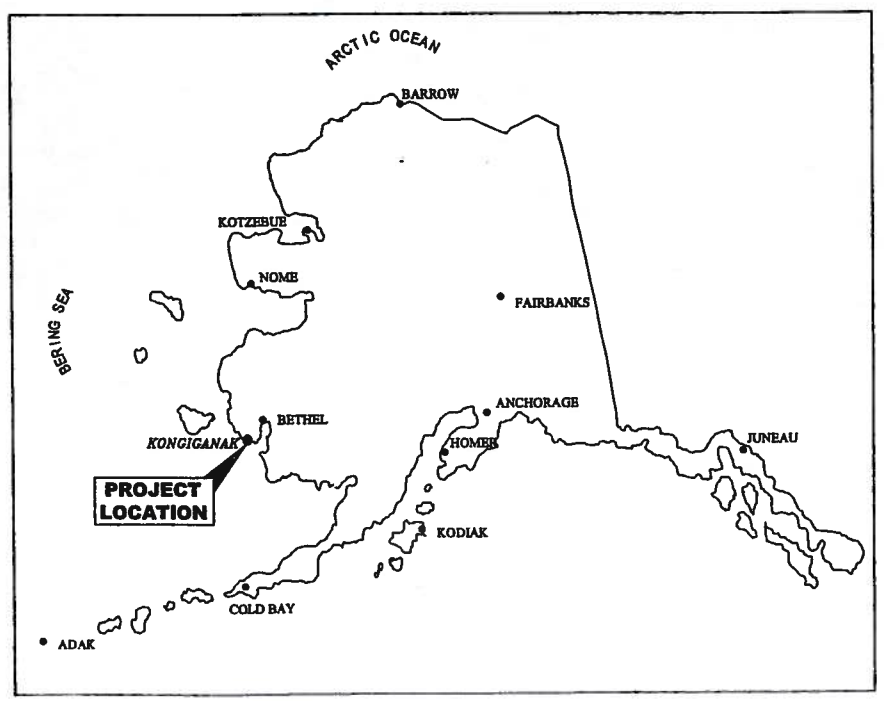
Johnson

Kongiganak Traditional Council
Water and Sewer Upgrades
Water Storage Tank Replacement

95% DESIGN
April 23rd, 2010

In Cooperation with the State of Alaska
Department of Environmental Conservation
Village Safe Water Program and
U.S. Department of Agriculture, Rural Development



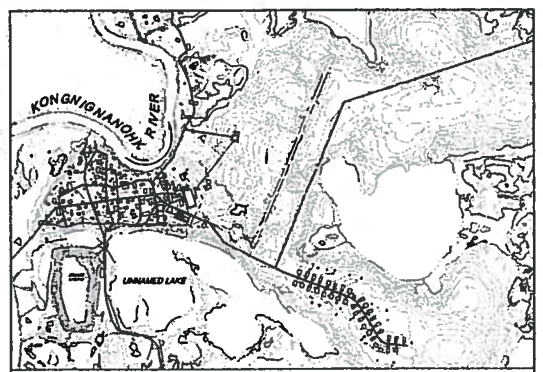
Location Map

VILLAGE SAFE WATER

STATE OF ALASKA
49th
JOHN C. TRAPP
NO. CE 11799
4-23-10
REGISTERED PROFESSIONAL ENGINEER

SUMMIT
CONSULTING SERVICES INC.

Consultant



KONGIGANAK
GRAPHIC SCALE
0 1000' 2000'

PROJECT NUMBER (CONSULTANT) _____ (VSW) _____
VSW PROJECT ENGINEER _____
CONSTRUCTION FOREMAN _____
FINAL DESIGN (DATE) _____
ADEC APPROVAL (DATE) _____
CONSTRUCTION PERIOD (FROM) _____ (TO) _____
AS-BUILTS (DATE) _____

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SITE PLAN

EXISTING		PROPOSED
W	WATER MAIN LOOP # 1	
W2	WATER MAIN LOOP # 2	W2
	WATER MAIN LOOP # 3	W3
WS	WATER SERVICES	WS
S	SEWER PHASE 1 MAIN	
SL	SEWER LAGOON MAIN	SL
	SEWER MAIN 1	S1
	SEWER MAIN 2	S2
	SEWER MAIN 3	S3
	SEWER MAIN 4	S4
SS	SEWER SERVICES	SS
	FENCING	
MH	MARINE HEADER	
FOL	FUEL OIL LINE	FOL
	ACCESS ROAD CENTERLINE	
	EDGE OF ACCESS ROAD QUICK CLAIM DEED BOUNDARY	QCD
	BOUNDARY OF HISTORICAL MONITORING AREA	MB
	RECORDED PLAT BOUNDARY	
	LEASE BOUNDARY	
	UNPAVED ROADS	
	TOWNSHIP SECTION LINE	
UE	UTILITY EASEMENTS	UE
	RIGHT OF WAY	ROW
FM	FORCE MAIN	FM
P	POWER LINE	P
C	COMMUNICATION LINE	C
	VALVE	
#	FILL AREA BUILDING # NOT TO BE SERVED	
#	BUILDING # TO BE SERVED	#
IN	IN-LINE FLUSHING HYDRANT	IN
OFF	OFFSET FLUSHING HYDRANT	OFF
	CULVERT	
	RAILROAD	
	WAIVER AREA CLOUD	
	UTILITY POLE	
	APPROXIMATE GRAVE OR CEMETERY LOCATION	
	SEPTIC SYSTEM TANK	
	TEST HOLE	
	CLEANOUTS	
W	WELL	
	MANHOLE	
BC	BRASS CAP	
	BENCH MARK	
	LIFT STATION WITH BUILDING ROW LINE	
W	CORPORATION STOP	W
W	WATERING POINT	W
CS W	CURB STOP	CS W
DT REPS	RESIDENTIAL EFFLUENT PUMPING STATION (DOSING TANK)	DT REPS

EXISTING		PROPOSED
UF	PEDESTAL	
	LEACHFIELD	LF
	TRANSFORMER	
R	RACEWAY	R
U	UTILIDOR	U
	DIRECTION OF FLOW	FLOW
	MARSH	
	EDGE OF WATER	
2	LOT NUMBER	
2	BLOCK NUMBER	
	TREES	
210	MAJOR CONTOUR	
	MINOR CONTOUR	
245.3	SPOT ELEVATIONS	
	UTILITY LINE WITH POLE	

MECHANICAL

	PRIMARY SYSTEM
HW	HOT WATER LINES
HWR	HOT WATER RETURN LINES
D	DRAIN AND OVERFLOW LINE
CWM	COLD WATER MAKE-UP LINE
BP	BY-PASS LINE
BW	BACK WASH LINE
CW	COLD WATER LINES
LWC	LOW WATER CUT-OFF
CP	CHEMICAL PUMP
C	CIRCULATING PUMP
M	WATER METER
	GATE VALVE
	CHECK VALVE
	UNION
DE	DIELECTRIC UNION
	AUTOMATIC AIR RELIEF
	PRESSURE RELIEF VALVE
	ADAPTOR
	FLEX PIPE
	FLEX COUPLING
A	AQUASTAT
FS	FLOW SWITCH
PS	PRESSURE SWITCH
	THERMOMETER
	PRESSURE REDUCING VALVE
	PRESSURE GAUGE
	FLOW INDICATOR
	THERMOFLO INDICATOR
	CIRCUIT SETTER
	DIRECTION OF FLOW
V	VACUUM BREAKER
	TANK LEVEL INDICATOR

PIPE FITTING AND VALVE SYMBOLS

	ANGLE VALVE		90° LONG RADIUS ELBOW
	CAP		VICTAULIC COUPLING
	CROSS	V	VACUUM BREAKER
	ELBOW (ELL), 45°		FLOOR DRAIN
	ELBOW, 90°		BALL VALVE
	LATERAL		CHECK BALL VALVE
	TEE	S	SOLENOID VALVE
	STRAINER		MOTORIZED VALVE
DE	DIELECTRIC FLANGE PKG.		MOTORIZED 3-WAY VALVE
	FLANGE JOINT		GLOBE VALVE
	SCREWED JOINT		BALANCING VALVE
	WELDED JOINT	2-WAY	AUTO. TEMP. CONTROL VALVE
	SOLDERED JOINT	3-WAY	AUTO. TEMP. CONTROL VALVE
	SLEEVE		QUICK OPENING VALVE
	DRESSER COUPLING		FUSIBLE VALVE
	EXPANSION JOINT		BUTTERFLY VALVE
	REDUCER, CONCENTRIC	FC 3gpm	FLOW CONTROL VALVE
	REDUCER, ECCENTRIC	3gpm	PLUG VALVE
HB	HOSE BIB		
	MINITROL	ELL - ELBOW	MJ-MECHANICAL JOINT

ELECTRICAL

	CONDUIT, SURFACE MOUNTED
	CONDUIT, BURIED OR IN-SLAB
	HOME RUN TO CIRCUIT BREAKER PANEL
	CONDUIT W/No. OF WIRES INDICATED ONE NEUTRAL, TWO HOT, A.W.G. 12, COPPER.
	INCANDESCENT FIXTURE
	INCANDESCENT FIXTURE, WALL MOUNTED
	FLUORESCENT FIXTURE
V	VAPOR TIGHT LIGHT FIXTURE
	HIGH PRESSURE SODIUM LIGHT FIXTURE
	INCANDESCENT FIXTURE, RECESSED
	FLUORESCENT FIXTURE, RECESSED
	DUPLEX RECEPTACLES
	QUADRAPLEX RECEPTACLES
	SPECIAL PURPOSE RECEPTACLES
S	SINGLE POLE SWITCH
S_3	3-WAY SWITCH
J	JUNCTION BOX
T	THERMOSTAT
T	TRANSFORMER
A	AQUASTAT
PC	PHOTO CELL
R	RELAY
M	MOTOR OPERATED VALVE (ZONE VALVE)
S	SOLENOID VALVE
	CONTROLLER
	MOTOR STARTER, MANUAL
	MOTOR STARTER, MAGNETIC
	SWITCHING PANEL
	CIRCUIT BREAKER PANEL
	ALARM PANEL
H	HEAT DETECTOR
S	SMOKE DETECTOR
B	BELL
	ALARM HORN
M	METER BASE
	MOTOR W/HORSEPOWER INDICATED
FLS	FLOAT SWITCH
PS	PRESSURE SWITCH
FS	FLOW SWITCH
UH	UNIT HEATER
	EMERGENCY LIGHT
	EXIT LIGHT
	SYSTEM GROUND
	SWITCHED RECEPTACLE
S_{PB}	PUSH-BUTTON SWITCH
F	FAN
P.C.	FIXTURE W/PULL CHAIN
S_T	SWITCH W/TIMER
CU	TELEPHONE OUTLET COPPER

95% DESIGN
ISSUED FOR AGENCY REVIEW

STATE OF ALASKA 49th JOHN C. TRACY REGISTERED PROFESSIONAL ENGINEER 12-31-10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

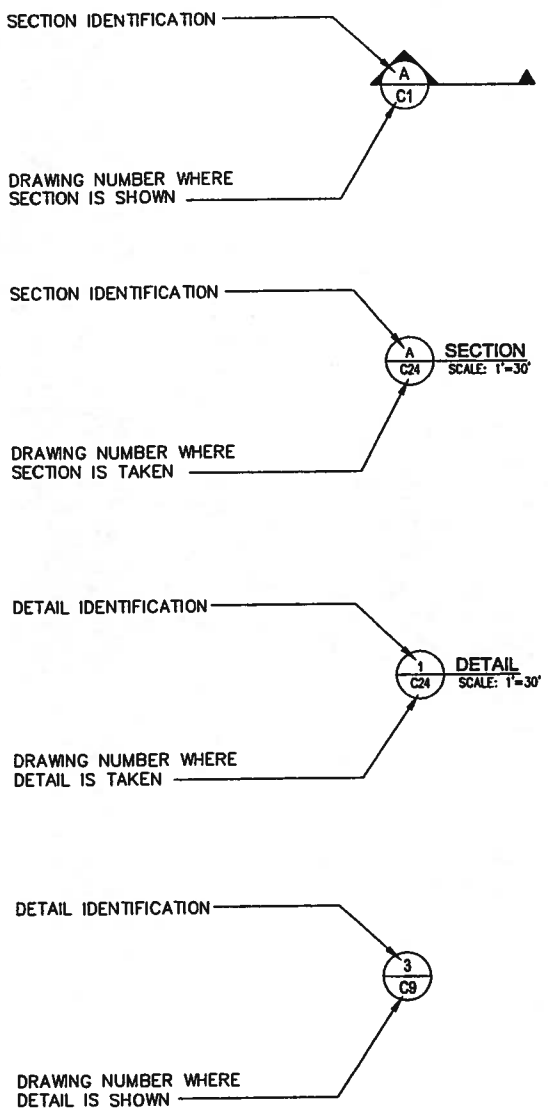
GENERAL LEGEND

REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RB
APPROVED CA

Sheet No.
G2

User: Rory Bryant Date/Time: 4/23/2010 2:11 PM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\95%\02-GENERAL LEGEND.dwg Sheet: G1



ABBREVIATIONS

AAC	ALASKA ADMINISTRATIVE CODE
ADEC	ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ADOT	ALASKA DEPARTMENT OF TRANSPORTATION
AC	ACRE(S)
ALUM	ALUMINIUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA	AMERICAN WATERWORKS ASSOCIATION
BH	BORE HOLE
BLDG	BUILDING
BLM	BUREAU OF LAND MANAGEMENT
BM	BENCH MARK
BTOC	BELOW TOP OF CASING
BX	BOX
℄	CENTERLINE
CC	CENTER TO CENTER
CF	CUBIC FOOT
CFS	CUBIC FEET PER SECOND
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CO-OP	CO-OPERATIVE
COE	US ARMY CORPS OF ENGINEERS
CONT	CONTINUED
CORP.	CORPORATION
CRUM	COLD REGIONS UTILITIES MONOGRAPH: THIRD EDITION
CT	CONTACT TIME
CTRS	CENTERS
CU	COPPER
CU FT	CUBIC FOOT
CY	CUBIC YARD
DCCED	ALASKA DEPARTMENT OF COMMUNITY, COMMERCE AND ECONOMICAL DEVELOPMENT
DET	DETAIL
DIP	DUCTILE IRON PIPE
DIA	DIAMETER
DOT/PF	DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
DWG	DRAWING
EA	EACH
EPA	ENVIROMENTAL PROTECTION AGENCY
EPS	EXPANDED POLYSTYRENE
ETC.	ET CETRA
ELEC	ELECTRICAL, ELECTRIC
ELEV	ELEVATION
EQUA	EQUAL
EQUIV	EQUIVALENT
EXIST	EXISTING
F	FUEL
FDN	FOUNDATION
FF	FINISH FLOOR
FL	FLANGE
FT	FOOT, FEET
FTG	FOOTING
G	GALLONS
GA	GAGE
GAL	GALLON
GALV	GALVANIZED
GCL	GEOSYNTHETIC CLAY LINER
GI	GALVANIZED IRON
GL	GROUND LEVEL (EXIST)
GND	GROUND
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
HC.	HORIZONTAL CHANGE OF DIRECTION AT STATION NUMBER
I	INSTRUMENTATION, INERTIA
IE	INVERT ELEVATION
ID	INSIDE DIAMETER, INSTRUMENTATION DIAGRAM
ILS	INDIVIDUAL LIFT STATION
IN	INCH(ES)
INV	INVERT
KIPS	1,000 LBS
L	LITER, LENGTH
LB	POUND
LBS	POUNDS
LF	LINEAL FOOT, LINEAL FEET, LINEAR FOOT, LINEAR FEET
LT	LIGHT
MAX	MAXIMUM
MCL	MAXIMUM CONTAMINANT LEVEL
MFG	MANUFACTING
MFR	MANUFACTURER
mg	MILLIGRAMS
mg/L	MILLIGRAMS PER LITER
MHW	MEAN HIGH WATER
MID	MIDDLE
MIN	MINIMUM, MINUTES
MIP	MALE IRON PIPE
MISC	MISCELLANEOUS
MKEC	MIDDLE KUSKOKWIM ELECTRIC CO-OP
MH	MANHOLE
mm	MILLIMETER
MON	MONUMENT
MPH	MILES PER HOUR
MPT	MALE PIPE THREAD
MRL	METHOD REPORTING LIMIT
MT	MONITORING TUBE
MW#	MAN WAY (NUMBER)
N#	NOZZEL (NUMBER)
N.I.C.	NOT IN CONTRACT
N.C.	NORMALLY CLOSED
NC	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NO	NORMALLY OPEN
N-P-K	NITROGEN-PHOSPHORUS-POTASSIUM
N	NORTH
NA	NOT APPLICABLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NFS	NON FROST SUSCEPTIBLE
NOM	NOMINAL
NORM	NORMALLY
NSF	NATIONAL SANITATION FOUNDATION
NTS	NOT TO SCALE
OC	ON CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OD	OUTSIDE DIAMETER
OZ	OUNCE, OUNCES
P	PIPING, PLUMBING
P & ID	PLUMBING & INSTRUMENTATION DIAGRAM
PC	POINT OF CURVATURE
PERF	PERFORATED
PEX	CROSS-LINKED POLYETHYLENE
P℄	PLAT/PROPERTY LINE
PF	PER FOOT
PPI	POUNDS PER INCH, PLASTIC PIPE INSTITUTE
PRV	PRESSURE REDUCING VALVE
PSF	POUND PER SQUARE FOOT
PSI	POUND PER SQUARE INCH
PSIG	POUND PER SQUARE INCH PRESSURE GUAGE
PT	POINT OF TANGENT
PVC	POLYVINYL CHLORIDE
PWS	PUBLIC WATER SYSTEM
QTY	QUANTITY
R	RADIUS
RC&D	RESOURCE CONSERVATION & DEVELOPMENT
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
ROW	RIGHT OF WAY
RW	RAW WATER
S	SOUTH, SLOPE
SCH	SCHEDULE
SDR	STANDARD DIMENSIONAL RATIO
SECT	SECTION
SF	SQUARE FOOT, SQUARE FEET
SH	SHEET
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL OR SANITARY SEWER
STA	STATION
STD	STANDARD
SUBD.	SUBDIVISION
SWPPP	STORM WATER POLLUTION PREVENTION PLAN
SWT	SWEAT (SOLDERED) CONNECTION
TB	TUBE
TBD	TO BE DETERMINED
TCR	TOTAL COLIFORM RULE
TEMP	TEMPERATURE, TEMPORARY
TP	TESTING POINT
TRAD.	TRADITIONAL
TW	TREATED WATER
TYP	TYPICAL
UMC	UNIFORMED MECHANICAL CODE
UPC	UNIFORMED PLUMBING CODE
U.S.	UNITED STATES
V	VOLUME, VELOCITY
VER	VERTICAL
VERT	VERTICAL
VPI	VERTICAL POINT OF INTERSECTION
VPSO	VILLAGE PUBLIC SAFETY OFFICER
VSS	VACUUM SEWER STATION
VSW	VILLAGE SAFE WATER
W/	WITH
W/O	WITHOUT
WCT	WATER CONTACT TANK
WS	WATER SURFACE
WT	WEIGHT
WTP	WATER TREATMENT PLANT
WWF	WELDED WIRE FABRIC
WWTF	WASTE WATER TREATMENT FACILITY
YD	YARD

