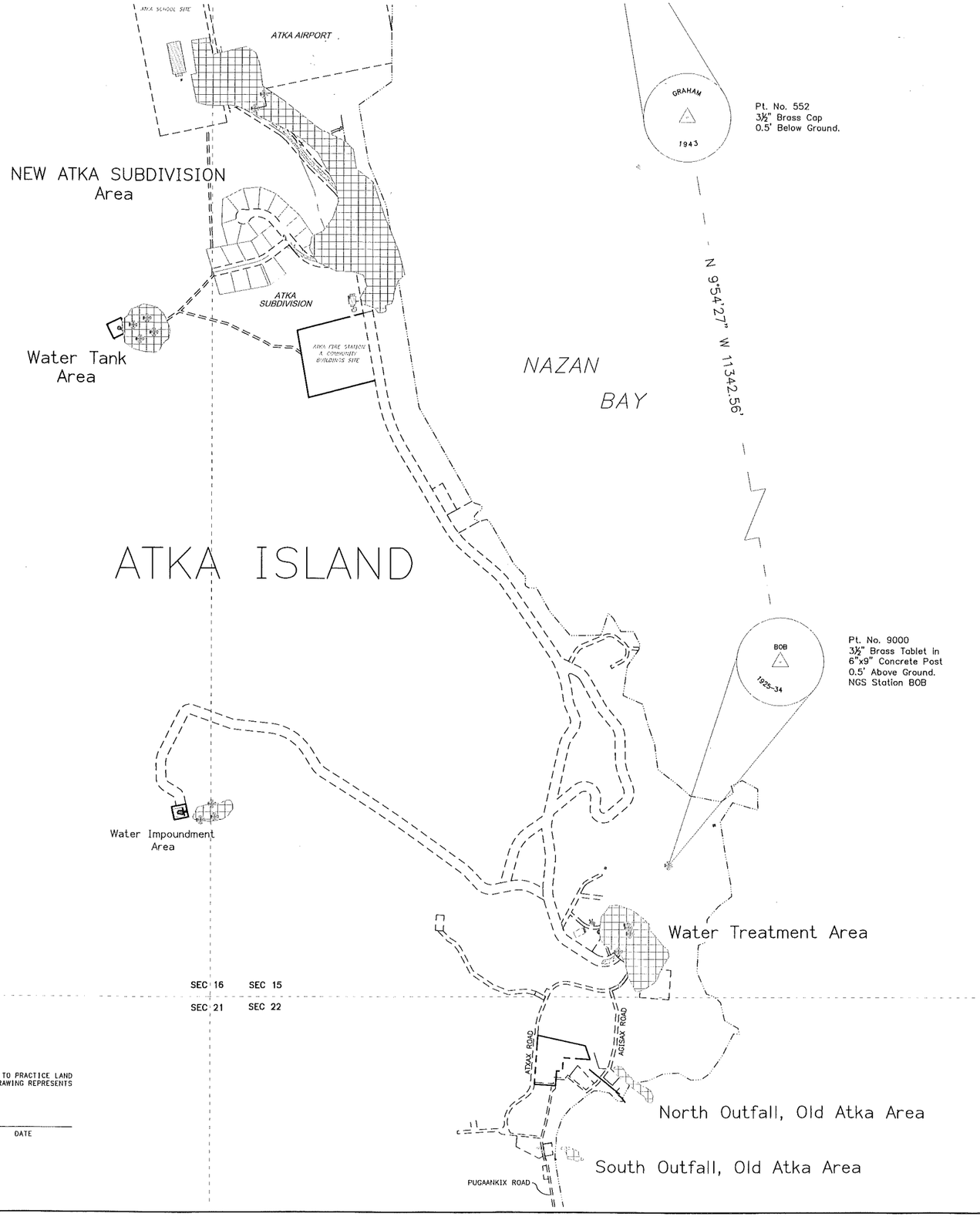
Project No.
Date SEPT 2010
Designed LAP
Drawn DDR
Approved LAP

Sheet No.
G1.3

G:\ACAD\ATKA\2010 Water Storage Tank\G1.3 Abbreviations Callouts.dwg, 9/20/2010 1:46:00 PM, Flash, HP LaserJet 5100 Series PCL6.pc3



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

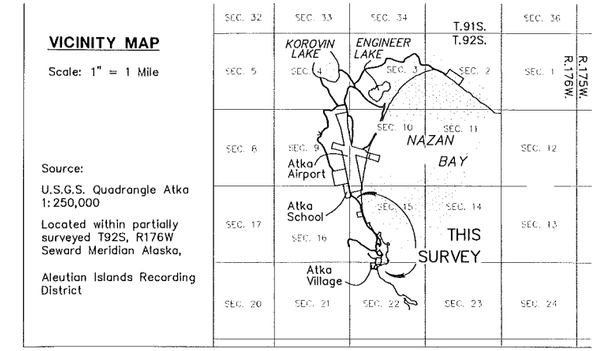


LEGEND

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

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

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 ½" 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 ½" 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 fom June 30 through July 2, 2005 and a comparison of these with the published MLLW values for the corresponding shoreline.

McCLINTOCK LAND ASSOCIATES, INC
11940 BUSINESS BOULEVARD, SUITE 205
EAGLE RIVER, ALASKA 99577
(907) 694-4499

STATE OF ALASKA
49TH
WILLIAM McCLINTOCK
LS 5480
REGISTERED PROFESSIONAL LAND SURVEYOR

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 McCLINTOCK
REGISTERED LAND SURVEYOR
LS-5480

DATE

300 0 300 600 900
SCALE IN FEET

RECORD DRAWING CERTIFICATE
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NAME
DATE

SCALE:
1" HALF SIZE INCH ON THIS SHEET MEANS ORIGINAL DRAWING IS ARCH D

CONSTRUCTION RECORD
FIELD BOOK
STAKING
FOREMAN
AS-BUILT
INSPECTOR

REVISION | BY | DATE

2010 WATER STORAGE TANK

SURVEY CONTROL

ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 232946 ANCHORAGE, AK 99523 PH: 907-345-1010 FAX: 907-345-1015

Project No. ____
Date SEPT 2010
Designed LAP
Drawn DDR
Approved LAP

Sheet No.
G1.4

DESIGN CRITERIA
ATKA WATER TREATMENT PROJECT--ATKA, ALASKA

DESIGN LIFE	20 YEARS
ANNUAL POPULATION GROWTH RATE	2% ANNUALLY
CURRENT POPULATION	92 PEOPLE
NUMBER OF HOMES	29 HOMES
AVERAGE # OF PEOPLE PER HOME	3 PEOPLE / HOME
DESIGN POPULATION (F = P*(1+I) ^N)	139 PEOPLE 92 (1.02) 20
AVERAGE WATER DEMAND PER CAPITA	65 GAL /PERSON/DAY
DAILY AVERAGE WATER DEMAND	9,035 GAL/DAY
DAILY AVERAGE DESIGN FLOW RATE	6.27 GAL/MINUTE
PEAK HOURLY (DOMESTIC USE) DESIGN FLOW RATE (FACTOR OF 4.0)	25 GAL/MINUTE
VOLUME OF WATER STORAGE TANK	62,750 GAL
DAYS OF STORAGE	1.5 DAYS
BASE ELEVATION OF WST	148.5 FT ABOVE MLLW
OVERFLOW ELEVATION OF WST	FT ABOVE MLLW
ELEVATION OF HIGHEST HOUSE	63± FT ABOVE MLLW
PRESSURE OF HIGHEST HOUSE	24 PSI
ELEVATION OF LOWEST HOUSE	11.5± FT ABOVE MLLW
PRESSURE OF LOWEST HOUSE	71 PSI
COMMERCIAL WATER USE	30,000GALLONS
WATER USE PERIOD	12 HOURS/DAY
PEAK HOURLY FLOW	41.7 GPM
TOTAL DAILY WATER USE	39,035 GALLON
TOTAL PEAK HOURLY FLOW	66.7 GPM

FILTRATION REMOVAL CREDIT FOR GIARDIA 2.0 LOG CREDIT PER ADEC
FILTRATION REMOVAL CREDIT FOR CRYPTOSPORIDIUM 2.0 LOG CREDIT PER EPA

CHLORINE DISINFECTION CALCULATIONS

DISINFECTION - CALCIUM HYPOCHLORITE INJECTION (FREE CHLORINE RESIDUAL)
INJECTION PUMP-LMI OR EQUAL

CT REQUIRED FOR 1.0 LOG INACTIVATION CREDIT
CT FORMULA FROM ADEC 18AAC 80.655
CT = (LOG INACTIVATION) (5.057) (E^A) (E^B) (E^C)
E = 2.72
A = -0.0693 X TEMP (ºC)
B = 0.361 X PH
C = 0.113 X CHLORINE CONCENTRATION (mg/L)
CHLORINE (Cl_2) CONCENTRATION = 0.4 mg/L (FREE CHLORINE RESIDUAL)
PH = 6.5
TEMPERATURE = 5º C (41º F)
LOG INACTIVATION = 1.0
CT = 40.0 mg-Min./L
RESULTS ALSO VERIFY WITH CT TABLE FROM ADEC REGULATIONS

CT REQUIRED FOR 4 LOG INACTIVATION OF VIRUSES = 8 MG-MIN/L

REQUIRED CHEMICAL CONTACT VOLUME (VR) AS DETERMINED FROM THE FOLLOWING FORMULA

VR=Q (CT REQUIRED)/[(Cl_2 CONC)(BF)]
WHERE:
Q = PEAK HOURLY DEMAND FLOW RATE IN GPM (66.7 GPM)
BF = TANK BAFFLE FACTOR = 0.10 (10%)

$$VR = (66.7\ GPM)\ \frac{\left(\frac{40\ mg.\ -\ MIN}{L}\right)}{\left(0.4\ \frac{mg}{L}\right)\ (\ 0.1)}$$

= 66.700 GALLONS
OR 57% OF TANK VOLUME
RECOMMENDED TANK OPERATING RANGE = 90,000-130,300 GALLONS

RECORD DRAWING CERTIFICATE
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NAME DATE

SCALE:

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FIELD BOOK
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AS-BUILT
INSPECTOR

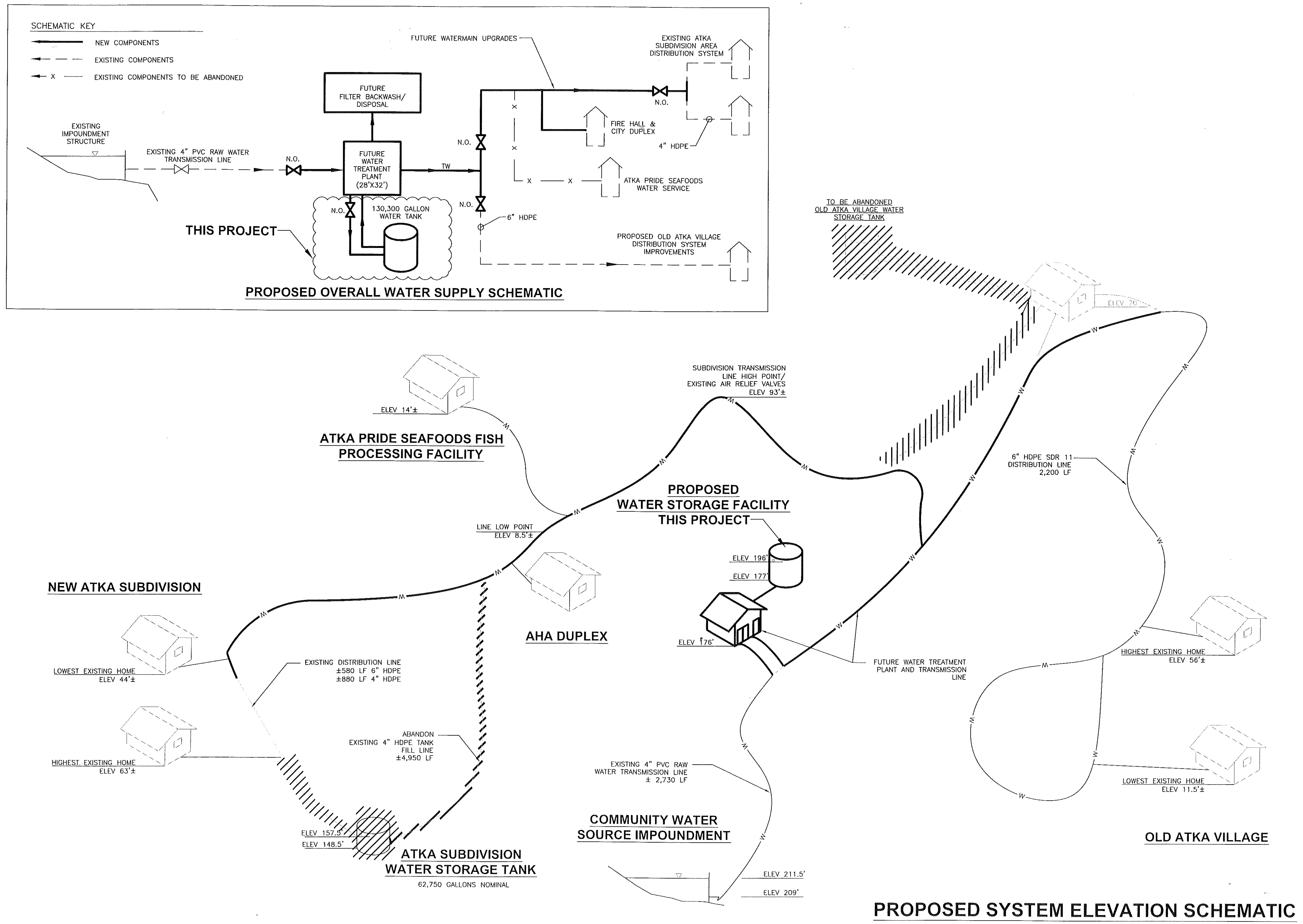
2009 WATER SYSTEM UPGRADES
PROJECT DESIGN AND CRITERIA
ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 223246 ANCHORAGE, AK 99522 PH: 907-345-1010 FAX: 907-345-1015

REVISION	BY	DATE

Project No.
Date MAY 2010
Designed LAP
Drawn DDR
Approved LAP

Sheet No.
G1.5



G:\ACAD\ATKA\2010 Water Storage Tank\G1.6 proposed elevation schematic.dwg, 10/5/2010 9:30:24 AM, Flash, HP LaserJet 5100 Series PCL6

RECORD DRAWING CERTIFICATE

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SCALE:

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

CONSTRUCTION RECORD: FIELD BOOK / STAKING / FOREMAN / AS-BUILT / INSPECTOR

STATE OF ALASKA — Lloyd A. Ponsson — NO. CE 9612 — REGISTERED PROFESSIONAL ENGINEER

2010 WATER STORAGE TANK

PROPOSED ELEVATION SCHEMATIC

ATKA, ALASKA

CE2 ENGINEERS, INC.

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

REVISION	BY	DATE

Project No. ____

Date SEPT 2010

Designed LAP

Drawn LAW

Approved LAP

Sheet No. G1.6

SOURCE:

TESTHOLE LOCATION AND CLASSIFICATION INFORMATION TAKEN FROM DUANE MILLER & ASSOCIATES GEOTECHNICAL INVESTIGATION FOR THE ATKA WATER PROJECT – MARCH 2006. TYPICAL FOR G1.8 & G1.9.

RECORD DRAWING CERTIFICATE

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INSPECTOR

2010 WATER STORAGE TANK

GEOTECHNICAL TEST PIT LOCATIONS

ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 232946 ANCHORAGE, AK 99523 PH: 907-349-1010 FAX: 907-349-1015

REVISION	BY	DATE

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Date SEPT 2010
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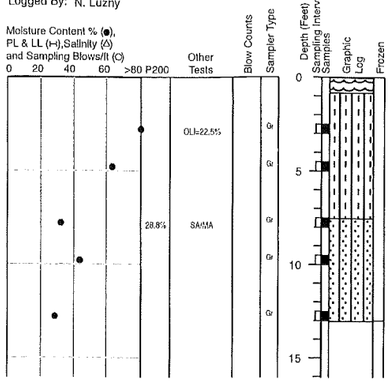
Drawn DDR
Approved LAP

Sheet No.
G1.7

DUANE MILLER ASSOCIATES LLC

Project: Atka Water & Sewer Project
DMA Job No.: 4149.035
Logged By: N. Luzny



Log of HOLE: TP-01

Date Drilled: June 30, 2008
Contractor.: CE2
Equipment: Hitachi Z 230 Excavator
GPS Coord.: 52°12'10.177" N 174°12'10.911" W (WGS 84)
Elevation: 178.9 feet

Description

PEAT (Pt) Live organic mat, grass roots

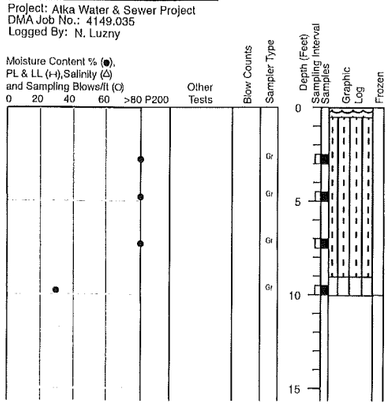
ORGANIC SILT (OL) Brown to orange-brown, moist, with fibrous organic material

SILTY SAND (SM) Brown, moist, with <15% subangular rock fragments to 2 inches and boulders to 2-foot diameter

Test pit completed at 13 feet on 6/30/2008

DUANE MILLER ASSOCIATES LLC

Project: Atka Water & Sewer Project
DMA Job No.: 4149.035
Logged By: N. Luzny



Log of HOLE: TP-02

Date Drilled: June 30, 2008
Contractor.: CE2
Equipment: Hitachi Z 230 Excavator
GPS Coord.: 52°12'10.060" N 174°12'10.011" W (WGS 84)
Elevation: 176.8 feet