95% DESIGN
ISSUED FOR
AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRUE
NO. CE 11797
REGISTERED PROFESSIONAL ENGINEER
4-23-10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

GENERAL ABBREVIATIONS

REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
G3

User: Rory Bryant Date/Time: 4/23/2010 2:14 PM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\95%\G3-GENERAL ABBR.dwg Sheet: G2

I. GENERAL PROJECT REQUIREMENTS

1. GENERAL:

THE OWNER FOR THIS PROJECT IS THE KONGIGANAK TRADITIONAL COUNCIL (KTC). ALL WORK ITEMS REQUIRING DIRECTION OR APPROVAL FROM THE OWNER SHALL BE COORDINATED THROUGH THE VILLAGE ADMINISTRATOR.

LOCAL CONTACTS ARE AS FOLLOWS:

KONGIGANAK TRAD. COUNCIL (KTC)		557-5226
PRESIDENT , KTC	PETER DANIEL, SR.	557-5226
VILLAGE ADMINISTRATOR, KTC	WAYNE PHILLIPS	557-5226
WTP OPERATOR	SAM IVON	557-5226
BACKUP WTP OPERATOR	JAMES TIKUN	557-5226
CALISTA REGIONAL CORPORATION	MARY MARTINEZ	279-5516
QEMIRTALEK CORPORATION		557-5529
LOWER KUSKOKWIM SCHOOL DISTRICT	BILL FERGUSON	543-4810
PUVURNAQ POWER COMPANY		557-5614
TELEPHONE	UNITED UTILITIES	1-800-478-2020

2. LANDS AND RIGHTS OF WAY (ROW):

PUBLIC LAND, SURFACE ESTATE AND RIGHTS OF WAY FOR THIS PROJECT, WITH THE EXCEPTIONS NOTED BELOW, ARE OWNED BY THE KONGIGANAK TRADITIONAL COUNCIL. SUBSURFACE ESTATE IS ADMINISTERED BY CALISTA REGIONAL CORPORATION.

3. CONSTRUCTION STAGING AREAS:

ALL CONSTRUCTION EQUIPMENT AND MATERIALS SHALL BE STORED, STOCKPILED, AND STAGED IN DESIGNATED AREAS AS IDENTIFIED OR APPROVED BY KTC.

4. HAUL ROUTES:

HAUL ROUTES FOR ALL CONSTRUCTION MATERIALS AND EQUIPMENT SHALL BE AS DIRECTED BY KTC.

5. EXISTING FACILITIES:

PRESERVE AND PROTECT EXISTING FACILITIES ON PRIVATE PROPERTY AND WITHIN THE ROW. THIS INCLUDES, BUT IS NOT LIMITED TO ELECTRICAL DISTRIBUTION FACILITIES, COMMUNICATIONS FACILITIES, FUEL FACILITIES, PRIVATE DWELLINGS, AND OTHER PRIVATE STRUCTURES AND PROPERTY. MISCELLANEOUS DEBRIS AND UNUSABLE MATERIALS MAY BE DISPOSED IN THE SOLID WASTE SITE. UNCLAIMED OR UNIDENTIFIED MATERIALS OR OBJECTS SHALL BE SALVAGED AND STORED AS DIRECTED BY KTC.

TREATED LUMBER SHALL NOT BE BURNED DUE TO POTENTIAL HAZARDOUS AIRBORNE BYPRODUCTS FROM COMBUSTION. SUCH MATERIAL SHALL BE DISPOSED IN THE SOLID WASTE SITE AND COVERED WITH FILL MATERIAL.

6. PERMITS AND AGENCY REQUIREMENTS:

PERMITS, PLANS & APPROVALS MAY BE REQUIRED FOR THIS PROJECT. COPIES OF THE REQUIRED FINAL PERMITS OR APPROVALS SHALL BE MAINTAINED AT THE PROJECT SITE. THE CONSTRUCTOR SHALL BE FAMILIAR WITH AND FOLLOW THE REQUIREMENTS AND CONDITIONS IDENTIFIED IN THESE PERMITS:

- U.S. ARMY CORPS OF ENGINEERS (COE) 404 PERMIT FOR DREDGE AND FILL
- STATE OF ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION (ADEC) CERTIFICATE OF REASONABLE ASSURANCE
- OFFICE OF PROJECT MANAGEMENT & PERMITTING, ALASKA DEPARTMENT OF NATURAL RESOURCES
- ADEC PLAN REVIEW AND APPROVAL TO CONSTRUCT
- ADEC STORM WATER POLLUTION PREVENTION PLAN

SUBSEQUENT OPERATION OF THE FACILITIES WILL REQUIRE ADDITIONAL PERMITS.

7. QUALIFICATIONS:

WORK UNDER THIS PROJECT SHALL BE CARRIED OUT BY PROPERLY TRAINED INDIVIDUALS WORKING UNDER QUALIFIED SUPERVISION. QUALIFIED SUPERVISION SHALL CONSIST OF COMPETENT FOREMEN AND SUPERINTENDENTS EXPERIENCED AND TRAINED IN THE WORK WHICH IS BEING SUPERVISED.

ELECTRICAL WORK SHALL BE PERFORMED BY STATE OF ALASKA LICENSED JOURNEYMEN ELECTRICIANS AND SHALL BE IN ACCORDANCE WITH THE MOST RECENT VERSION OF NFPA 70 ADOPTED BY THE STATE OF ALASKA.

MECHANICAL WORK SHALL BE PERFORMED BY STATE OF ALASKA LICENSED JOURNEYMEN PLUMBERS AND SHALL BE IN ACCORDANCE WITH THE MOST RECENT VERSIONS OF THE UPC AND IMC ADOPTED BY THE STATE OF ALASKA.

ALL OTHER SPECIALTY WORK SHALL BE UNDERTAKEN BY LICENSED AND QUALIFIED PERSONNEL FOR THAT PARTICULAR TRADE.

ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL LAWS REGARDING LICENSING, QUALIFICATIONS, AND OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) REQUIREMENTS.

8. SUBMITTALS:

SUBMITTALS ARE REQUIRED FOR THE FOLLOWING:

- WATER STORAGE TANK
- PIPING MATERIALS
- THERMISTORS
- GEOFOAM
- THERMOSYPHONS

SEE APPLICABLE SPECIFICATIONS BELOW AND AS SHOWN ON THE PLANS.

9. INSPECTIONS:

THE ENGINEER SHALL CONDUCT PERIODIC INSPECTIONS OF THE WORK TO ENSURE GENERAL CONFORMANCE OF ALL WORK ELEMENTS TO THE PROJECT PLANS AND SPECIFICATIONS.

THE ENGINEER SHALL ALSO MAKE A FINAL INSPECTION AND NOTED DEFICIENCIES SHALL BE CORRECTED.

10. RECORD DRAWINGS:

THE SUPERINTENDENT SHALL KEEP A DAILY RECORD THAT ACCURATELY SHOWS THE ACTUAL WORK COMPLETED AND ANY DEVIATIONS FROM THE PLANS AND SPECIFICATIONS. A FULL SIZE SET OF PLANS SHALL BE RESERVED AND USED FOR THIS PURPOSE. THIS SET OF "REDLINE" MARK UPS SHALL BE NEATLY DRAWN TO SCALE AND SHALL INCLUDE NOTES, AS REQUIRED, TO FULLY AND ACCURATELY DESCRIBE THE ACTUAL WORK COMPLETED. THE SET OF "REDLINE" RECORD DRAWINGS SHALL BE MADE AVAILABLE TO THE ENGINEER DURING INSPECTIONS AND SHALL BE DELIVERED TO THE OWNER AT THE COMPLETION OF THE PROJECT. AFTER CORRECTIONS ARE MADE, FINAL RECORD DRAWINGS SHALL BE PRODUCED AND SENT TO THE OWNER, VSW & ADEC..

11. SURVEY CONTROL:

TWO MONUMENTS LOCATED ON DOT PROPERTY SHALL BE USED AS THE BASE POINT FOR VERTICAL CONTROL. SURVEY CONTROL POINTS SHALL BE ESTABLISHED AS PART OF THIS PROJECT. PRIMARY SURVEY CONTROL, RECOVERING OR REESTABLISHING PROPERTY CORNERS, AND SETTING REFERENCE POINTS TO CONTROL THE WORK ON THIS PROJECT SHALL BE UNDERTAKEN BY A LAND SURVEYOR REGISTERED IN THE STATE OF ALASKA.

LINES AND GRADES INDICATED OR SHOWN ON THE DRAWINGS SHALL BE LAID OUT IN THE FIELD BY COMPETENT PERSONNEL USING THESE CONTROL POINTS. WORK CONSTRUCTED SHALL BE IN GENERAL CONFORMANCE TO THE LINES AND GRADES INDICATED OR SHOWN.

FEATURES SHOWN ON THE BASE MAPS ARE TAKEN FROM RECTIFIED AERIAL SURVEY. FIELD VERIFY HORIZONTAL AND VERTICAL LOCATION OF FEATURES AS REQUIRED.

12. MONUMENTS:

THERE ARE SEVERAL PROPERTY CORNERS WHICH ARE LOCATED CLOSE TO THE CONSTRUCTION AREA. IT IS POSSIBLE THEY COULD BE DISTURBED OR DESTROYED BY THE CONSTRUCTION EFFORT.

STATE LAW REQUIRES THAT MONUMENTS WHICH MAY BE DISTURBED OR DESTROYED BY CONSTRUCTION ACTIVITIES BE REFERENCED PRIOR TO THE BEGINNING OF CONSTRUCTION AND THAT THEY BE REPLACED IN THEIR ORIGINAL POSITION FOLLOWING CONSTRUCTION.

II. EMBANKMENT AND EXCAVATION

1. GENERAL:

ALL TEST HOLES ACCOMPLISHED DURING THE PREPARATION OF THIS DESIGN AND OTHER AVAILABLE TEST HOLES ACCOMPLISHED PREVIOUSLY FOR OTHER PROJECTS ARE CONSISTENT.

IN GENERAL, UNDISTURBED SOILS ARE 6 - 12 INCHES OF ORGANIC MAT, 3 - 6 INCHES OF PEAT/SILT FOLLOWED BY SILT/FINE SANDY SILT TO AN UNKNOWN DEPTH. GROUND WATER IS NORMALLY NOT ENCOUNTERED AND FROZEN SILT/PERMAFROST IS FOUND FROM 3 -20 FEET BELOW GRADE.

2. MATERIALS:

A. UNSUITABLE MATERIALS:

UNSUITABLE MATERIALS ARE ORGANIC MATERIALS, ICE RICH SILTS, PEATS, AND SATURATED MATERIALS, WHICH CANNOT BE READILY COMPACTED. THEY INCLUDE ANY MATERIAL THAT CONTAINS DELETERIOUS SUBSTANCES OR MATERIALS DESIGNATED AS UNSUITABLE BY THE ENGINEER.

UNSUITABLE MATERIALS GENERATED ON THIS PROJECT SHALL BE USED TO THE EXTENT POSSIBLE AS TOP SOILS, NON-STRUCTURAL COVER, OR REPAIR OF DAMAGED SURFACE AREAS OR AREAS DEVOID OF VEGETATION. UNSUITABLE MATERIALS, WHICH ARE NOT USED, SHALL BE DISPOSED OF IN THE SPOILS DISPOSAL AREA. THE SPOILS DISPOSAL AREA SHALL BE DETERMINED PRIOR TO THE START OF CONSTRUCTION AND SHALL BE APPROVED BY KTC.

B. SUITABLE MATERIALS:

SUITABLE MATERIALS SHALL BE IMPORTED OR REMOVED FROM EXCAVATIONS ON THIS OR OTHER PROJECTS.

SUITABLE MATERIALS SHALL CONTAIN NO MUCK, PEAT, ICE, ROOTS, SOD, DELETERIOUS MATTER, OR OTHER CHARACTERISTICS OR PROPERTIES WHICH WOULD CLASSIFY IT AS UNSUITABLE MATERIALS.

SUITABLE MATERIALS SHALL CONSIST OF CLEAN NATIVE SILT SOILS OR IMPORTED NFS MATERIALS OR OTHER IMPORTED SPECIFIED MATERIALS.

3. BORROW SITES:

THERE ARE SUITABLE BORROW AREAS ON LAND OWNED OR LEASED BY KTC. KTC SHALL APPROVE ALL BORROW SITES.

4. DISTURBANCE OF UNAFFECTED AREAS:

DISTURBANCE OF VEGETATION OUTSIDE THE LIMITS OF FILL OR EXCAVATION IS TO BE MINIMIZED AS FAR AS POSSIBLE. WHERE THIS CANNOT BE AVOIDED, RE-TOPSOIL WITH UNSUITABLE MATERIAL GENERATED ELSEWHERE ON THE PROJECT AND RESEED. IF THE AREA IS SLOPING, USE EROSION CONTROL MEASURES TO RECLAIM THE DAMAGED AREA.

5. WATER CONTROL:

AN APPROVED SWPPP SHALL BE DEVELOPED AND FOLLOWED FOR THIS PROJECT.

CONSTRUCTION AREA SHALL BE MAINTAINED IN A RELATIVELY DRY CONDITION THROUGHOUT THE CONSTRUCTION OPERATION. TRENCHES SHALL BE KEPT DEWATERED DURING PIPE INSTALLATION, DISCHARGE SHALL BE DIRECTED AWAY FROM THE SITE AND DISPOSED IN AN APPROVED MANNER.

APPROPRIATE MEASURES, SUCH AS SETTLING PITS OR SILT FENCES, SHALL BE USED TO PREVENT HIGHLY TURBID WATERS FROM ENTERING EXISTING WETLANDS OR WATERWAYS. IT IS NOT ANTICIPATED SUCH EVENTS SHALL OCCUR ON THIS PROJECT.