Description

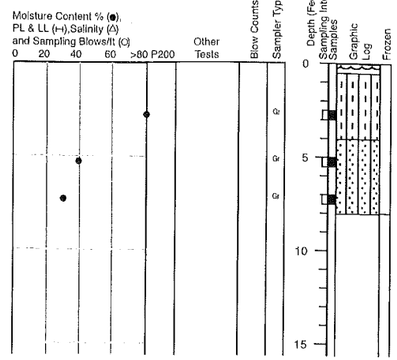
PEAT (Pt) Live organic mat, grass roots

ORGANIC SILT (OL) Brown to orange-brown, moist, with peat (Pt) interbeds

GRAVELLY SILT (ML) Brown to orange-brown, moist, with subangular rock fragments to 1-foot diameter
Test pit completed at 10 feet on 6/30/2008

DUANE MILLER ASSOCIATES LLC

Project: Atka Water & Sewer Project
DMA Job No.: 4149.035
Logged By: N. Luzny



Log of HOLE: TP-03

Date Drilled: June 30, 2008
Contractor.: CE2
Equipment: Hitachi Z 230 Excavator
GPS Coord.: 52°12'09.835" N 174°12'08.705" W (WGS 84)
Elevation: -

Description

PEAT (Pt) Live organic mat, grass roots

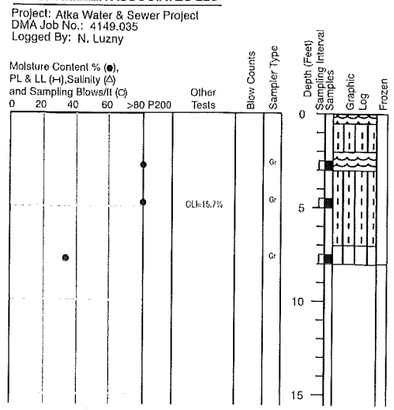
ORGANIC SILT (OL) Brown to orange-brown, moist, with fibrous organic material

SILTY GRAVELLY SAND (SM) Brown, moist, with subangular rock fragments to 2-foot diameter

Test pit completed at 8 feet on 6/30/2008

DUANE MILLER ASSOCIATES LLC

Project: Atka Water & Sewer Project
DMA Job No.: 4149.035
Logged By: N. Luzny



Log of HOLE: TP-04

Date Drilled: June 30, 2008
Contractor.: CE2
Equipment: Hitachi Z 230 Excavator
GPS Coord.: 52°12'10.473" N 174°12'08.333" W (WGS 84)
Elevation: 172.6 feet

Description

PEAT (Pt) Live organic mat, grass roots

ORGANIC SILT (OL) Brown to orange-brown, moist, with fibrous organic material

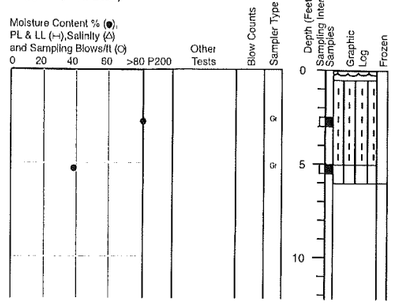
PEAT (Pt) Brown, fibrous, with orange-brown organic silt (OL)

ORGANIC SILT (OL) Brown to orange-brown, moist, with fibrous organic material

GRAVELLY SILT (ML) Brown to orange-brown, moist, with subangular rock fragments to 1-foot diameter
Test pit completed at 8 feet on 6/30/2008

DUANE MILLER ASSOCIATES LLC

Project: Atka Water & Sewer Project
DMA Job No.: 4149.035
Logged By: N. Luzny



Log of HOLE: TP-05

Date Drilled: June 30, 2008
Contractor.: CE2
Equipment: Hitachi Z 230 Excavator
GPS Coord.: 52°12'09.064" N 174°12'08.794" W (WGS 84)
Elevation: -

Description

PEAT (Pt) Live organic mat, grass roots

ORGANIC SILT (OL) Brown to orange-brown, moist, with peat (Pt) interbeds

GRAVELLY SILT (ML) Brown to orange-brown, moist, with subangular gravel to 1.5 inches and 5-10% subangular rock fragments to 2-foot diameter
Test pit completed at 6 feet on 6/30/2008

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NAME
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SCALE:

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FIELD BOOK
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FOREMAN
AS-BUILT
INSPECTOR

2010 WATER STORAGE TANK

GEOTECHNICAL INFORMATION

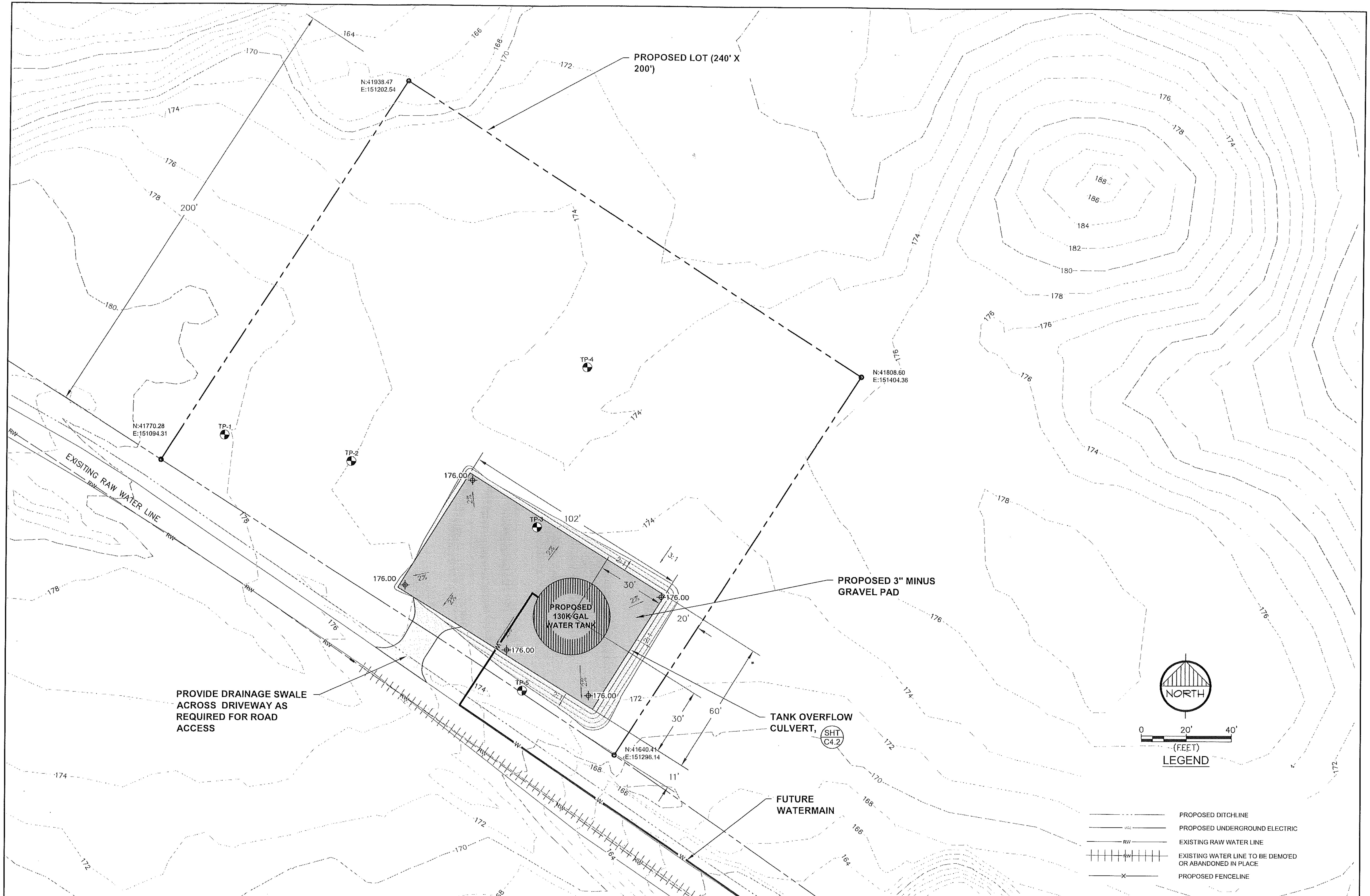
ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 223648 ANCHORAGE, AK 99503 PH: 907-349-1015 FAX: 907-349-1015

REVISION	BY	DATE

Project No.
Date SEPT 2010
Designed LAP
Drawn DDR
Approved LAP

Sheet No.
G1.8



NOTES

1. EXISTING UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS PRIOR TO CONSTRUCTION TO ACCOMMODATE ANY GRADE CHANGES REQUIRED.

RECORD DRAWINGS CERTIFICATE

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SCALE:

CONSTRUCTION RECORD

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STAKING
FOREMAN
AS-BUILT
INSPECTOR

2010 WATER STORAGE TANK

SITE PLAN
WATER TREATMENT SITE

ATKA, ALASKA

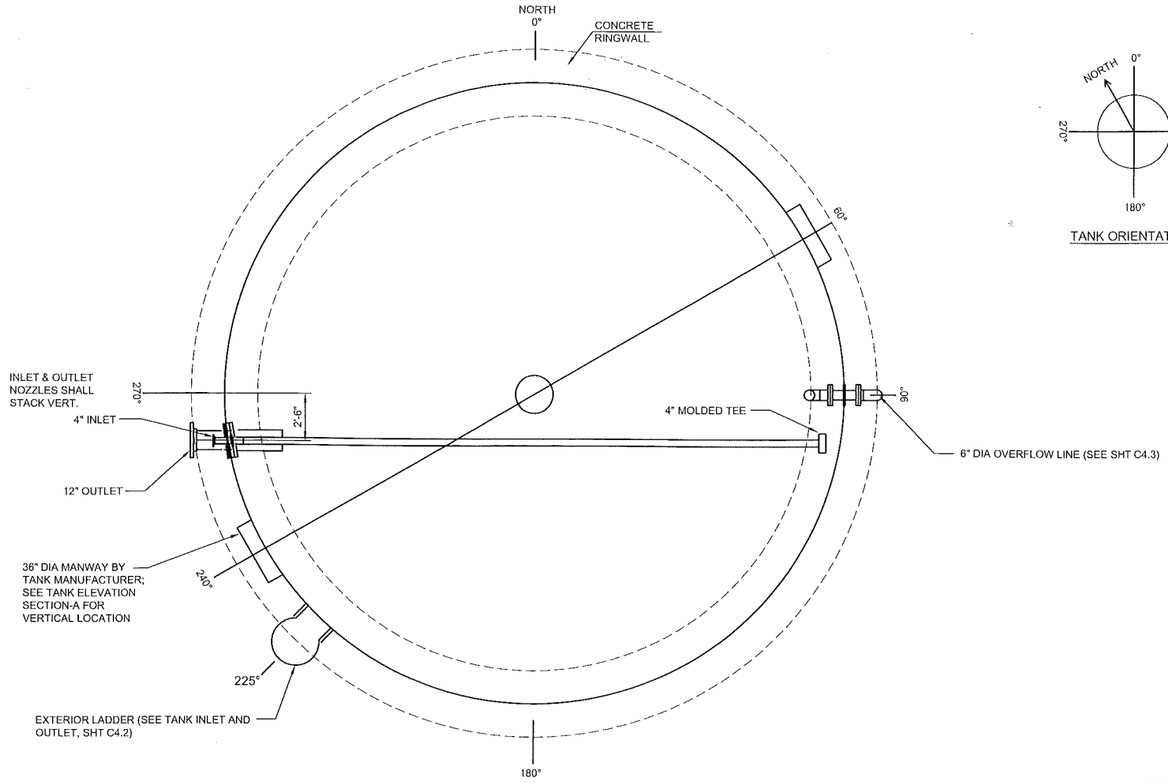
CE2 ENGINEERS, INC.
PO BOX 232946 ANCHORAGE, AK 99523 PH: 907-349-1010 FAX: 907-349-1015

REVISION	BY	DATE

Project No.	
Date	SEPT 2010
Designed	LAP
Drawn	CM
Approved	LAP

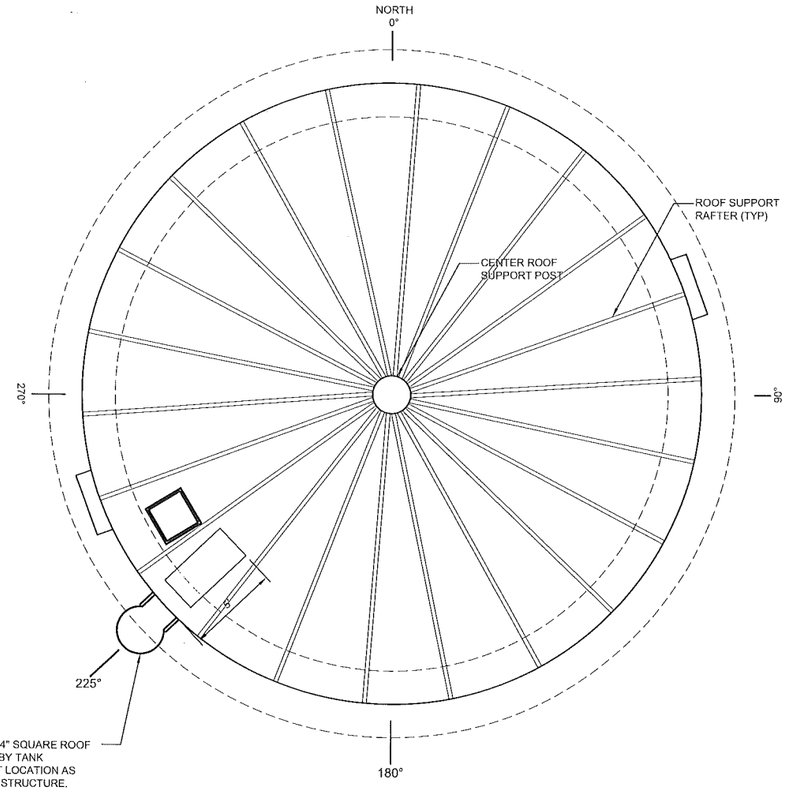
Sheet No.
C1.0

G:\ACAD\ATKA\2010 Water Storage Tank\C1.0 C1.1 WTP SITE PLAN.dwg, 9/27/2010 2:52:56 PM, cmerz, HP LaserJet 5100 Series PCL6.pc3

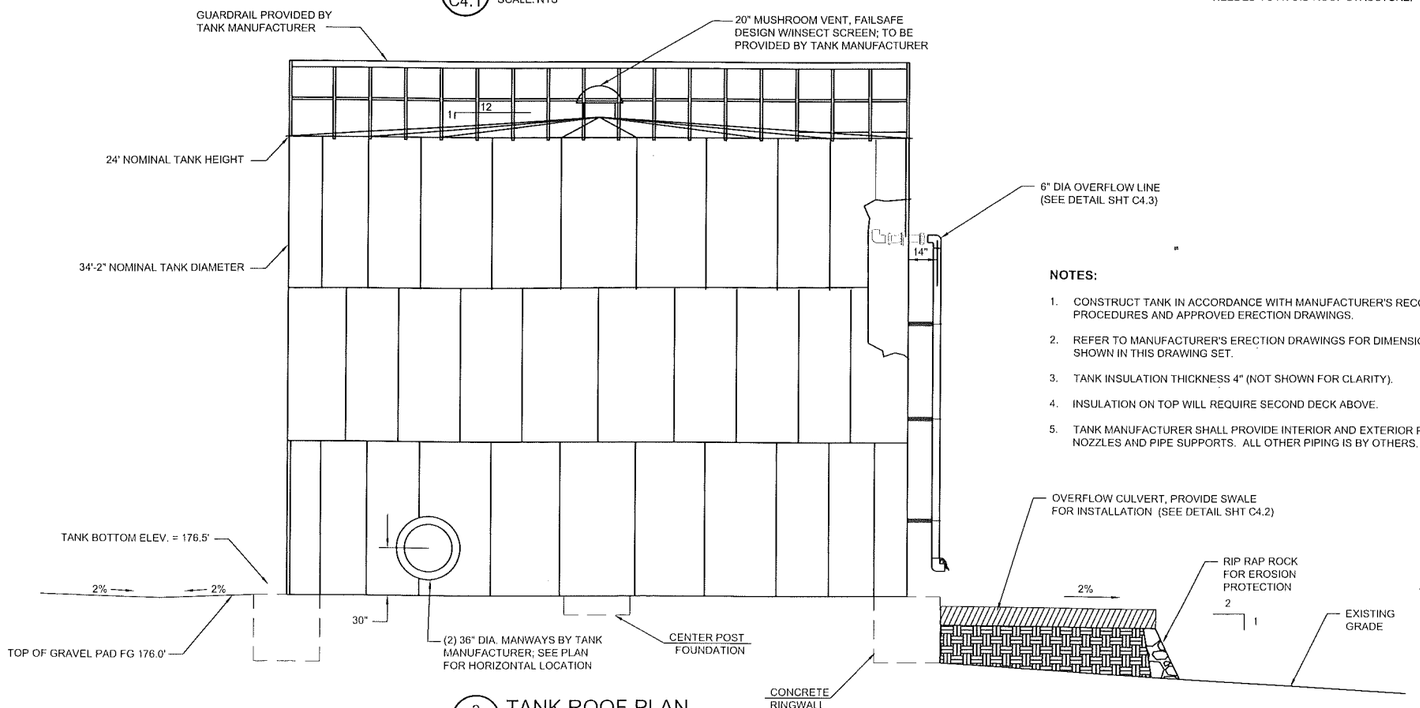


1 C4.1 TANK SECTION
SCALE: NTS

TANK ORIENTATION



2 C4.1 TANK ROOF PLAN
SCALE: NTS



3 C4.1 TANK ROOF PLAN
SCALE: NTS

NOTES:

1. CONSTRUCT TANK IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED ERECTION PROCEDURES AND APPROVED ERECTION DRAWINGS.
2. REFER TO MANUFACTURER'S ERECTION DRAWINGS FOR DIMENSIONS AND DETAILS NOT SHOWN IN THIS DRAWING SET.
3. TANK INSULATION THICKNESS 4" (NOT SHOWN FOR CLARITY).
4. INSULATION ON TOP WILL REQUIRE SECOND DECK ABOVE.
5. TANK MANUFACTURER SHALL PROVIDE INTERIOR AND EXTERIOR PIPE SPOOLS AT TANK NOZZLES AND PIPE SUPPORTS. ALL OTHER PIPING IS BY OTHERS.