6. COMPACTION REQUIREMENTS AND METHODS:

INCLUDING PLACEMENT AND COMPACTION OF BEDDING - SURFACE DRAINAGE AND TRENCH DEWATERING PIPE BEDDING AND TRENCH BACK FILL MATERIAL SHALL BE COMPACTED TO 92% OF MAXIMUM DENSITY BY HAND OPERATED VIBRATORY OR RECIPROCATING PLATE COMPACTORS.

COMPACTION OF TRAVELED WAY SURFACES SHALL BE PERFORMED BY DRIVING AVAILABLE WHEELED OR TRACKED VEHICLES, OR A STEEL DRUM ROLLER, OVER THE FILL AREAS UNTIL THE FILL IS COMPACTED TO A DENSE AND UNYIELDING SURFACE AND NO RUTTING OR PUMPING OCCURS UNDER VEHICULAR TRAFFIC. HORIZONTAL LIFT HEIGHTS MAY VARY BUT SHALL NOT EXCEED A DEPTH SUCH THAT THE COMPACTION EFFORT AND RESULTS ARE NOT UNIFORM THROUGHOUT THE ENTIRE LIFT HEIGHT AND WIDTH.

FILL FOR THIS PROJECT SHALL BE SPREAD IN HORIZONTAL LIFTS LESS THAN 8 INCHES (LOOSE) IN HEIGHT AND COMPACTED. EACH LIFT SHALL BE COMPACTED UNIFORMLY THROUGHOUT THE LIFT. LIFT HEIGHT SHALL BE REDUCED IF THE REQUIRED COMPACTION IS NOT MET THROUGHOUT THE LIFT HEIGHT.

ALL AREAS WITHIN 2 FEET OF AN EXISTING STRUCTURE OR PREVIOUSLY COMPLETED PORTION OF A FOUNDATION, OR OTHER INACCESSIBLE AREAS, SHALL BE COMPACTED BY HAND OPERATED VIBRATORY PLATE COMPACTORS OR RECIPROCAL ACTING PLATE COMPACTORS.

FILL SHALL BE CONSTRUCTED USING UNFROZEN MATERIALS.

7. EROSION CONTROL AND RECLAMATION:

EROSION CONTROL AND RECLAMATION SHALL BE CONSTRUCTED IN ALL VEGETATED AREAS DISTURBED BY ACTIVITIES CONDUCTED AS PART OF THIS PROJECT. THE EROSION CONTROL AND RECLAMATION DESCRIBED IN THIS SECTION ONLY INCLUDES THOSE EFFORTS TO PROVIDE PERMANENT PROTECTION AND RECLAMATION. TEMPORARY EROSION PROTECTION ACTIVITIES, SUCH AS SILT FENCING, ADDITIONAL GRADING, ETC. SHALL BE DISCUSSED IN THE STORM WATER POLLUTION PREVENTION PLAN.

FERTILIZER SHALL BE 20-20-10 (N-P-K) AND SHALL CONFORM TO THE REQUIREMENTS OF ADOT STANDARD SPECIFICATIONS SECTION 725. FERTILIZER SHALL BE APPLIED AT A RATE OF 450 TO 500 LB PER ACRE (OR APPROXIMATELY 5 LB PER 1,000 SF). THE FERTILIZER SHALL BE RAKED INTO THE TOP SEVERAL INCHES OF SOIL AFTER APPLICATION.

SEED SHALL BE PROVIDED IN GENERAL CONFORMANCE WITH APPLICABLE REQUIREMENTS OF ADOT STANDARD SPECIFICATIONS SECTION 724. SEED SHALL CONSIST OF A MIX OF THE FOLLOWING:

'NORCOAST' BERING HAIRGRASS (DESCHAMPSIA BERINGENSIS 'NORCOAST')	30%
'ARCTARED' RED FESCUE (FESTUCA RUBRA 'ARCTARED')	50%
ANNUAL RYE	20%

SEED SHALL BE BROADCAST SPREAD (AFTER APPLICATION OF FERTILIZER) USING A MECHANICAL SPREADER AND APPLIED AT A RATE OF 1 LB PER 1,000 SF. SEED SHALL NOT BE SPREAD AFTER AUGUST 15. EFFORTS SHOULD BE MADE TO RESEED DISTURBED AREAS THE SAME SUMMER THEY ARE DISTURBED. IF THIS CANNOT BE COMPLETED AS DESCRIBED ABOVE, AREAS SHOULD BE RESEEDED THE FOLLOWING SPRING AS SOON AS SNOW HAS MELTED FROM THE AREAS.

TOPSOIL SHALL CONSIST OF A MIXTURE OF NATIVE ORGANIC MATERIAL AND LOCALLY AVAILABLE SILTY MATERIAL. THE MATERIALS SHALL BE THOROUGHLY MIXED. TOPSOIL SHALL BE MOISTENED PRIOR TO APPLICATION. IT IS ANTICIPATED THAT MUCH OF THE UNUSABLE MATERIALS GENERATED AT EXCAVATIONS ON THIS PROJECT WILL BE USED TO PROVIDE TOPSOIL FOR EROSION PROTECTION AND RECLAMATION. TOPSOIL SHALL BE APPLIED AT ALL NON-TRAVELED WAYS DISTURBED BY CONSTRUCTION ACTIVITIES.

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AGENCY REVIEW

STATE OF ALASKA * 49th * JOHN C. TRAM 10-4217 REGISTERED PROFESSIONAL ENGINEER

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

GENERAL NOTES

REVISION	BY	DATE

PROJECT NO.
DATE 4/22/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
G4

User: Rory Bryant Date/Time: 4/23/2010 2:36 PM Plot Style: Monochrome.stb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\0.5 MO Tank\95%\G04-GENERAL NOTES.dwg Sheet: G1

8. **SAFETY CONSIDERATIONS:**

SIDE WALLS OF TRENCHES AND EXCAVATIONS SHALL BE SLOPED OR SUFFICIENTLY BRACED IN CONFORMANCE WITH THE APPROPRIATE 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 BACK FILLED OR COVERED BEFORE WORK IS STOPPED FOR THE DAY. IF IT BECOMES NECESSARY TO LEAVE A PORTION OF THE EXCAVATION OPEN AND UNATTENDED, THE OPEN SECTIONS SHALL BE ADEQUATELY SIGNED AND BARRICADED TO WARN RESIDENTS OF THE HAZARD. UTILITY LOCATIONS TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

III. OTHER PROJECT MATERIALS

1. **GEOTEXTILE:**

GEOTEXTILE MATERIAL SHALL BE SUITABLE FOR USE IN EMBANKMENT, SEPARATION, AND REINFORCEMENT APPLICATIONS AND SHALL BE AMOCO 2006, MIRAFI 500X, OR APPROVED EQUAL.

GEOTEXTILE MAY ALSO BE PLACED AT THE CONTRACTORS DISCRETION TO MITIGATE ADVERSE LOCAL CONDITIONS OR TO FACILITATE CONSTRUCTION OR SITE ACCESS. ADVERSE LOCAL CONDITIONS MAY INCLUDE, BUT ARE NOT LIMITED TO, WET, SOFT, AND UNSTABLE AREAS, OR OTHER CONDITIONS WHEREBY USE OF A GEOTEXTILE MATERIAL MAY HELP TO MINIMIZE FILL QUANTITIES.
GEOTEXTILES MAY BE INSTALLED WITH SEWN OR OVERLAP EDGES. OVERLAP JOINTS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER.

SEWN JOINTS SHALL BE INSTALLED USING THREAD HAVING PHYSICAL, CHEMICAL, AND ULTRAVIOLET-RESISTANCE CHARACTERISTICS SIMILAR TO OR GREATER THAN THE GEOTEXTILE FABRIC. SEAMS, STITCHES AND STITCH SPACING SHALL BE AS RECOMMENDED BY THE GEOTEXTILE MANUFACTURER.

JOINTS AND EDGES MAY BE PINNED TO HOLD FABRIC IN PLACE DURING FILL OR BACKFILL OPERATIONS IF CONDITIONS, SUCH AS HIGH WINDS, WARRANT.

2. **ALL-WEATHER WOOD:**

ALL WOOD SHALL BE PRESSURE TREATED IN ACCORDANCE WITH AMERICAN WOOD PRESERVER'S ASSOCIATION OF RECOMMENDED PRACTICE, STANDARD FOR PRESERVATIVE TREATMENT BY PRESSURE PROCESS - ALL TIMBER PRODUCTS. KILN-DRIED LUMBER SHALL BE TREATED WITH A WATERBORNE PRESERVATIVE AND SHALL HAVE A MAXIMUM MOISTURE CONTENT OF 15 PERCENT AFTER TREATMENT. PRESERVATIVE SHALL CONFORM TO AMERICAN WOOD PRESERVES BUREAU STANDARD SPECIFICATIONS. CREOSOTE SHALL NOT BE USED. EACH PIECE OF TREATED LUMBER SHALL BEAR THE APPROVAL MARK OF AN APPROVED TESTING AGENCY.

ALL FIELD CUTS, NOTCHES, TAPS, OR DRILLED AREAS WHICH CREATE NEWLY EXPOSED AREAS SHALL BE TREATED WITH TWO HEAVY COATS OF THE SAME PRESERVATIVE USED IN THE ORIGINAL TREATMENT. MINIMUM PENETRATION OF FIELD-APPLIED PRESERVATIVES SHALL BE 1/4 INCH.

3. **SILTCRETE:**

SITLCRETE SHALL CONSIST OF A MIXTURE OF NATIVE SILT AND PORTLAND CEMENT, WITH A RATIO EQUIVALENT TO A 1 SACK MIX (1 SACK PORTLAND CEMENT TO 1 CUBIC YARD SILT). THE NATIVE SILT WILL BE DRAINED OF ANY FREE WATER, PRIOR TO MIXING. AFTER MIXING, THE MATERIAL SHOULD BE COMPACTED AND SMOOTHED USING A SMALL PLATE COMPACTOR OR A SMALL, SMOOTH DRUM.

IV. CONTAMINATED SOILS

1. **ACTIONS:**

IF FUEL CONTAMINATED SOILS ARE ENCOUNTERED, ALL REMOVED SOILS SHALL BE PLACED ON A LINER AND COVERED WHILE A PLAN IS FORMULATED TO DISPOSE OF THE SOILS.

IF FUEL CONTAMINATED SOILS ENCOUNTERED ARE SATURATED AND FREE PRODUCT IS OBSERVED, THE CONSTRUCTION SHALL BE HALTED UNTIL THE FREE PRODUCT CAN BE KEPT OUT OF THE EXCAVATION.

2. **NOTIFICATIONS:**

THE VSW AND SCS PROJECT ENGINEER SHALL BE NOTIFIED WITHIN 24 HOURS IF EITHER CONDITION OCCURS.

V. PROJECT SCOPE

THIS PROJECT PRIMARILY CONSISTS OF REMOVING SOIL AND EXISTING PILES FROM THE OLD WATER STORAGE TANK SITE. INSTALLING THERMISTOR STRING AND THERMOSYPHONS. CONSTRUCTING A NEW FOUNDATION PAD. ALSO, PROCURING AND ERECTING A NEW 500,000 GALLON BOLTED STEEL WATER STORAGE TANK.

1. **INFORMATION REFERENCE:**

BASE INSULATION UNDER TANK:

NOMINAL DENSITY	2PCF	ASTM C303
K FACTOR @ 40 dF	0.21 BTU/hr*ft^2*dF*inch	ASTM C177 or C518
COMPRESSIVE STRENGTH	25 psi (10% deformation)	ASTM D1621
WATER ABSORPTION	<2.0%	ASTM C272

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KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

GENERAL NOTES
& SCOPE OF WORK

REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
G5

User: John Trapp Date/Time: 4/24/2010 2:36 PM Plot Style: Monochrome.ctb
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I. SPECIFICATIONS:

1. GENERAL - WATER TANK APPLICATIONS:

A. **WORK INCLUDED:** THE ENGINEER'S SELECTION OF FACTORY-COATED BOLTED STEEL TANK CONSTRUCTION FOR THIS FACILITY HAS BEEN PREDICATED UPON THE DESIGN CRITERIA AND CONSTRUCTION METHODS SPECIFIED. DEVIATIONS FROM THE SPECIFIED DESIGN AND CONSTRUCTION DETAILS WILL NOT BE PERMITTED.

B. **DRAWINGS AND SPECIFICATIONS:** CONSTRUCTION SHALL BE GOVERNED BY THE DRAWINGS AND SPECIFICATIONS SHOWING GENERAL DIMENSIONS AND CONSTRUCTION DETAILS. AFTER APPROVAL BY THE ENGINEER OF DETAILED ERECTION DRAWINGS PREPARED BY THE MANUFACTURER, THERE SHALL BE NO DEVIATION FROM THESE DRAWINGS AND SPECIFICATIONS EXCEPT UPON WRITTEN ORDER OR APPROVAL FROM THE ENGINEER.

C. **QUALIFICATIONS OF TANK MANUFACTURER:** THE TANK MANUFACTURE SHALL BE A SPECIALIST IN THE DESIGN, FABRICATION, AND ERECTION OF FACTORY-COATED BOLTED STEEL TANKS. THE MANUFACTURER SHALL BE QUALITY CERTIFIED, HAVING AN ACTIVE API-Q1 AND AN ISO 9001 REGISTRATION.

D. **DESIGN CRITERIA:**

JOB SITE LOCATION:	KONGIGANAK	
PRODUCT TO BE STORED:	POTABLE DRINKING WATER	
SPECIFIC GRAVITY:	1	
pH OF PRODUCT:	7± 0.5	
TEMPERATURE OF PRODUCT:	45°F	
MINIMUM CAPACITY:	500,000	GALLONS
DIAMETER:	60	FT
MAXIMUM DEPTH:	25	FT
MINIMUM FREEBOARD:	12	INCHES
DESIGN PRESSURE/VAC:	10	KPSI
DECK LIVE LOAD:	40	PSF
WIND SPEED:	100	MPH (WHEN COMPLETELY ERECTED)
SEISMIC ZONE:	II	

E. **REFERENCES:**

1. AWWA D103-09 - BOLTED STEEL TANK FABRICATION AND ERECTION
2. API 12B - PRINCIPLES OF STANDARD SPECIFICATION FOR BOLTED STEEL TANK

2. PRODUCTS - MATERIALS:

A. **TANK STRUCTURE:** THE MATERIALS, DESIGN, FABRICATION AND ERECTION OF THE BOLTED STEEL TANK SHALL CONFORM TO AWWA D103-97, TO THE PRINCIPLES OF STANDARD SPECIFICATION 12B OF THE AMERICAN PETROLEUM INSTITUTE, OR TO COLUMBIAN'S SPECIFICATIONS WHICH ARE DERIVED FROM ENGINEERING PRINCIPLES, INDUSTRY EXPERIENCES, AND THE AFOREMENTIONED STANDARDS AND SPECIFICATIONS.

1. **STEEL:**
   - A. STEEL SHEETS SHALL CONFORM TO OR SHALL BE AT LEAST EQUAL TO HOT-ROLLED QUALITY PER ASTM A570 GRADE 33 WITH A MINIMUM YIELD STRENGTH OF 33,000 PSI. MINIMUM THICKNESS SHALL BE 12 GAUGE (0.0972" MINIMUM).
   - B. STEEL PLATES SHALL CONFORM TO OR AT LEAST BE EQUAL TO THE REQUIREMENTS OF ASTM A36 WITH A MINIMUM YIELD STRENGTH OF 36,000 PSI.
   - C. ROLLED STRUCTURAL SHAPES SHALL CONFORM TO ASTM A36.
2. **BOLTS:**
   - A. GALVANIZED BOLTS, NUTS, AND WASHERS USED IN TANK JOINTS SHALL BE A MINIMUM 1/2 INCH BOLT DIAMETER AND SHALL MEET THE MINIMUM REQUIREMENTS OF API 12B, APPENDIX A, EXCEPT THAT BOLT HEADS AND NUTS MAY BE OTHER THAN SQUARE AT THE OPTION OF THE TANK MANUFACTURER.
   - B. POLYCAPPED BOLT HEADS SHALL BE USED FOR ADDITIONAL CORROSION PROTECTION.
   - C. OTHER BOLTS SHALL CONFORM TO OR AT LEAST BE EQUAL TO THE LATEST REVISION OF ASTM A307.
   - D. ADDITIONALLY, ANY STEEL NUTS THAT ARE IN CONTACT WITH THE LIQUID IN THE TANK SHALL BE FACTORY - ENCAPSULATED SO THAT THE NUT FORMS ONE PIECE WITH THE CORROSION RESISTANT ENCAPSULATION MATERIAL.
3. **GASKETS:** ALL BOLTED CONNECTIONS SHALL INCORPORATE AN EPDM, NEOPRENE OR BUNA N* PREFABRICATED GASKET. MINIMUM WIDTH 1-3/4". A SINGLE PIECE DOUBLE-PUNCHED GASKET SHALL BE USED AT VERTICAL SEAMS WHICH REQUIRE TWO VERTICAL ROWS OF PUNCHING. FIELD CAULKING WILL BE ALLOWED WHEN JOINING A DISCONTINUOUS GASKET SECTION AND AT CERTAIN JOINT CONNECTIONS. NEOPRENE BACKED STEEL WASHERS SHALL BE PROVIDED AT ALL BOLTS IN CONTACT WITH THE STORED.
4. **MULTIPLE ROW PUNCHING:** ALL SHEETS IN THE SHELL OF THE TANK THAT REQUIRE MULTIPLE VERTICAL ROW PUNCHING (DOUBLE OR TRIPLE) MUST BE IN A SINGLE STROKE TO INSURE PROPER ALIGNMENT.

   NOTE: EPDM SHALL BE USED WHERE IT HAS BETTER RESISTANCE TO THE CHEMICALS PRESENT.
5. **COATING:** ALL METAL PLATES, SUPPORTS, MEMBERS, AND MISCELLANEOUS PARTS, EXCEPT BOLTS, CERTAIN ACCESSORIES, AND APPURTENANCES, SHALL BE FACTORY COATED IN ACCORDANCE WITH THE PROVISIONS OF THESE SPECIFICATIONS. FIELD COATING, EXCEPT FOR TOUCH-UP WILL NOT BE PERMITTED.
   - A. **INTERIOR:** THERMALLY CURED EPOXY TRICO-BOND 478 BY COLUMBIAN STEEL TANK COMPANY OR EQUAL.
   - B. **EXTERIOR:** AMINE EPOXY PRIMER WITH BAKED ACRYLIC FINISH COAT OR EQUAL.
6. **ACCEPTED MANUFACTURERS:** THE STEEL TANK AND ACCESSORIES FURNISHED UNDER THIS SECTION SHALL BE AS MANUFACTURED BY COLUMBIAN STEEL TANK COMPANY, KANSAS CITY, KANSAS.

3. **EXECUTION:** APPLICATION PROCEDURES FOR FACTORY COATING.

A. **SURFACE PREPARATION:**
1. TANK PARTS ARE THOROUGHLY WASHED AND RINSED TO REMOVE GREASE, OIL AND FOREIGN MATTER.
2. PARTS ARE THEN IMMEDIATELY OVEN-DRIED.
3. PARTS ARE GRIT-BLASTED TO SSPC-SP10-63T (NEAR WHITE BLAST CLEANING) TO A 2-3 MILS PROFILE.
4. ALL PARTS MUST BE COATED WITHIN 15 MINUTES AFTER BLASTING, AND NO FURTHER PROCESSING OTHER THAN COATING APPLICATION SHALL BE DONE.

B. **INTERIOR COATING:** TICO-BOND 478 (INCLUDES UNDERNEATH SIDE OF STEEL BOTTOM)
1. FIRST COAT ELECTROSTATIC APPLICATION OF NSF APPROVED THERMOSET EPOXY. TECHNICAL COATINGS COMPANY EPICON 925 AS PRIMER, 2.5 MILS AVERAGE DRY FILM THICKNESS.
2. SECOND COAT ELECTROSTATIC APPLICATION OF NSF APPROVED THERMOSET EPOXY, TECHNICAL COATINGS COMPANY EPICON 925 AS TOPCOAT, 2.5 MILS AVERAGE DRY FILM THICKNESS.
3. COATING SYSTEM TO HAVE 5.0 MILS AVERAGE DRY FILM THICKNESS.

C. **EXTERIOR COATING:** COLUMBIAN STANDARD TRICO-BOND 478 AND ACRYLIC ENAMEL FINISH
1. ONE COAT EPOXY PRIMER, TECHNICAL COATINGS COMPANY EPICON 925, 2 MILS AVERAGE DRY FILM THICKNESS, ELECTROSTATICALLY APPLIED.
2. ONE COAT HIGH SOLIDS ACRYLIC BAKING ENAMEL, TECHIVAL COATINGS COMPANY #894-N-006 TAN, 1 MIL AVERAGE DRY FILM THICKNESS.
3. COATING SYSTEM TO HAVE 3 MILS AVERAGE TOTAL DRY FILM THICKNESS.

D. **EXTERIOR COATING:** Z BOND 493 OPTIONAL EXTERIOR COATING
1. ONE COAT TECHNICAL COATINGS COMPANY ZINC RICH PRIMER, 2.5 MILS AVERAGE DRY FILM THICKNESS.
2. ONE COAT ELECTROSTATIC APPLICATION OF THERMOSET EPOXY, TECHNICAL COATINGS COMPANY EPICON 925, 2.5 MILS AVERAGE DRY FILM THICKNESS.
3. SECOND COAT ELECTROSTATIC APPLICATION OF THERMOSET EPOXY, TECHNICAL COATINGS COMPANY EPICON 925, 2.5 MILS AVERAGE DRY FILM THICKNESS.
4. ONE TOPCOAT URETHANE, TECHNICAL COATINGS COMPANY ACROTHANE HF, 1.5 MILS AVERAGE DRY FILM THICKNESS.
5. COATING SYSTEM TO HAVE 8.5 MILS AVERAGE TOTAL DRY FILM THICKNESS.

4. **DRYING AND SHIPPING PARTS:**

A. **CURING:** BACKING OVENS TO BE USED AFTER EACH COAT. FINAL COAT IS TO BE CURED IN A BAKE OVEN FOR AT LEAST 15 MINUTES.

B. **PREPARATION FOR TRANSPORT:**
1. MATERIALS TO BE MARKED OR TAGGED WITH THE PART NUMBER AND ORDER NUMBER FOR FIELD ASSEMBLY REQUIREMENTS.
2. TANK MATERIAL TO BE PLACED IN RACKS OR ON PALLETS TO FACILITATE TRANSPORTATION TO JOBSITE. THE RACKS WILL ALSO PREVENT SCRATCHING BY ERECTION CREWS.
3. TOUCH-UP PAINT WITH INSTRUCTIONS FOR APPLICATION BY ERECTION PERSONNEL.

C. **APPURTENANCES:**
1. THE CONTRACTOR SHALL FURNISH AND INSTALL THE APPURTENANCES AS SHOWN ON THE CONTRACT DRAWINGS AND AS SPECIFIED BELOW.
2. UNLESS OTHERWISE NOTED, STANDARD APPURTENANCES SHALL BE AS FOLLOWS:
   - A. **HATCH:** THE TANK ROOF HATCH SHALL HAVE A CURBED, UPWARD OPENING 24" SQUARE. THE CURB SHALL EXTEND AT LEAST FOUR INCHES ABOVE THE TANK. THE HATCH COVER LIP SHALL BE HINGED AND PROVISIONS MADE FOR LOCKING. THE HATCH COVER LIP SHOULD EXTEND FOR A DISTANCE OF TWO INCHES DOWN ON THE OUTSIDE OF CURB.
   - B. **INLET, OUTLET, AND OVERFLOW CONNECTIONS:** INLET, OUTLET, AND OVERFLOW CONNECTIONS SHALL CONFORM TO THE SIZES AND LOCATIONS SPECIFIED ON THE PLAN SHEETS.
   - C. **VENT:** A MUSHROOM-SCREENED VENT SHALL BE FURNISHED ABOVE THE MAXIMUM WATER LEVEL OF SUFFICIENT SIZE TO ACCOMMODATE NORMAL INLET AND OUTLET FLOW. THE OVERFLOW PIPE SHALL NOT BE CONSIDERED TO BE A TANK VENT. THE VENT SHALL BE SO DESIGNED AND CONSTRUCTED AS TO PREVENT THE ENTRANCE OF BIRDS AND ANIMALS.
   - D. **24" x 46" FLUSH CLEANOUT DOOR (24" DIAMETER SHELL MANWAY):** THE FLUSH CLEANOUT DOOR (SHELL MANWAY) SHALL CONFORM TO THE SIZES AND LOCATIONS SPECIFIED ON THE PLAN SHEETS.
   - E. **OUTSIDE TANK LADDER:** AN OUTSIDE OSHA LADDER SHALL BE FURNISHED AT THE LOCATION DESIGNATED.
   - F. **LIQUID LEVEL INDICATOR:** A LIQUID LEVEL INDICATOR WITH FLOAT AND TARGET BOARD SHALL BE INSTALLED AS DETAILED ON THE PLANS AND TO THE TANK MANUFACTURER'S SPECIFICATIONS.
   - G. **INTERNAL OVERFLOW WEIR CONE:** THE INTERNAL OVERFLOW WEIR CONE SHALL CONFORM TO THE SIZE AND LOCATION SPECIFIED ON THE PLAN SHEETS.
   - H. **GALVANIZED HANDRAIL AND TOEBOARD:** HANDRAIL AND TOEBOARD AROUND THE DECK PERIMETER SHALL BE INSTALLED AS SPECIFIED ON THE PLAN SHEETS.
   - D. **TANK FOUNDATION:**
     1. **THE TANK FOUNDATION** SHALL BE DESIGNED TO SAFELY SUSTAIN THE LOADS FROM THE TANK.
     2. **STEEL BOTTOM TANKS:** THE FOUNDATION SHALL BE INSTALLED PER AWWA D103-09, SECTION 11.4.
     3. **THE FOUNDATION SHALL BE LEVEL** WITH DIFFERENTIAL NOT EXCEEDING ±1/4 INCH OR ±0.02 FT WITHIN 30-FOOT CIRCUMFERENCE ON THE SILTCRETE LEVEL.
   - A. THE LAYER THAT FOAM RESTS UPON SHALL BE LEVEL WITH THE DIFFERENTIAL OF ±0.05 FT WITHIN ANY 30 FT CIRCUMFERENCE.
   - E. **SHIPPING:** ALL PLATES, SUPPORTS, MEMBERS, AND MISCELLANEOUS PARTS SHALL BE PACKAGED FOR SHIPMENT IN SUCH MANNER TO PREVENT ABRASION OR SCRATCHING OF THE FINISHED COATING.
   - F. **ERECTION:** FIELD ERECTION OF FACTORY-COATED BOLTED STEEL TANKS SHALL BE IN STRICT ACCORDANCE WITH THE TANK MANUFACTURER'S RECOMMENDATIONS. PARTICULAR CARE SHALL BE EXERCISED IN HANDLING AND BOLTING OF THE TANK PLATES, SUPPORTS, AND MEMBERS TO AVOID ABRASION OR SCRATCHING OF THE COATING. TOUCH-UP COATING SHALL BE DONE IN ACCORDANCE WITH TANK MANUFACTURER'S RECOMMENDATIONS WHERE AND AS DIRECTED.
   - G. **TESTING:** FOLLOWING COMPLETION OF ERECTION AND CLEANING OF THE TANK, THE TANK SHALL BE TESTED FOR LIQUID-TIGHTNESS BY FILLING THE TANK TO ITS OVERFLOW ELEVATION.
     1. ANY LEAKS DISCLOSED BY THIS TANK TEST SHALL BE CORRECTED BY THE CONTRACTOR IN ACCORDANCE WITH THE TANK MANUFACTURER'S RECOMMENDATIONS.
     2. THE TANK SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C652.
     3. CLEAN WATER REQUIRED FOR TESTING SHALL BE FURNISHED BY OWNER WITHOUT CHARGE AT THE TIME OF ERECTION COMPLETION. FILLING AND EMPTYING THE TANK ARE ALSO THE RESPONSIBILITY OF OWNER.
   - H. **WARRANTY:** THE TANK MANUFACTURER SHALL WARRANT THE TANK AGAINST ANY DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SHIPMENT. IN THE EVENT ANY DEFECT SHOULD APPEAR, IT SHALL BE REPORTED IN WRITING TO THE MANUFACTURER DURING THE WARRANTY PERIOD.

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STATE OF ALASKA — JOHN C. TRIPP — 4-23-10 — REGISTERED PROFESSIONAL ENGINEER

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WATER STORAGE TANK
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GENERAL INSTALLATION
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Sheet No.
G6

User: John Tripp Date/Time: 4/24/2010 3:54 PM Plot Style: Monochrome.ctb
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SECTION 32
IC NOS. 451/452
QCC, INC.

EIN 2

LEASED TO KONGIGANAK TRADITIONAL COUNCIL 12/22/1988

APPROX. UTILITY EASEMENT TO KONGIGANAK TRADITIONAL COUNCIL 12/10/1986

KONGNIGNANOHK RIVER

Above Ground Pipeline

RECORD OF SURVEY PLAT 94-01RS

LEASED TO STATE OF AK DEPT. OF MILITARY AND VETERAN'S AFFAIRS ARMORY SITE PLAT NO. 2004-04

TRACT 1

EASEMENT AND RIGHT OF WAY GRANTED TO UNITED UTILITES 7/15/2004

APPROX. UTILITY EASEMENT TO KONGIGANAK TRADITIONAL COUNCIL 12/10/1986

LEASED TO UNITED UTILITIES INC. 3/21/2003

LEASED TO AT&T

APPROX. UTILITY EASEMENT TO KONGIGANAK TRADITIONAL COUNCIL 12/10/1986

LOCATION OF PROPOSED 500,000 GALLON WATER STORAGE TANK

APPROX. UTILITY EASEMENT TO KONGIGANAK TRADITIONAL COUNCIL 12/10/1986

GRANT OF AIRPORT FREIGHT TERMINAL TO KONGIGANAK TRADITIONAL COUNCIL 8/29/1985

LEASED TO KONGIGANAK TRADITIONAL COUNCIL 1/2/1994

20' SEWER LAGOON INT. EASEMENT 7/25/1989

EASEMENT TO KONGIGANAK VILLAGE COUNCIL 12/23/2002 FOR BOARDWALK THOUGH 14(C)3 PARCEL

LEASE TO KONGIGANAK VILLAGE COUNCEL 01/27/2003

EIN 2

INTERIM LEASE TO KONGIGANAK TRADITIONAL COUNCIL 2/14/2003

TEMPORARY LEASE FROM QEMIRTALEK CORPORATION TO THE VILLAGE OF KONGIGANAK 8/11/2005

APPROXIMATE LOCATION OF ANCSA 14(C)3 PARCEL. HELD IN TRUST BY THE STATE OF ALASKA MUNICIPAL LANDS TRUSTEE PROGRAM

THIS 50' RIGHT OF WAY WAS LEASED TO AVCP AND DEDICATED TO THE VILLAGE OF KONGIGANAK. THIS LEASE WILL REMAIN AFTER PURCHASE OF THE AIRPORT PROPERTY BY AK DOT.

SEWAGE LAGOON

UNNAMED LAKE

LAND LEASE AGREEMENT BETWEEN QEMIRTALEK CORPORATION AND THE VILLAGE OF KONGIGANAK 1/27/2003

L1B1

QEMIRTALEK AVENUE

QEMIRTALEK SUBDIVISION PLAT NO. 95-02

NOTE: ALL SURFACE PROPERTY OWNED BY QEMIRTALEK AND ALL SUBSURFACE PROPERTY OWNED BY CALISTA UNLESS OTHERWISE NOTED.