WATER STORAGE TANK DESIGN CRITERIA	
SPECIFICATION	AWWA D103-09 BOLTED STEEL TANKS FOR POTABLE WATER STORAGE
SIZE	130,300 GALLON NET CAPACITY WITH ALLOWANCE FOR SEISMIC SLOSHING (163,000 NOMINAL) 34'-2" DIAMETER, 24'-1 ½" SHELL HEIGHT
CATHODIC PROTECTION	NONE
INSULATION	4" TOTAL THICKNESS, DESIGNED AND SUPPLIED BY TANK MANUFACTURER, SEE SPECIFICATIONS AND DRAWINGS FOR PIPE AND FOUNDATION INSULATION.
COATING SYSTEM	TANK SHELL - INSIDE AND OUTSIDE: NFS 61 APPROVED POWDER COAT COLUMBIA TECTANK TRICO-BOND EP OR EQUAL OUTSIDE ONLY: POLY URETHENE TOP COAT TANK ROOF: SHALL BE GALVANIZED PER ASTM
DESIGN LOADS	SEE NOTE 1 SHEET S1.0
FOUNDATION	SEE SPECIFICATIONS. FOUNDATIONS SUBJECT TO INTERNAL & EXTERNAL LOADS. FOR SOIL CONDITIONS SEE "GEOTECHNICAL EXPLORATION, ATKA WATER PROJECT, ATKA, ALASKA, DATED JULY 1, 2008, BY DUANE L. MILLER, PE.

RECORD DRAWING CERTIFICATE
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NAME _____ DATE _____

SCALE:
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CONSTRUCTION RECORD
FIELD BOOK
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FOREMAN
AS-BUILT
INSPECTOR

STATE OF ALASKA — REGISTERED ENGINEER — DUANE L. MILLER — No. CE 9882 — REGISTERED PROFESSIONAL ENGINEER

2010 WATER STORAGE TANK

WATER STORAGE TANK PLAN AND ELEVATIONS

ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 232346 ANCHORAGE, AK 99523 PH: 907-345-1010 FAX: 907-345-1015

REVISION	BY	DATE

Project No. _____
Date SEPT 2010
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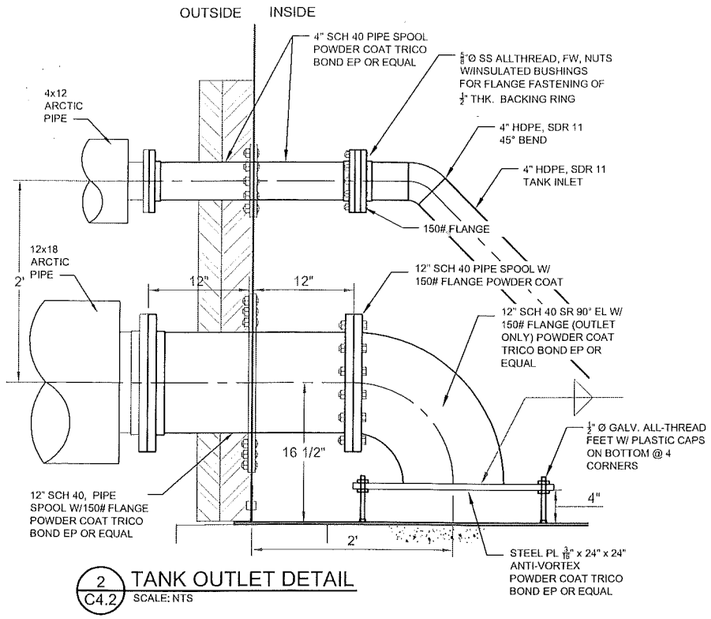
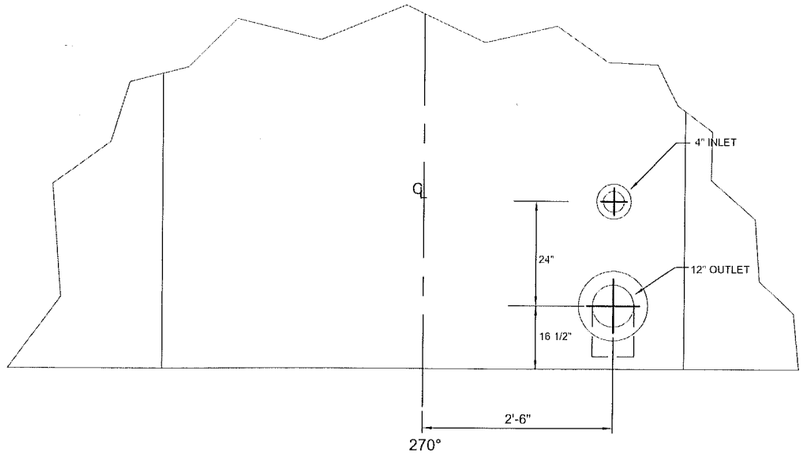
Drawn DDR
Approved LAP

Sheet No.
C4.1

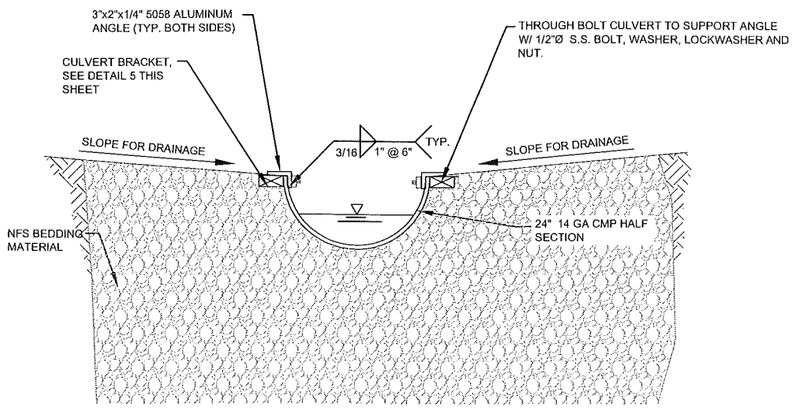
G:\ACAD\ATKA\2010 Water Storage Tank\C4.1 TANK PLAN DETAILS.dwg, 9/20/2010 1:58:33 PM, Flash, HP LaserJet 5100 Series PCL6