LEGEND KEY

- United Utilities Leases
- NVK WTP/Washeteria Property (2003 Lease)
- Miscellaneous Leases
- Boardwalk Easements
- Future Airport Property Boundary (AKDOT)
- Lagoon and Access Road Lease Boundary
- 14(c)3 Conveyance Boundary
- Qemirtalek Subdivision Plat 95-02

NORTH
SUMMIT

GRAPHIC SCALE
0 300' 600'

95% DESIGN
ISSUED FOR
AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRAUT
NO. CE 11787
REGISTERED PROFESSIONAL ENGINEER
4/23/10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

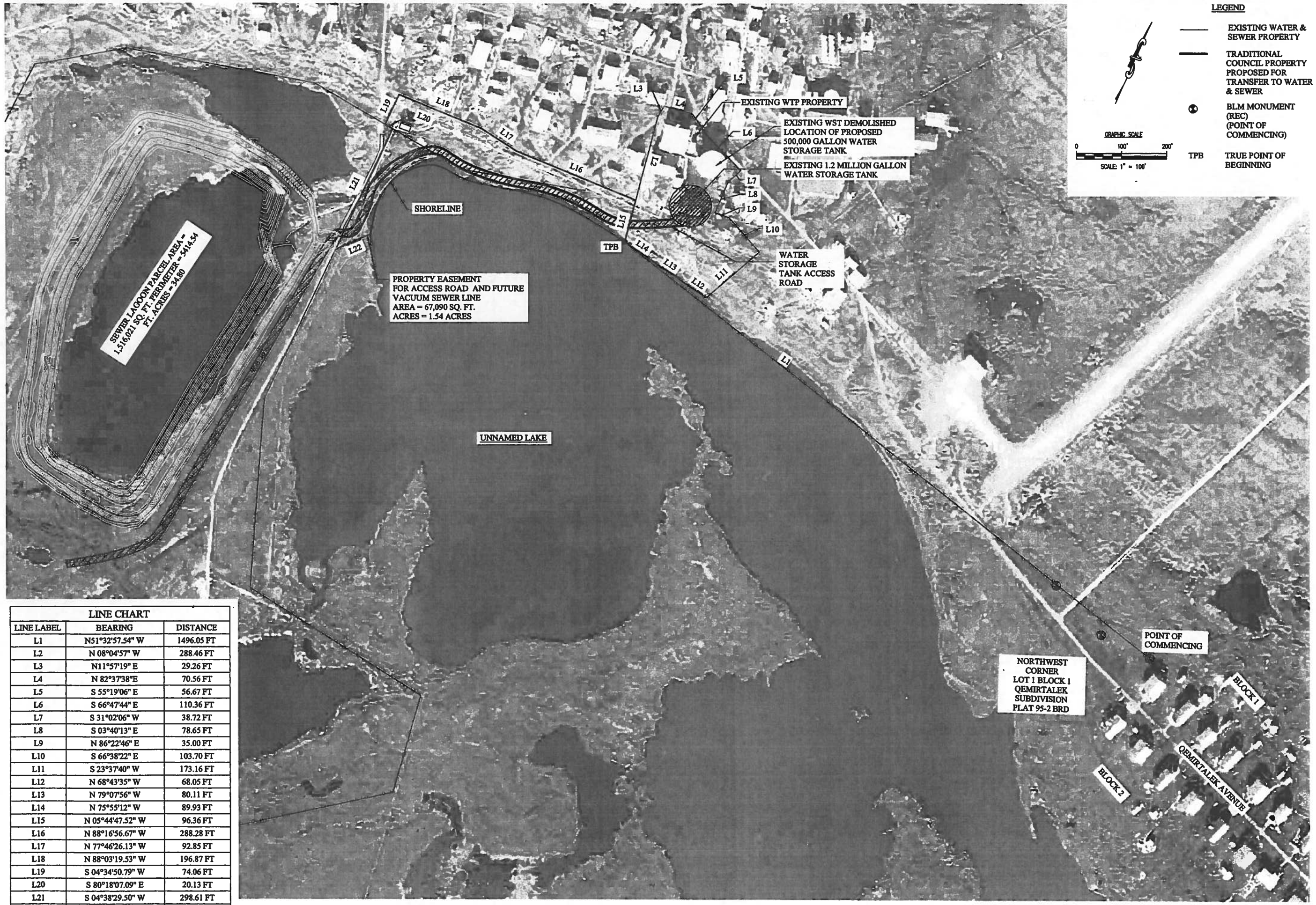
PROPERTY
LAND OWNERSHIP

BY	DATE	REVISION

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
R1

User: Ray Bryant Date/Time: 4/23/2010 1:56 PM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\0.5 MG Tank\95%\R3.1 -LAND OWNERSHIP.dwg Sheet: R1.1



LINE CHART		
LINE LABEL	BEARING	DISTANCE
L1	N51°32'57.54" W	1496.05 FT
L2	N 08°04'57" W	288.46 FT
L3	N11°57'19" E	29.26 FT
L4	N 82°37'38"E	70.56 FT
L5	S 55°19'06" E	56.67 FT
L6	S 66°47'44" E	110.36 FT
L7	S 31°02'06" W	38.72 FT
L8	S 03°40'13" E	78.65 FT
L9	N 86°22'46" E	35.00 FT
L10	S 66°38'22" E	103.70 FT
L11	S 23°37'40" W	173.16 FT
L12	N 68°43'35" W	68.05 FT
L13	N 79°07'56" W	80.11 FT
L14	N 75°55'12" W	89.93 FT
L15	N 05°44'47.52" W	96.36 FT
L16	N 88°16'56.67" W	288.28 FT
L17	N 77°46'26.13" W	92.85 FT
L18	N 88°03'19.53" W	196.87 FT
L19	S 04°34'50.79" W	74.06 FT
L20	S 80°18'07.09" E	20.13 FT
L21	S 04°38'29.50" W	298.61 FT
L22	N 45°48'08.46" E	86.53 FT

95% DESIGN
ISSUED FOR AGENCY REVIEW

STATE OF ALASKA
49th
JOHN C. TRACY
NO. 12 170
11-23-10
REGISTERED PROFESSIONAL ENGINEER

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

SURVEY CONTROL DIAGRAM

REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RCB
APPROVED CA

Sheet No.
K1

User: Rory Bryant Date/Time: 4/23/2010 2:22 PM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\95%WKI-SURVEY CONTROL.dwg Sheet: Layout1

NEW BOARDWALK
SEE SHEET C19

EXISTING BOARDWALK

EXISTING BOARDWALK
TO BE REMOVED

GRADE BAND

EXISTING FOUNDATION PILINGS
TO BE CUT DOWN BELOW TANK
PROPOSED FOUNDATION

TANK WALL

TANK OVERFLOW SPILL
PAD SEE SHEET C19

PROPOSED 500,000 GALLON
WATER STORAGE TANK

THERMOSYPHONS

END OF WORKPAD

YARD PIPING
TO BE RELOCATED:
1" CONDUIT
2" FUEL LINE
6" CIRCULATING
WASTE HEAT RECOVERY

LADDER

LIMIT OF EXCAVATION

1" CONDUIT

2" FUEL LINE

6" CIRCULATING WASTE
HEAT RECOVERY

THERMISTOR 3" HDPE FROM
NEW WST TO PULL BOX
SEE DETAILS ON SHEET C4

EXISTING BOARDWALK

WATERING
POINT
BUILDING

GENERATOR
BUILDING

WATER TREATMENT PLANT

NEW (2) 4 x 12
ARCTIC PIPE

VALVE HOUSE

3" HDPE FROM JUNCTION BOX
TO WATER TREATMENT PLANT
SEE DETAILS ON SHEET C4

500,000 GALLON
WATER STORAGE TANK
PULL BOX

1.2 MILLION GALLON
WATER STORAGE TANK
PULL BOX

EXISTING SEWER

EXISTING
1.2 MILLION GALLON
WATER STORAGE TANK

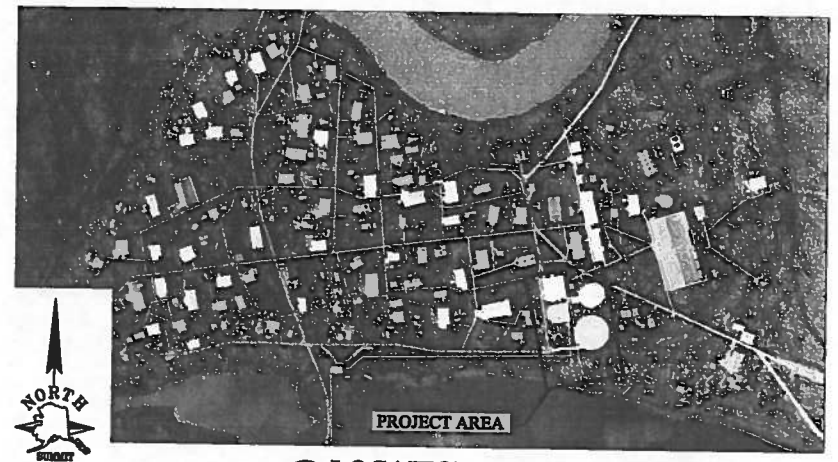
WASHETERIA

EXISTING LIFT STATION

EXISTING BOARDWALK

SEWER LINE

NORTH



2/C1 LOCATION MAP
SCALE: AS SHOWN

GRAPHIC SCALE
0 250' 500'

1/C1 SITE PLAN
SCALE: AS SHOWN

95% DESIGN
ISSUED FOR
AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRAUTMAN
No. 11795
REGISTERED PROFESSIONAL ENGINEER
4/19th

VILLAGE SAFE WATER

SUMMIT
CONSULTING SERVICES
Remote Project Construction
Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

SITE PLAN

REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN REB
APPROVED CA

Sheet No.
C1

User: Rory Bryant Date/Time: 4/23/2010 12:55 PM Plot Style: Monochrome.ctb
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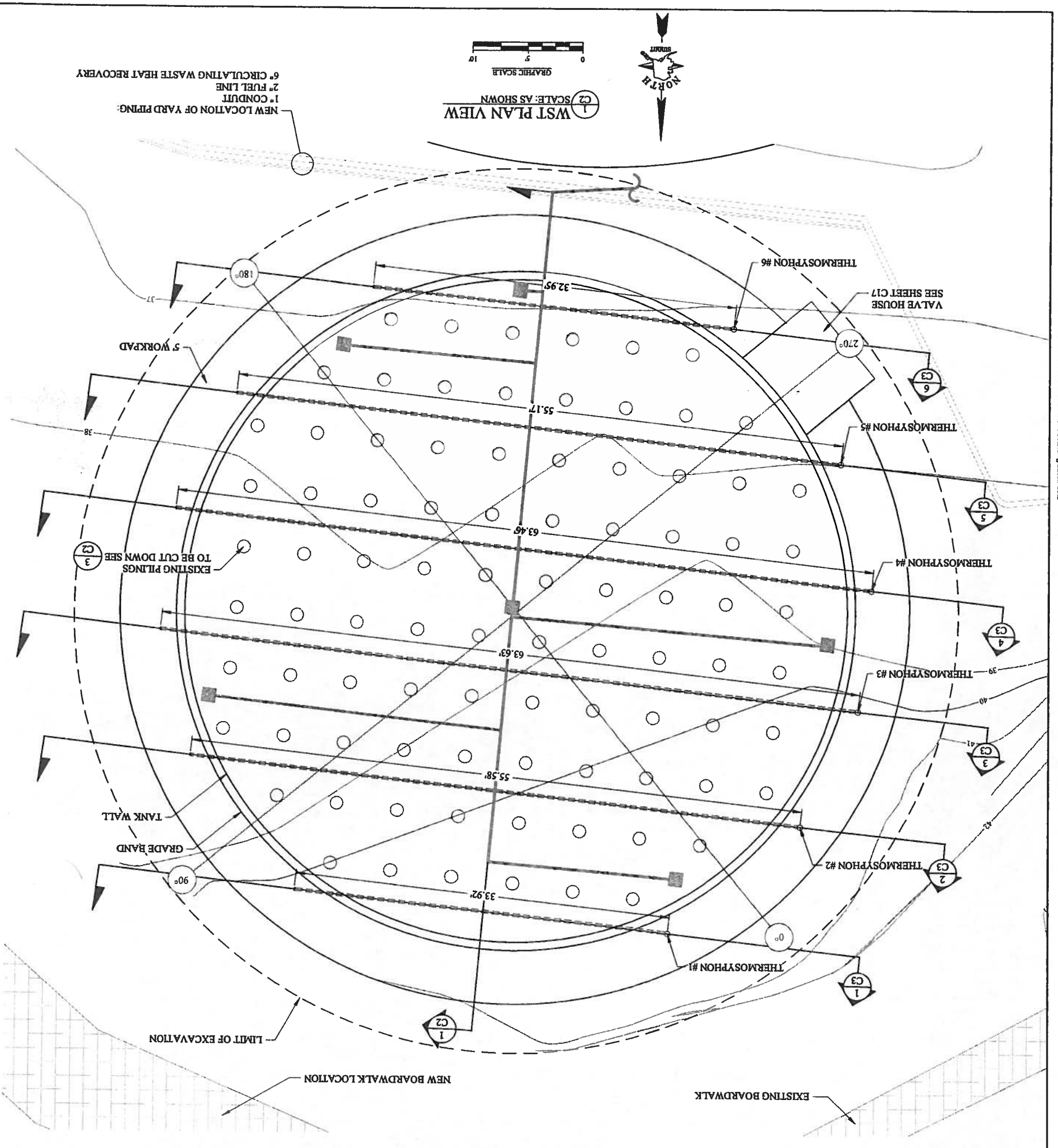
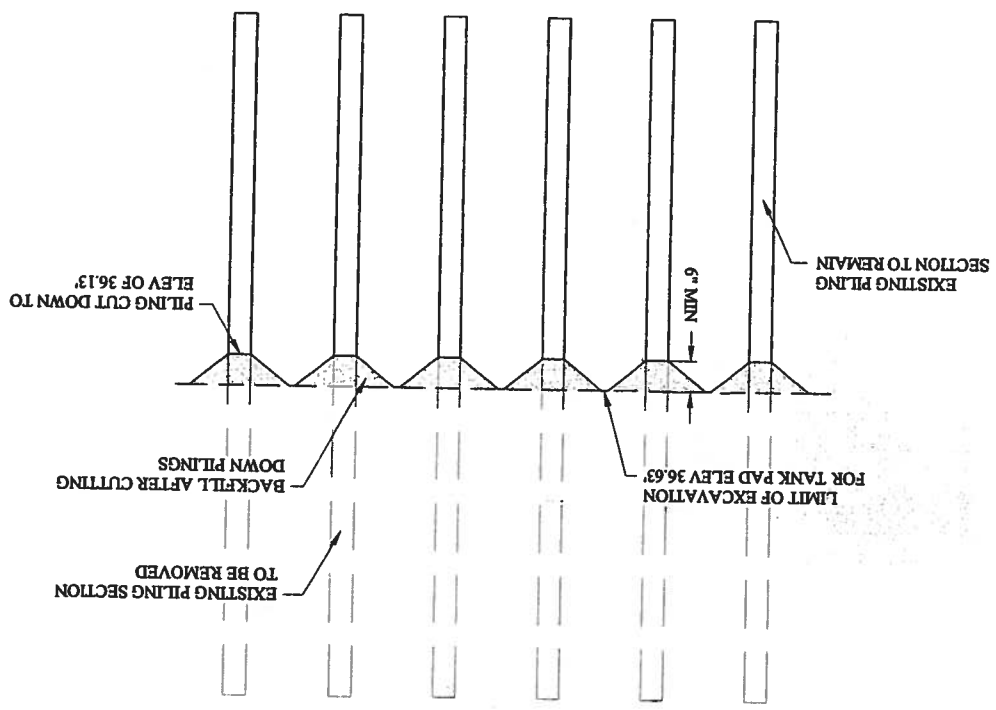
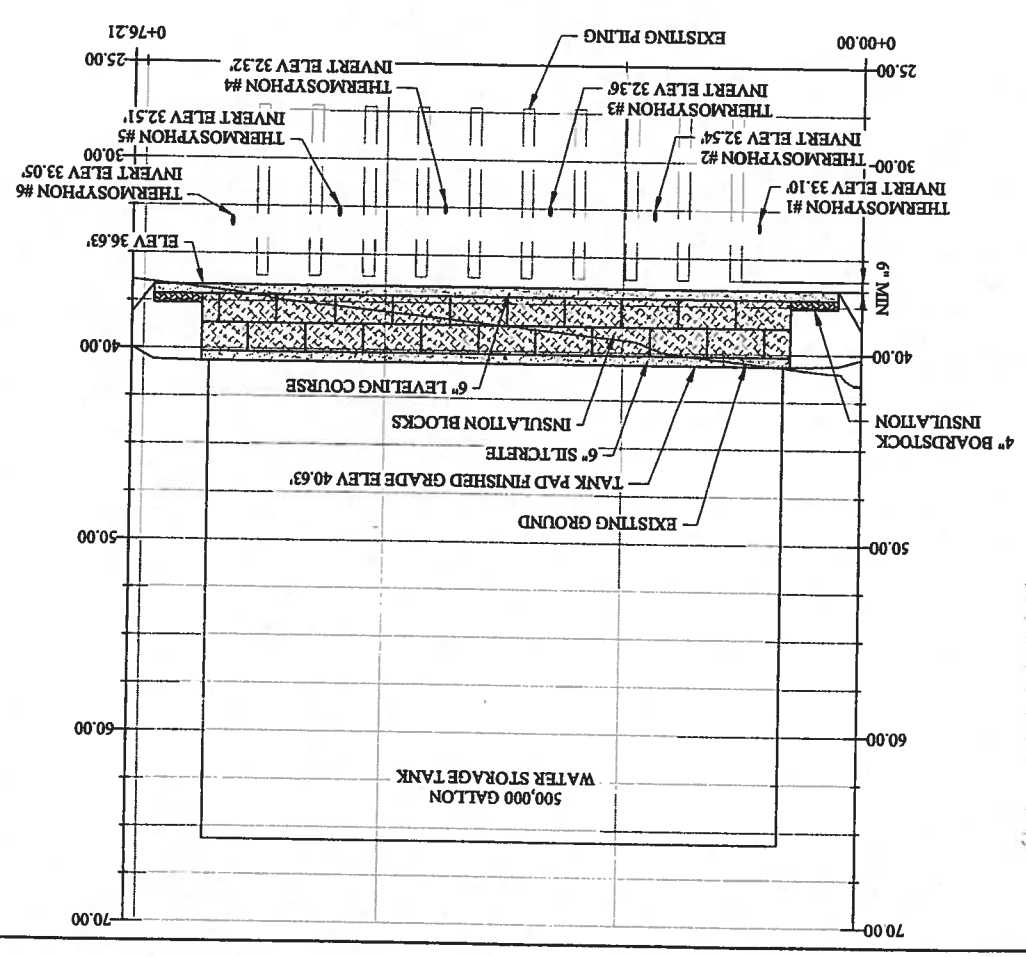


3 C2 EXISTING PILING DETAIL
NTS



1 C2 TANK CENTERLINE CROSS SECTION
VERTICAL: 1" = 5'; HORIZONTAL 1" = 10'



KONGIGANAK WATER STORAGE TANK REPLACEMENT

WST PLAN VIEW AND CROSS SECTIONS

REVISION	BY	DATE

PROJECT NO.
DATE 4/21/10
DESIGNED JT
DRAWN RKB
APPROVED CA

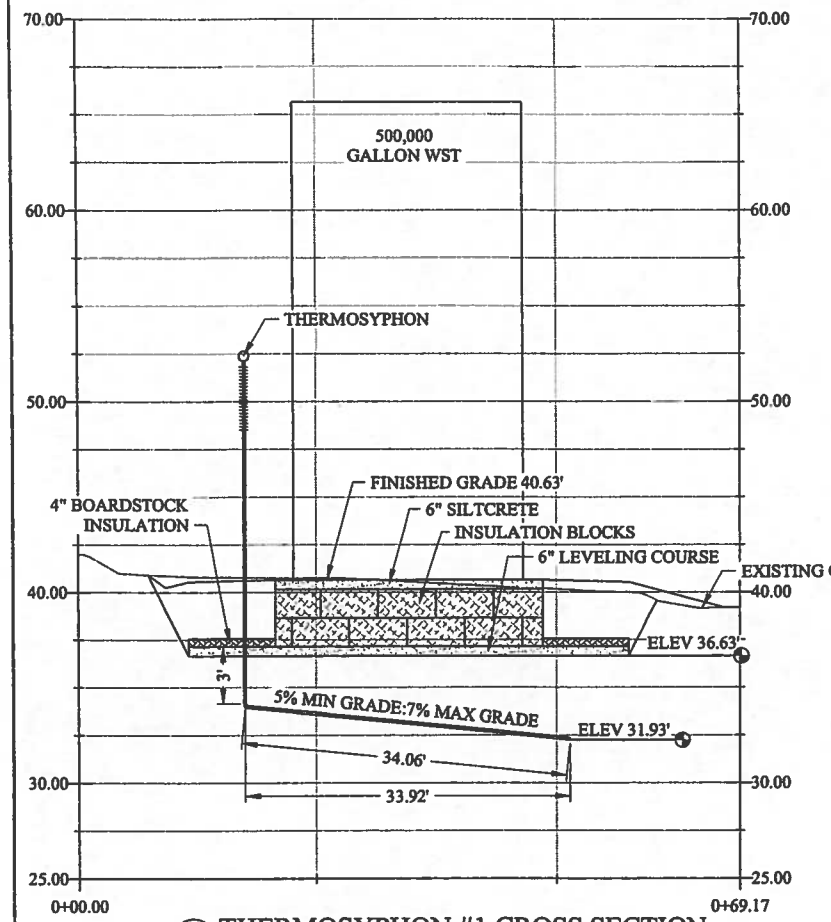
Sheet No. C2

95% DESIGN
ISSUED FOR AGENCY REVIEW

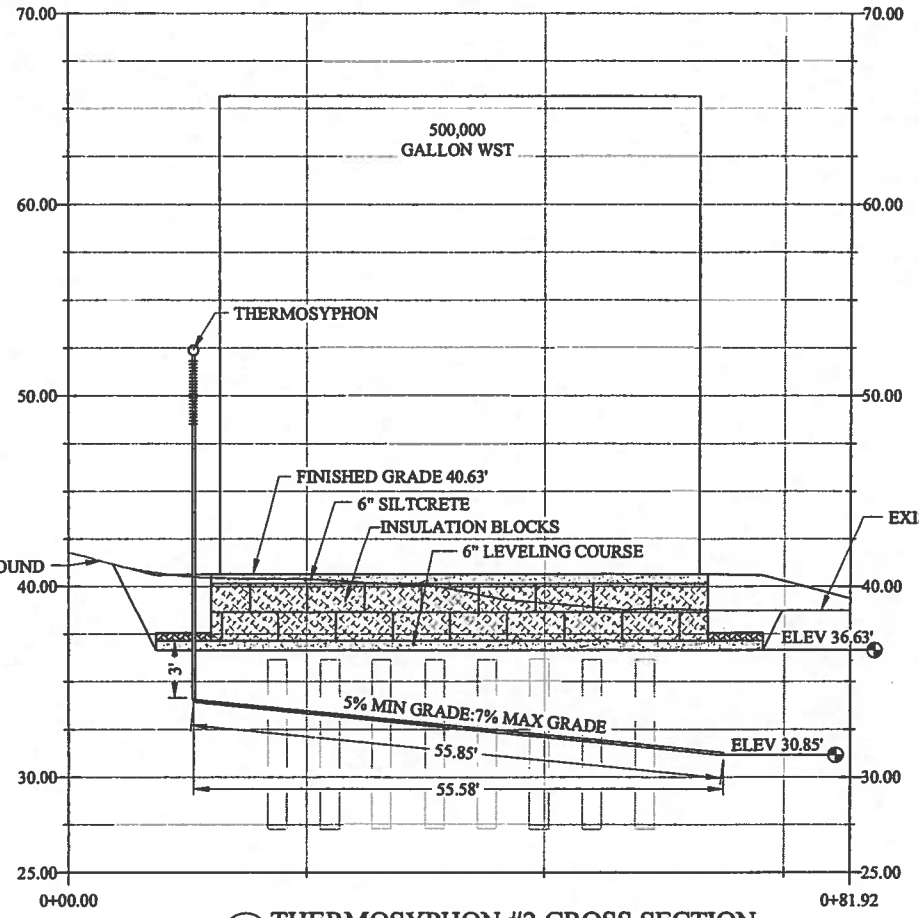
SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

VILLAGE SAFE WATER

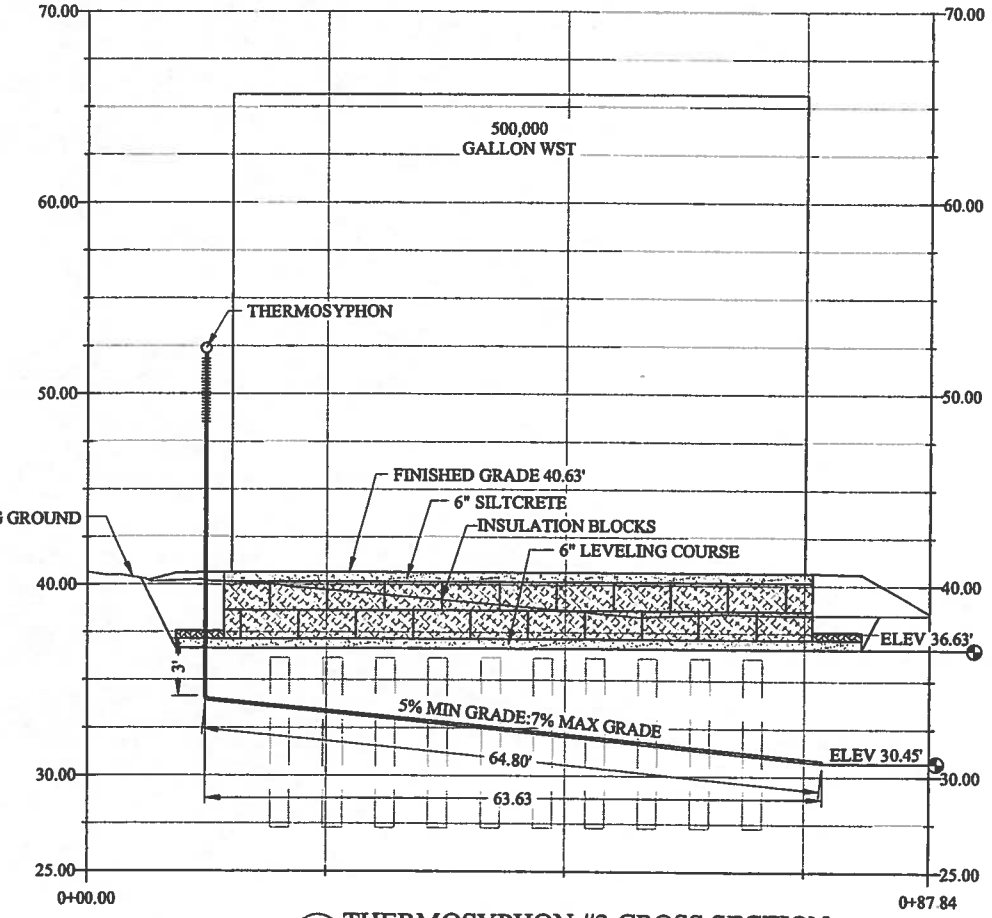
STATE OF ALASKA
JOHN C. TRAMPE
11-23-11
PROFESSIONAL ENGINEER
4/21/10



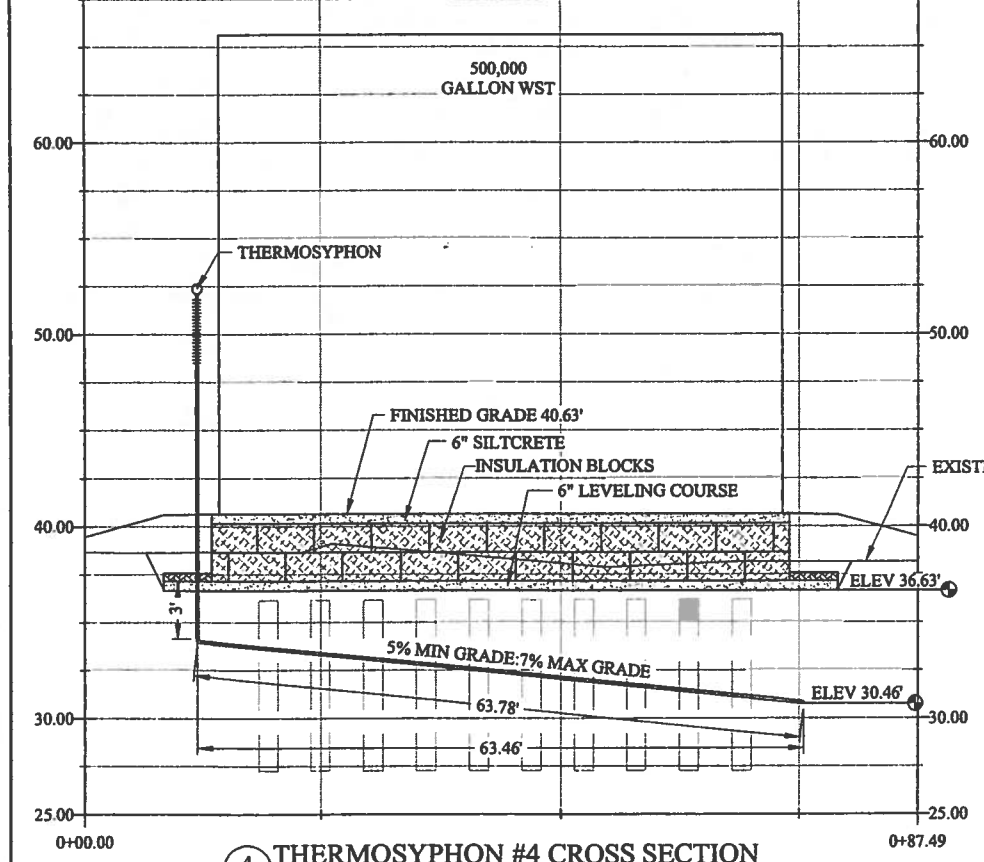
1/C3 THERMOSYPHON #1 CROSS SECTION
VERTICAL: 1" = 5'; HORIZONTAL 1" = 10'



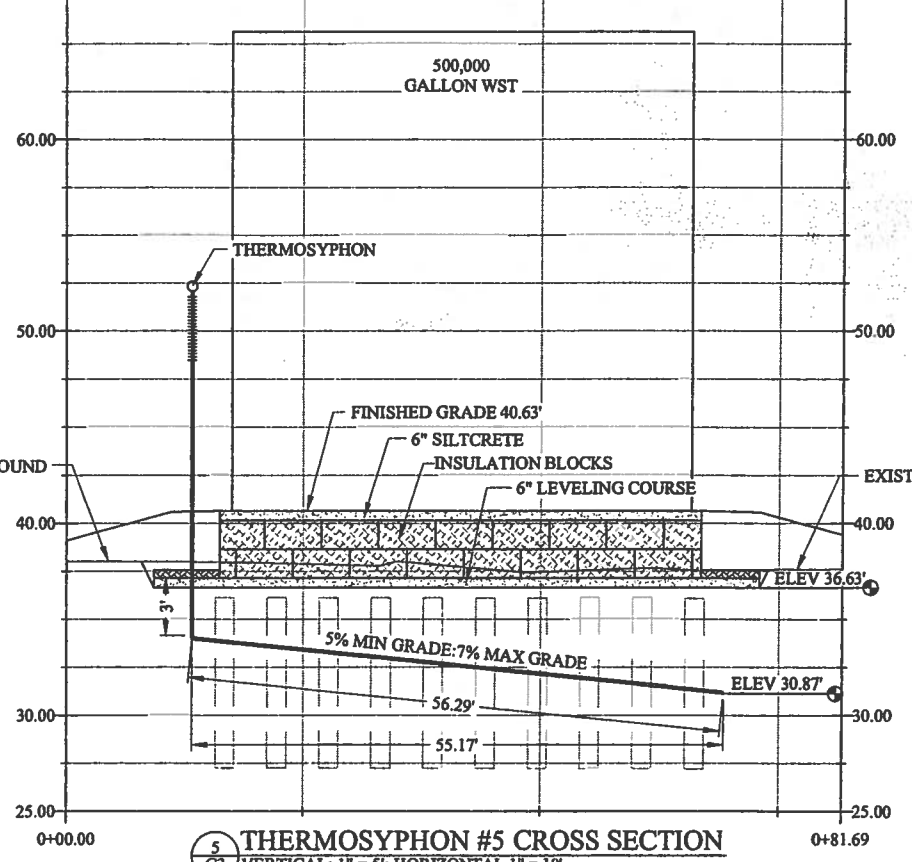
2/C3 THERMOSYPHON #2 CROSS SECTION
VERTICAL: 1" = 5'; HORIZONTAL 1" = 10'



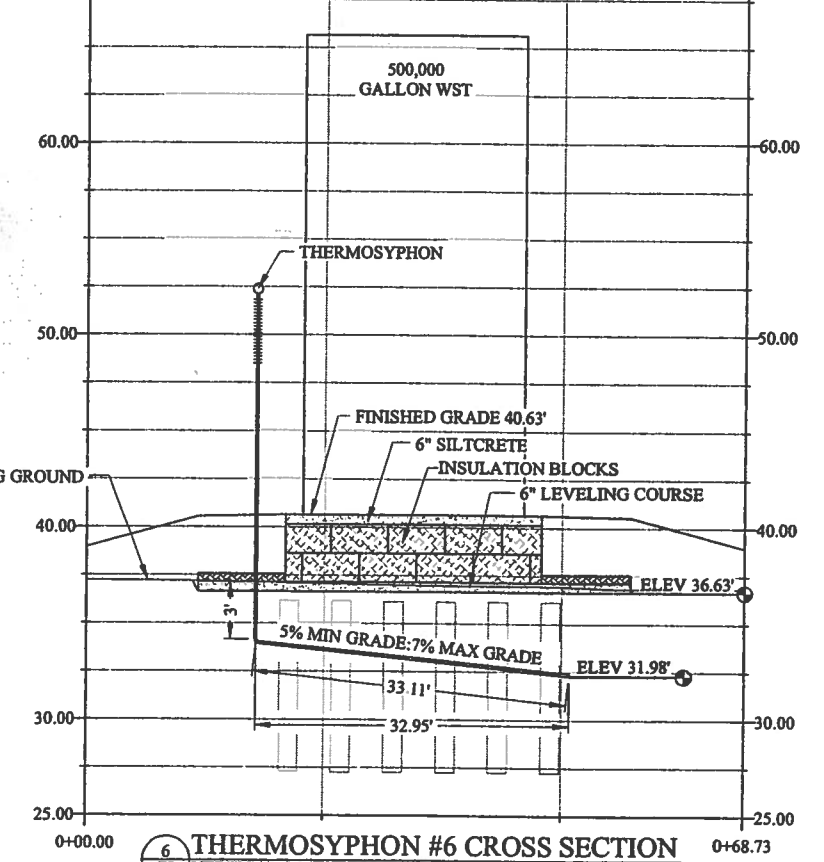
3/C3 THERMOSYPHON #3 CROSS SECTION
VERTICAL: 1" = 5'; HORIZONTAL 1" = 10'