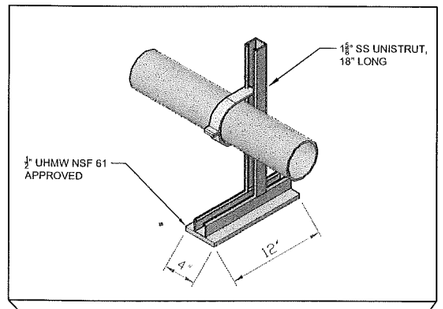
2 C4.2 TANK OUTLET DETAIL
SCALE: NTS

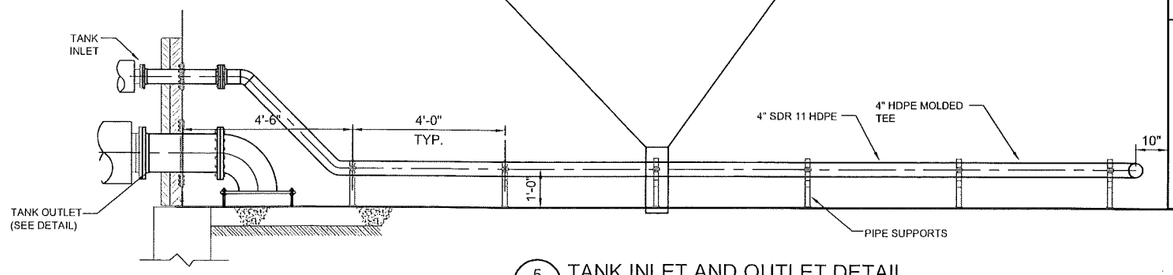


3 C4.2 PARTIAL ELEV. SHOWING TANK NOZZLES
SCALE: NTS

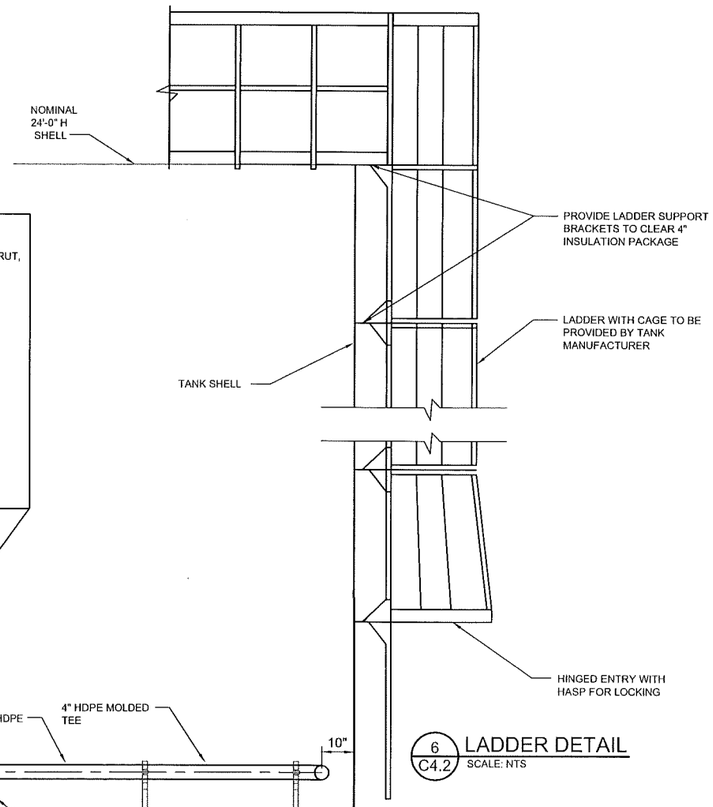


1 C4.2 CULVERT SUPPORT DETAIL
SCALE: NTS





5 C4.2 TANK INLET AND OUTLET DETAIL
SCALE: NTS



6 C4.2 LADDER DETAIL
SCALE: NTS

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NAME
DATE

SCALE:
DATE OF ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY
IF NOT ONE INCH ON ORIGINAL DRAWING

CONSTRUCTION RECORD
FIELD BOOK
STAKING
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AS-BUILT
INSPECTOR

2009 WATER SYSTEM UPGRADES

WATER STORAGE TANK DETAILS

ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 223346 ANCHORAGE, AK 99523 PH: 907-349-1010 FAX: 907-349-1015

REVISION	BY	DATE

Project No.
Date MAY 2010
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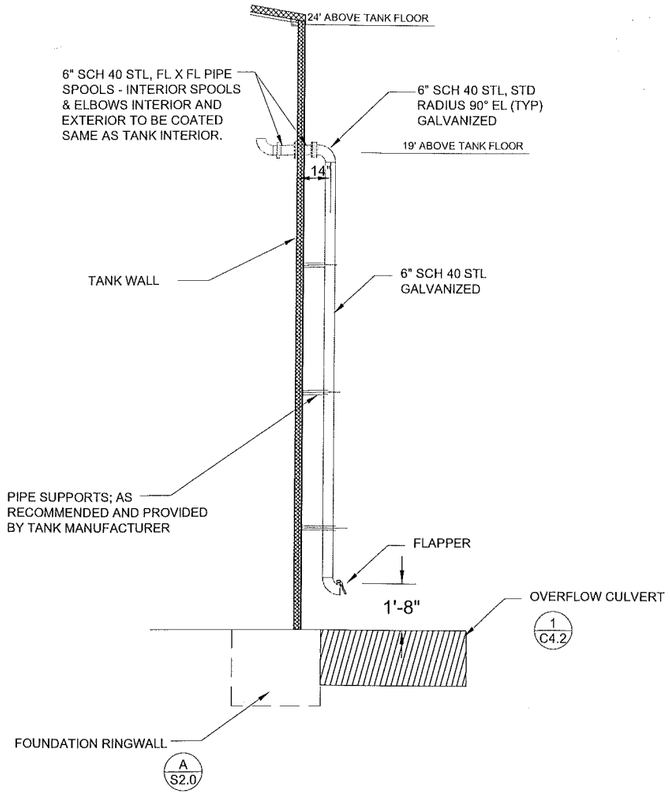
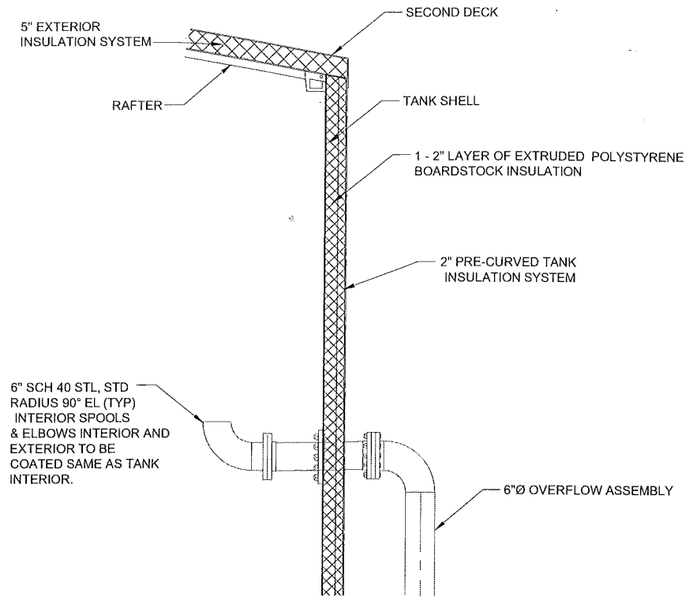
Drawn DDR
Approved LAP

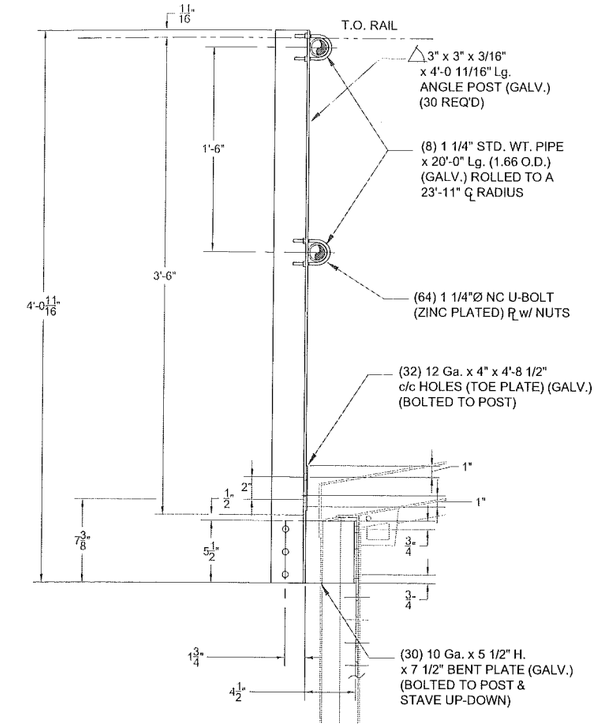
Sheet No.
C4.2



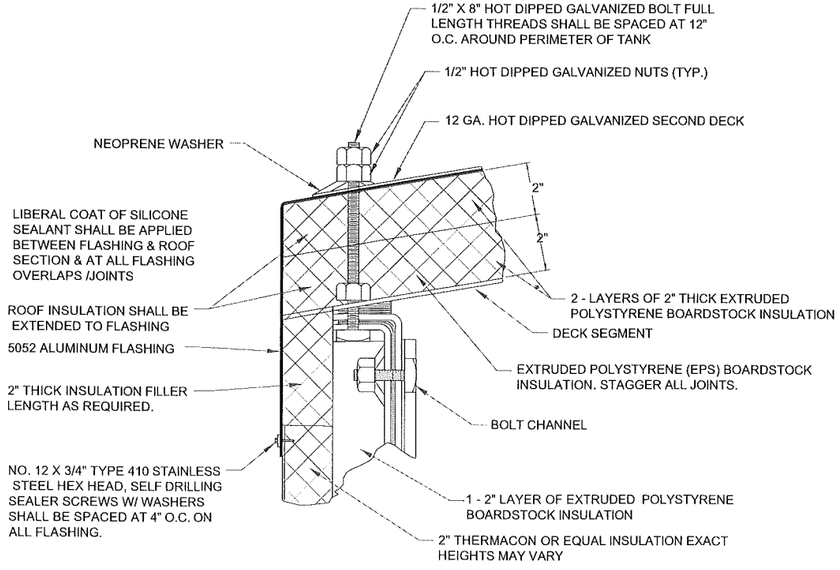
1 C4.3 TANK OVERFLOW DETAIL
SCALE: NTS



2 C4.3 OVERFLOW PENETRATION DETAIL
SCALE: NTS

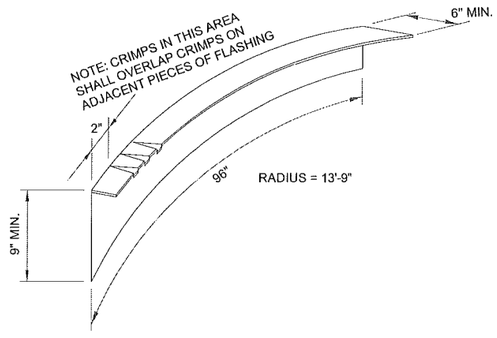


3 C4.3 ROOF HANDRAIL POST DETAIL
SCALE: NTS ASS'Y TO BE HOT DIPPED GALV. AFTER FABRICATION.



1. DOUBLE ROOF DECK
2. UPPER ROOF PLATES SHALL BE TRIMMED AROUND MANWAY NECK & ROOF VENT NECK TO ALLOW REQUIRED FIT. ALL SEAMS JOINT AROUND NECKS SHALL BE CAULKED.
3. 1/2" GALVANIZED ALL THREAD EXTENSION ASSEMBLY AROUND MANWAY AT 8" ON CENTER.
4. 1/2" COUPLING NUT (REPLACES STANDARD DECK NUT) WITH LOCK WASHER TO ATTACH TO SECOND DECK