4/C3 THERMOSYPHON #4 CROSS SECTION
VERTICAL: 1" = 5'; HORIZONTAL 1" = 10'



5/C3 THERMOSYPHON #5 CROSS SECTION
VERTICAL: 1" = 5'; HORIZONTAL 1" = 10'



6/C3 THERMOSYPHON #6 CROSS SECTION
VERTICAL: 1" = 5'; HORIZONTAL 1" = 10'

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AGENCY REVIEW

STATE OF ALASKA
49th
JOHN C. TIPPIE
REGISTERED PROFESSIONAL ENGINEER
4-23-10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

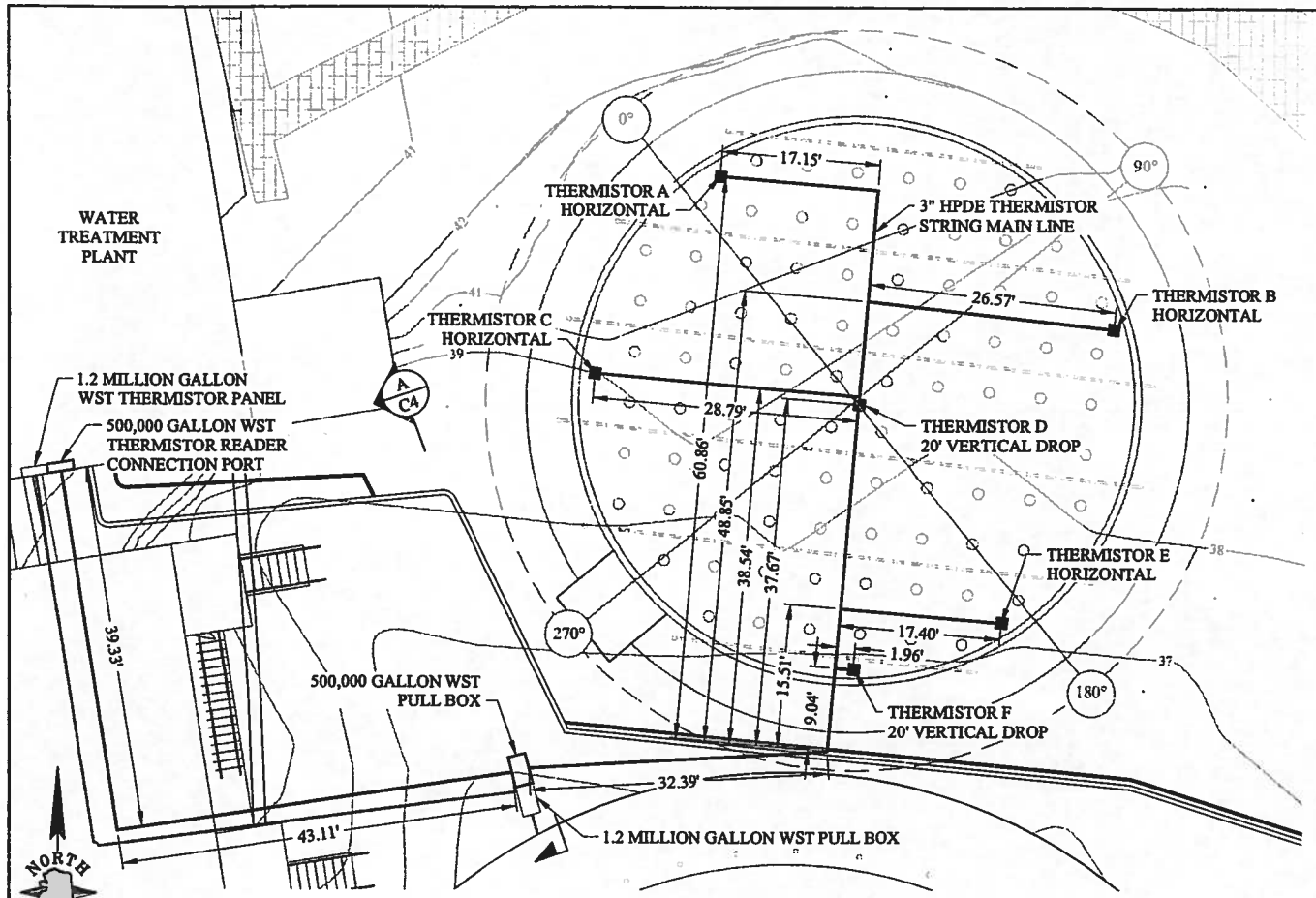
THERMOSYPHON
CROSS SECTIONS

REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

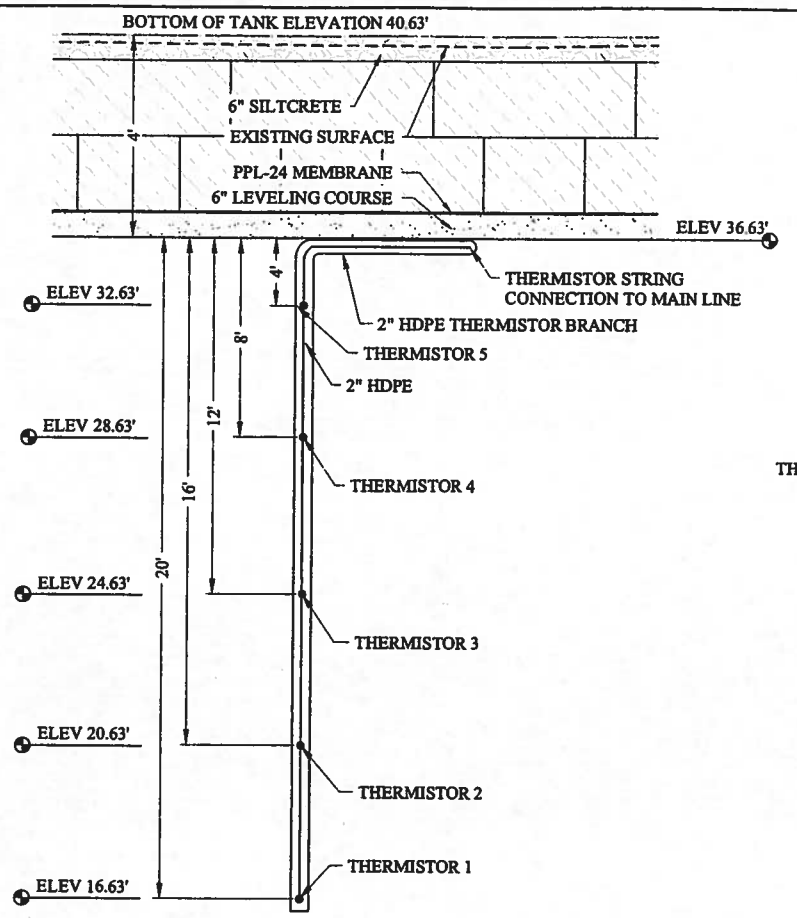
Sheet No.
C3

User: Rory Bryant Date/Time: 4/23/2010 5:16 PM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\0.5 MG Tank\95%\C2-C4 - WST THERMOSYPHONS & THERMISTORS.dwg Sheet: C5.3

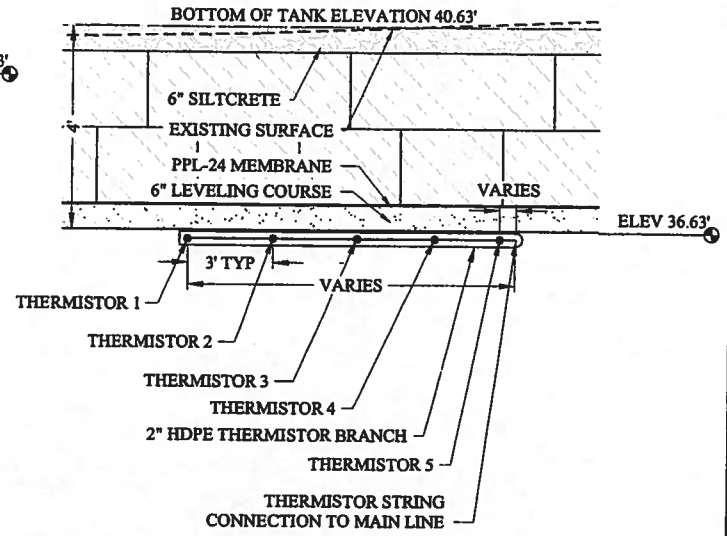


1 C4 THERMISTOR LAYOUT
SCALE: AS SHOWN

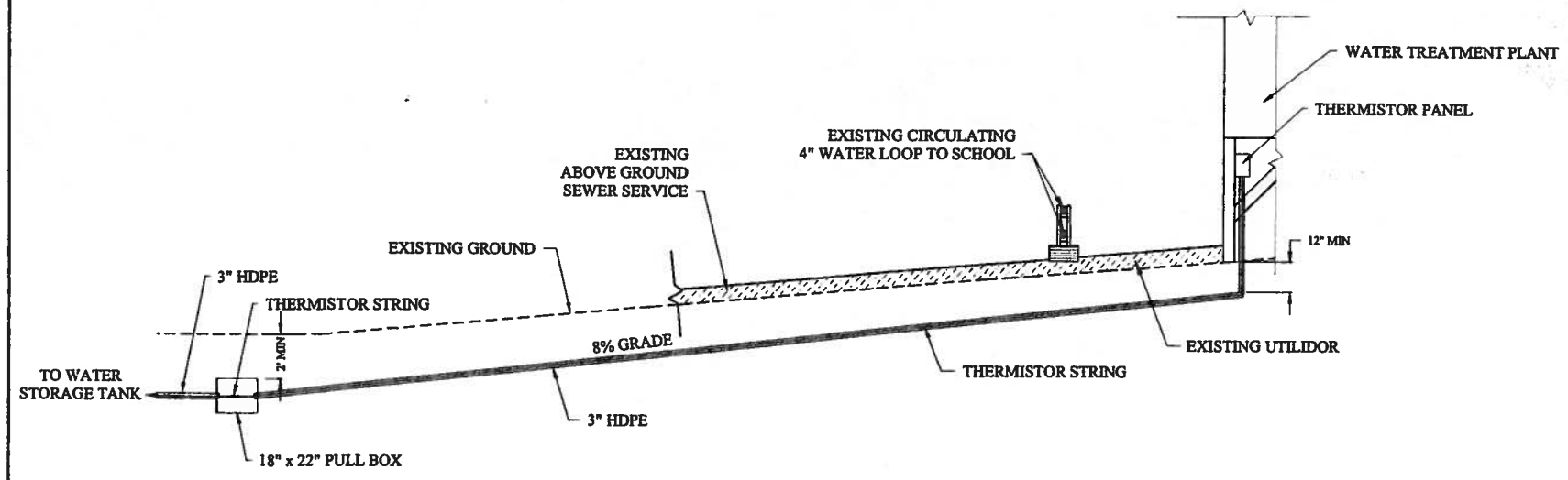
GRAPHIC SCALE
0 10' 20'



2 C4 TYP THERMISTOR VERTICAL DROP SECTION
NTS



3 C4 TYP THERMISTOR HORIZONTAL SECTION
NTS



A C4 THERMISTOR STRING PULL BOX TO THERMISTOR PANEL CROSS SECTION
NTS

THERMISTOR SPECIFICATIONS

THERMISTOR	THERMISTOR #S	DIRECTION	SEPARATION DISTANCE	LENGTH	LEAD
A	1 - 5	HORIZONTAL	3' O.C.	17.15'	182.28'
B	1 - 8	HORIZONTAL	3' O.C.	26.57'	170.27'
C	1 - 9	HORIZONTAL	3' O.C.	28.79'	159.96'
D	1 - 5	VERTICAL	4' O.C.	20.00'	159.09'
E	1 - 5	HORIZONTAL	3' O.C.	17.40'	136.93'
F	1 - 5	VERTICAL	4' O.C.	20.00'	130.46'

95% DESIGN
ISSUED FOR AGENCY REVIEW

STATE OF ALASKA 49th PROFESSIONAL ENGINEER JOHN C. TRAUT 12-31-10 REGISTERED PROFESSIONAL

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

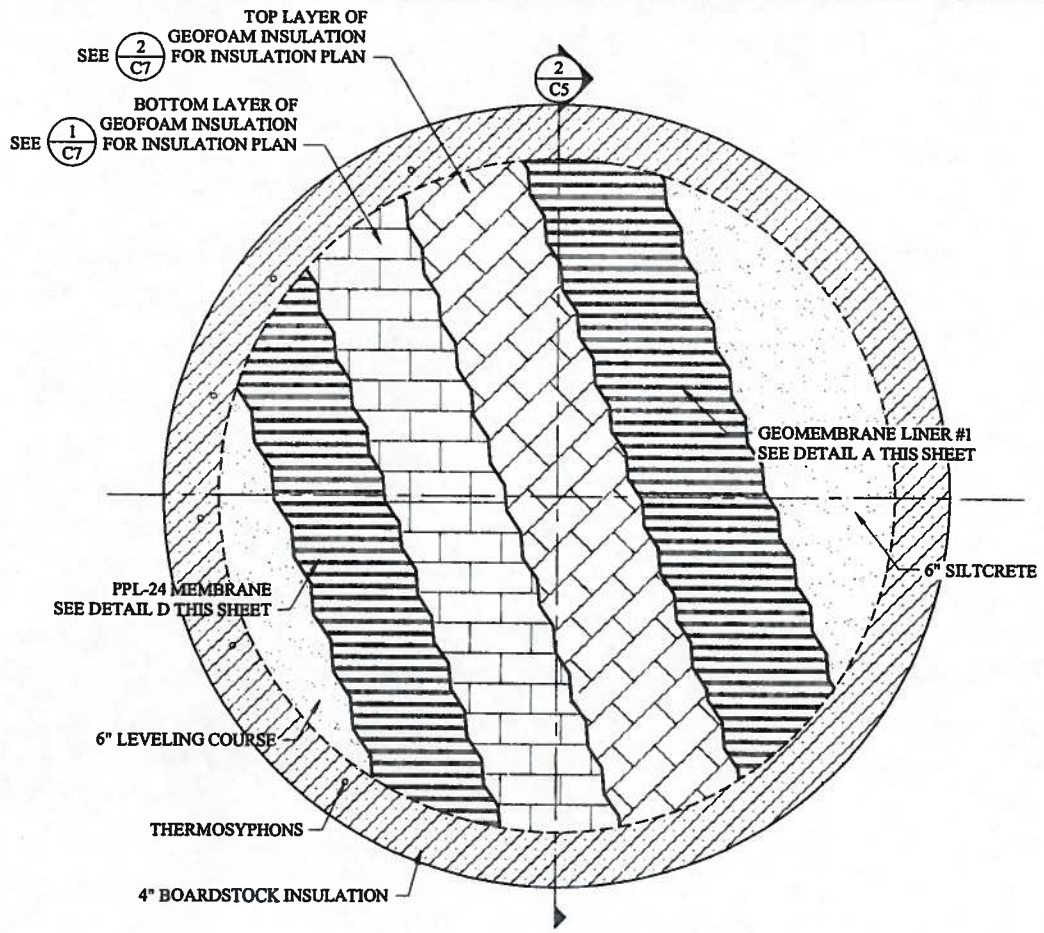
KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