4 C4.3 BOLTED TANK ROOF INSULATION DETAIL
SCALE: NTS



5 C4.3 FLASHING DETAIL
SCALE: NTS

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SCALE:
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0 1"
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CONSTRUCTION RECORD
RED DOCK
STAKING
FOREMAN
AS-BUILT
INSPECTOR

2009 WATER SYSTEM UPGRADES

WATER STORAGE TANK AND OVERFLOW DETAILS

ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 232546 ANCHORAGE, AK 99523 PH: 907-345-1818 FAX: 907-345-1015

REVISION	BY	DATE

Project No. _____
Date MAY 2010
Designed LAP
Drawn DDR
Approved LAP

Sheet No.
C4.3

G:\ACAD\ATKA\2010 Water Storage Tank\C4.3 TANK DETAILS OVERFLOW.dwg, 9/16/2010 9:29:39 AM, Flash, HP LaserJet 5100 Series PCL6.pc3

GENERAL STRUCTURAL NOTES

THE FOLLOWING NOTES APPLY IF RELEVANT:

CODE: 2006 INTERNATIONAL BUILDING CODE (IBC) UNLESS NOTED OTHERWISE

1. LOADS
   GROUND SNOW LOAD = 30 PSF
   FLAT ROOF SNOW, Pf = 30 PSF
   SNOW LOAD IMPORTANCE FACTOR, I = 1.0
   THERMAL FACTOR, Ct = 1.0
   WIND = 130 MPH, EXPOSURE D
   IMPORTANCE FACTOR: I = 1.00, BUILDING CATEGORY II
   SEISMIC DESIGN CATEGORY D
   Ss = 1.75 SITE CLASS D S1 = 0.75
   I = 1.0 SDs = 1.17

2. CONTRACTOR TO INSPECT THE EXISTING SITE PRIOR TO BIDDING. ALL DEVIATIONS FROM CONTRACT INFORMATION THAT ARE EXPOSED TO VIEW ARE ASSUMED ACCEPTABLE AT THE TIME OF THE BID.

3. ALL DIMENSIONS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF ANY WORK.

4. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK BETWEEN SOILS TESTING LAB AND FOUNDATION CONTRACTOR.

5. FOUNDATION
   ALLOWABLE SOIL PRESSURE IS 3000 PSF. SEE GEOTECHNICAL REPORT FROM BY DUANNE MILLER ASSOCIATES LLC, DATED NOVEMBER 30, 2009.

   THE ORGANIC SOILS, PEAT AND ORGANIC SILT SHOULD BE REMOVED FROM THE BUILDING AREA AND BE REPLACED WITH PROPERLY COMPACTED, INORGANIC FILL MATERIAL. THE REMOVAL OF WEAK SOILS SHOULD EXTEND HORIZONTALLY AT LEAST FIVE FEET BEYOND PERIMETER OF THE BUILDING. THE BOTTOM OF THE OVER-EXCAVATION SHOULD EXPOSE THE SILT WITH ROCK FRAGMENTS. THE DEPTH OF EXCAVATION SHOULD BE AT LEAST FIVE FEET. THE BOTTOM OF THE EXCAVATION SHOULD BE PROOF-ROLLED AND IF SOFT SPOTS ARE FOUND, THE EXCAVATION SHOULD BE DEEPENED.

   THE MATERIAL USED TO BACKFILL THE EXCAVATION SHOULD BE A MIXTURE OF SAND AND GRAVEL. THE MATERIAL SHOULD BE PLACED IN THIN LIFTS, AND EACH LIFT SHOULD BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DENSITY OF THE MATERIAL AS DETERMINED BY THE ASTM D1557 TEST PROCEDURE.

6. CONCRETE
   f'c=4000 PSI FOR FOOTINGS, SLABS AND FOUNDATION WALLS.
   ULTIMATE STRENGTH DESIGN METHOD USED. MIXING AND PLACING OF ALL CONCRETE AND SELECTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE IBC AND ACI CODE 318-02.

   MINIMUM MIX DESIGN FOR AIR-ENTRAINED CONCRETE

   SLUMP = 3-IN. TO 4-IN.
   WATER CEMENT RATIO = 0.50
   MAXIMUM SIZE OF AGGREGATE = 1 1/2"
   AIR CONTENT = 5% ±1%
   WATER = 265 LB. PER CU.YD. OF CONCRETE
   CEMENT = 530 LB. PER CU.YD. OF CONCRETE
   FINE SAND, FINENESS MODULUS = 2.50
   FINE AGGREGATE:
   = 32% OF TOTAL AGGREGATE
   = 980 LB. PER CU.YD. OF CONCRETE
   COARSE AGGREGATE = 2110 LB. PER CU.YD. OF CONCRETE
   PROVIDE 1/2" CHAMFER TO ALL EXPOSED CONCRETE EDGES.
   KEYED CONSTRUCTION JOINTS SHALL BE USED IN ALL CASES. ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED AND ALL LAITANCE SHALL BE REMOVED. ALL VERTICAL JOINTS SHALL BE THOROUGHLY WETTED AND SLUSHED WITH A COAT OF NEAT CEMENT. USE DOWELED EXPANSION/CONTROL JOINTS PER TYPICAL DETAILS.

   ANCHOR BOLTS, DOWELS AND OTHER EMBEDDED ITEMS SHALL BE SECURELY TIED IN PLACE BEFORE CONCRETE IS POURED.

   NO HEATING SHALL BE ALLOWED FOR BENDING OF REINFORCING STEEL UNLESS APPROVED BY ENGINEER.

7. FIELD GROUTING
   GROUT IS TO BE NON-METALLIC MASTER BUILDERS MASTERFLOW 713 NON-SHRINK GROUT OR ENGINEER APPROVED EQUAL, f'c=6,000 PSI.

8. REINFORCING STEEL
   ALL CONCRETE REINFORCING STEEL SHALL BE EPOXY COATED BARS A775 GRADE 60 (fy=60,000 PSI), EXCEPT ALL #4 SLAB REINFORCEMENT AND DOWELS SHALL BE GRADE 40 (fy=40,000 PSI). LAP CONTINUOUS REINFORCING BARS 40 BAR DIAMETERS 24" MIN. UNLESS INDICATED OTHERWISE. CORNER BARS (24" BEND) WILL BE PROVIDED FOR ALL HORIZONTAL REINFORCEMENT. LAPS SHALL BE WELL STAGGERED. DETAIL STEEL IN ACCORDANCE WITH ACI "MANUAL OF STANDARD PRACTICE OF DETAILING CONCRETE STRUCTURES". WELDED WIRE FABRIC (WWF) TO CONFORM WITH ASTM A185. REINFORCING HOOKS TO COMPLY WITH ACI STANDARD MINIMUM COVER TO MAIN REINFORCEMENT SHALL BE:
   BOTTOM OF FOOTINGS.....3"
   FORMED SURFACES--EXPOSED TO WEATHER, EARTH OR CORROSIVE ENVIRONMENT
   #6 AND LARGER.....2"
   #5 AND SMALLER.....1-1/2"
   INTERIOR FACE.....3/4"
   LAP WELDED WIRE FABRIC 2 SPACES PLUS 2 INCHES OR 12" MINIMUM.

9. SPECIAL CONDITIONS
   CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD AND SHALL PROVIDE ADEQUATE SHORING AND BRACING OF ALL STRUCTURAL MEMBERS DURING CONSTRUCTION IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY ORDINANCE. ANY DEVIATION MUST BE SHALL NOTIFY ENGINEER OF ALL FIELD CHANGES PRIOR TO INSTALLATION.

10. INSPECTION,TESTING, AND OBSERVATION
    SPECIAL INSPECTION AND TESTING REQUIRED PER IBC CHAPTER 17 AND BY AN INDEPENDENT TESTING LAB OR QUALIFIED LICENSED ENGINEER FOR THE FOLLOWING:

    FOUNDATIONS: REINFORCEMENT
    VERIFY THAT ALL REINFORCING IS PLACED IN ACCORDANCE WITH APPROVED PLANS. CHECK FOR REQUIRED COVER, SIZE AND GRADE.

    ANCHOR BOLTS LOCATION, EMBEDMENT, SIZE, TYPE.

    CONCRETE: REINFORCEMENT PLACEMENT PRIOR TO CONCRETE DELIVERY; DURING TAKING OF SPECIMENS; PRIOR TO GROUTING; STRESSED SKIN PANEL ANCHORS AND TIE DOWN ANCHORS AND HOLDOWN INSTALLATION; INSPECT DIAMETER, EMBEDMENT, LOCATION, NUT/PLATE ON EMBEDDED END.

ABBREVIATIONS:

@	AT
PL	PLATE
'	FEET
"	INCHES
EA	EACH
OC	ON CENTER
TYP	TYPICAL
W/	WITH
DWG	DRAWING
UNO	UNLESS NOTED OTHERWISE
PT	PRESSURE TREATED
THK	THICK

09/09/10

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CONSTRUCTION RECORD
FIELD BOOK
STAKING
FOREMAN
AS-BUILT
INSPECTOR

2009 WATER STORAGE TANK
GENERAL STRUCTURAL NOTES
ATKA, ALASKA

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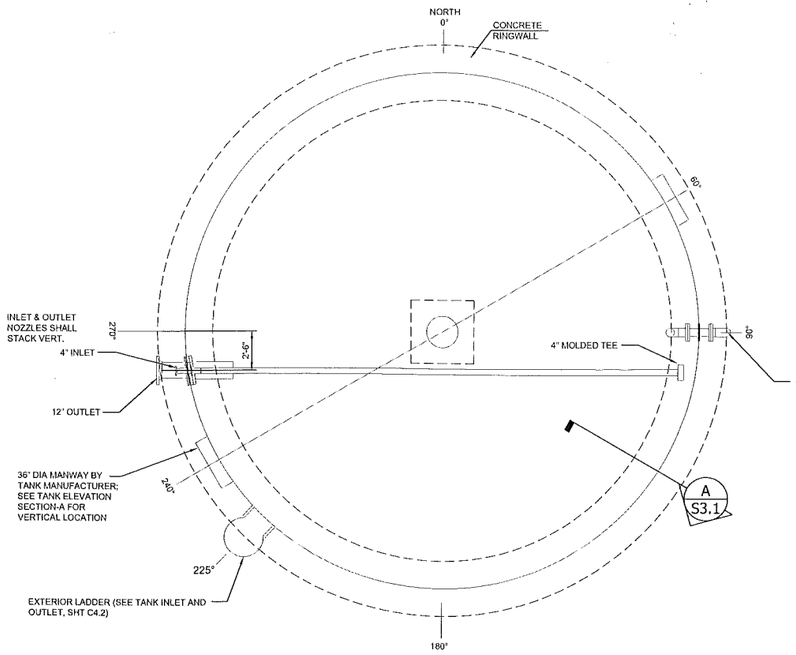
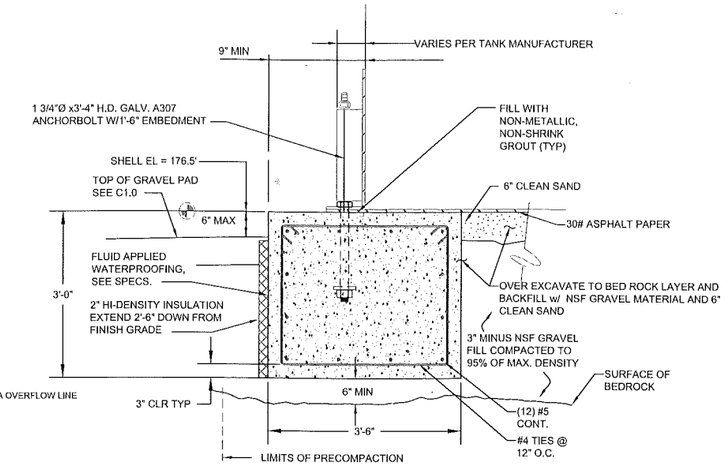
REVISION	BY	DATE
#1 - TANK DESIGN ONLY	MCB	090910

Project No. ____
Date SEPT 2009
Designed LAP
Drawn MCB
Approved LAP

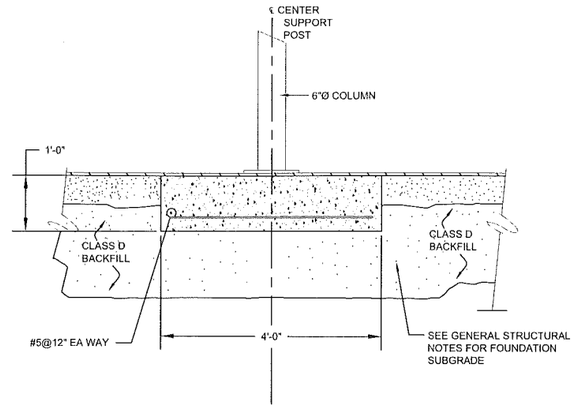
Sheet No.
S1.0



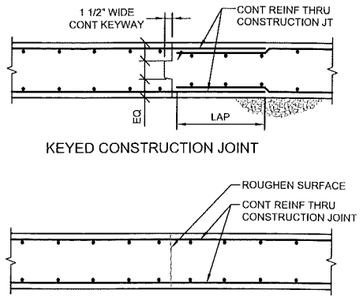


NOTES:
1. REFER TO APPROVED MANUFACTURER'S SUBMITTALS FOR ADDITIONAL FOUNDATION REQUIREMENTS.
2. TANK MANUFACTURER MUST SUBMIT RECOMMENDED TANK ANCHOR BOLTS TO STRUCTURAL ENGINEER OF RECORD FOR PREVIEW AND APPROVAL PRIOR TO FABRICATION.
3. SEE GENERAL STRUCTURAL NOTES FOR FOUNDATION SUBGRADE.

A S3.1 TANK FOUNDATION SECTION
NTS



CENTER POST FOUNDATION
NTS



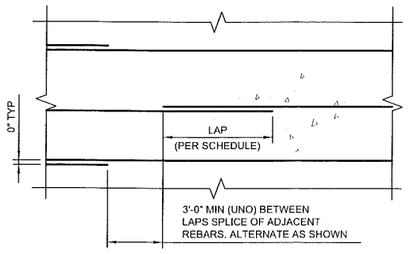
KEYED CONSTRUCTION JOINT

ROUGHEN CONSTRUCTION JOINT

NOTES:

1. FURNISH CONSTRUCTION JOINTS SHOWN HERE AT ALL WALL VERTICAL AND SLAB CONSTRUCTION JOINTS.
2. SEE SPECIFICATION FOR REQUIREMENT TO TIE WATERSTOPS IN PLACE TO PREVENT MOVEMENT OR FOLDING OVER.

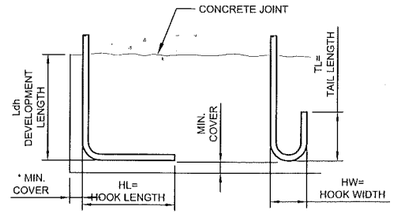
CONSTRUCTION JOINT (CJ)
NTS



NOTE:

1. APPLIES TO SLABS AND WALLS (BOTH HORIZONTAL AND VERTICAL)

REINFORCING SPLICE WHEN NOT AT CJ
NTS



90° STD HOOK 180° STD HOOK

BAR SIZE GRADE 60	f'c=3000 psi			
	Ldh *	HL	HW	TL
#3	6"	6"	3"	3"
#4	8"	8"	4"	4 1/2"
#5	10"	10"	5"	5"
#6	1'-0"	1'-0"	6"	6"
#7	1'-2"	1'-2"	7"	7"
#8	1'-4"	1'-4"	8"	8"
#9	1'-6"	1'-7"	11 3/4"	10 1/2"
#10	1'-8"	1'-10"	1'-1 1/4"	11 1/2"
#11	1'-10"	2'-0"	1'-2 3/4"	1'-1"

* COMPLYING WITH MINIMUM COVER REQUIREMENTS OF ACI 318, 12.5.3.2. OTHERWISE Ldh MUST BE RE-CALCULATED.

REINFORCING HOOK SCHEDULE
NTS

LAP SPLICE AND EMDEDMENT LENGTHS f'c =3.0 ksi fy = 60 ksi		
BAR	BARS SPACED GREATER THAN 4"	BARS SPACED LESS THAN OR EQUAL TO 4"
#3	17"	20"
#4	22"	32"
#5	29"	46"
#6	39"	62"
#7	55"	87"
#8	69"	107"
#9	76"	116"

NOTES:

1. PROVIDE MINIMUM LAP SPLICE LENGTHS AND EMBEDMENTS PER TABLE UNLESS NOTED OTHERWISE. EMBEDMENT LENGTH EQUALS THE LAP SPLICE LENGTH UNLESS OTHERWISE NOTED.
2. BAR SPACING AT LAP SPLICE IS THE MINIMUM CLEAR DISTANCE BETWEEN LAPPED BARS PLUS ONE BAR DIAMETER.
3. ALL SPLICES TO BE CONTACT SPLICES AND WIRED TOGETHER UNLESS OTHERWISE APPROVED BY ENGINEER.

REINFORCING LAP AND EMBEDMENT SCHEDULE
NTS

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REVISION	BY	DATE
#1 - TANK DESIGN ONLY	MCB	090910

2010 WATER STORAGE TANK

WATER STORAGE TANK FOUNDATION PLAN AND DETAILS

ATKA, ALASKA

CE2 ENGINEERS, INC.
PO BOX 232946 ANCHORAGE, AK 99523 PH: 907-349-1010 FAX: 907-349-1015

Project No. ____
Date SEPT 2010
Designed LAP
Drawn DDR
Approved LAP

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