WST THERMISTOR
PLAN VIEW & DETAILS

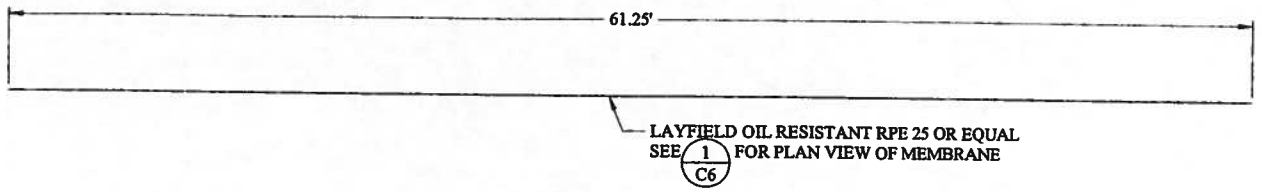
REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

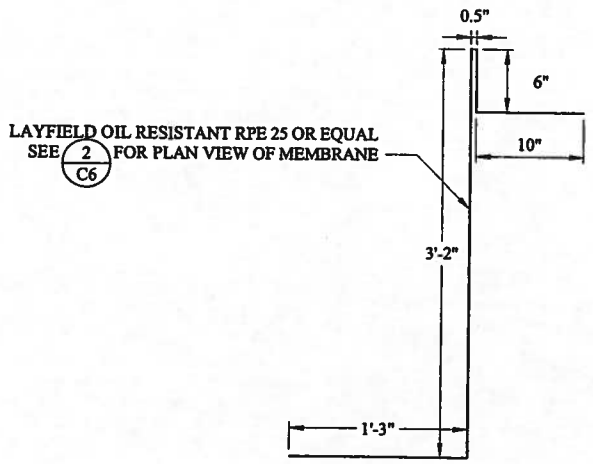
Sheet No.
C4



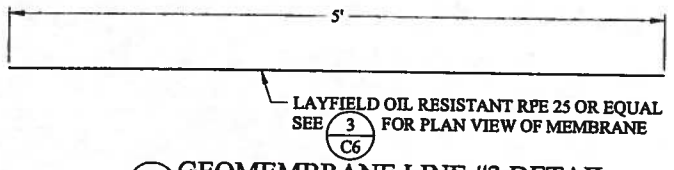
1/C5 TANK FOUNDATION LAYERS
NOT TO SCALE



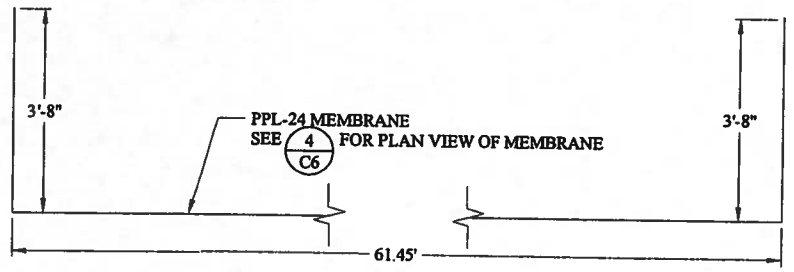
A/C5 GEOMEMBRANE LINE #1 DETAIL
SCALE: NTS



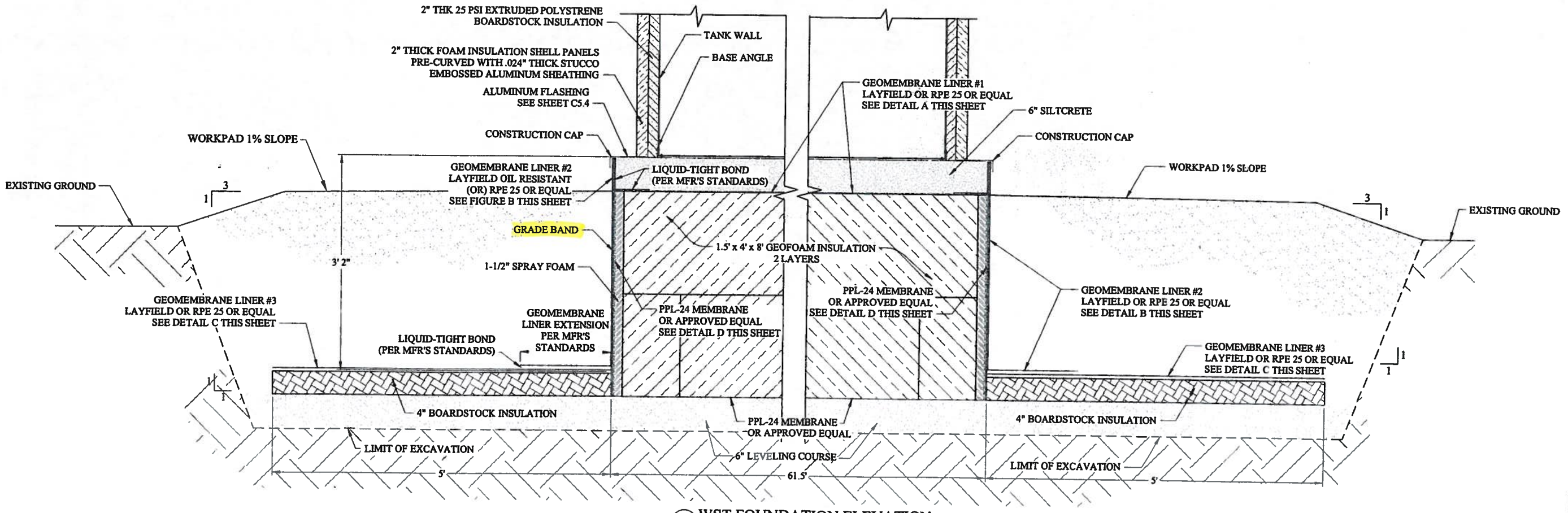
B/C5 GEOMEMBRANE LINE #2 DETAIL
SCALE: NTS



C/C5 GEOMEMBRANE LINE #3 DETAIL
SCALE: NTS



D/C5 PPL-24 MEMBRANE DETAIL
SCALE: NTS



2/C5 WST FOUNDATION ELEVATION
SCALE: NTS

95% DESIGN
ISSUED FOR AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRAPP
No. CE 11799
REGISTERED PROFESSIONAL ENGINEER
4/23/10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

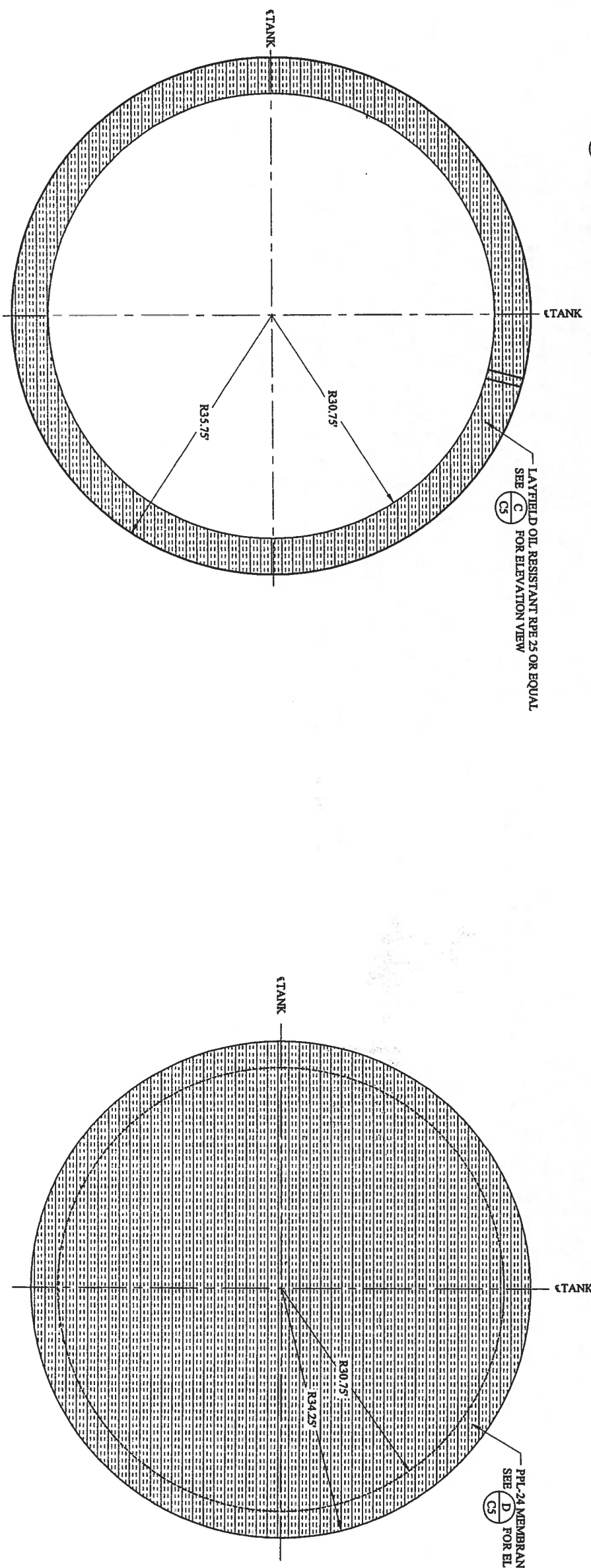
WST FOUNDATION PLAN
AND MEMBRANE DETAILS

REVISION	BY	DATE

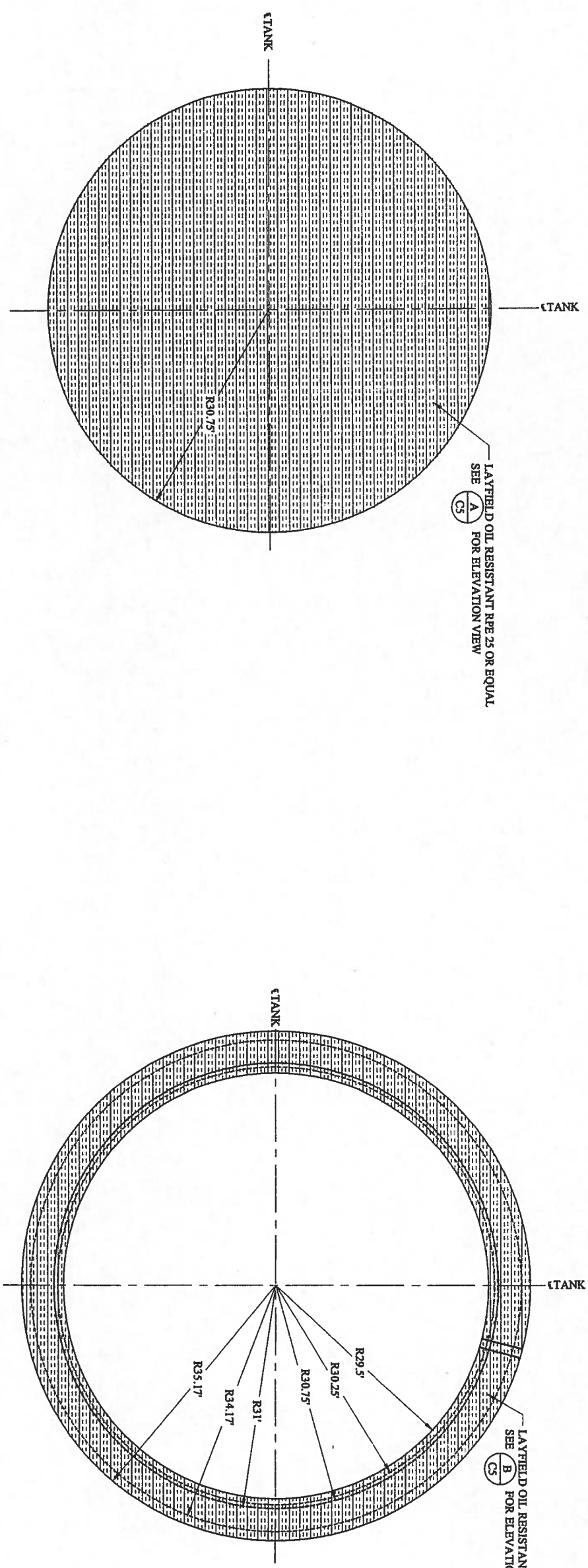
PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
C5

User: Rory Bryant Date/Time: 4/23/2010 10:57 AM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\0.5 MG Tank\95%\C5.5 - C5.7 - FOUNDATION PLAN & SPECS.dwg Sheet: C5.6



3/C6 NOT TO SCALE
GEOMEMBRANE LINER #3 LAYOUT



1/C6 NOT TO SCALE
GEOMEMBRANE LINER #1 LAYOUT

4/C6 NOT TO SCALE
PPL-24 MEMBRANE LAYOUT

2/C6 NOT TO SCALE
GEOMEMBRANE LINER #2 LAYOUT

Sheet No.	C6
PROJECT NO.	
DATE	4/23/10
DESIGNED	JT
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APPROVED	CA

REVISION	BY	DATE

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

WST MEMBRANE LAYOUT

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

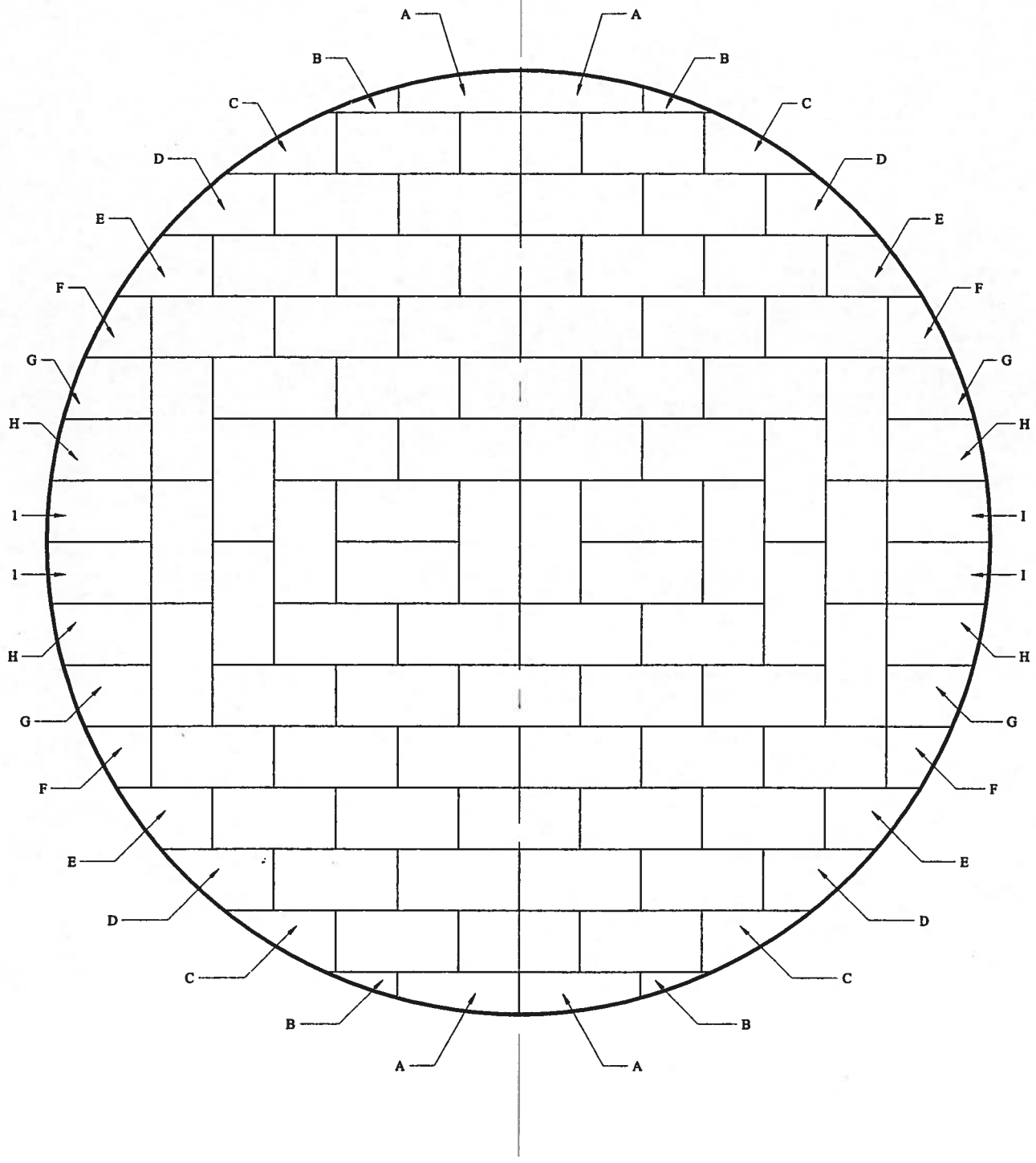
VILLAGE SAFE WATER

STATE OF ALASKA
49th
JOHN C. TRAPP
NO. CE 11790
REGISTERED PROFESSIONAL ENGINEER

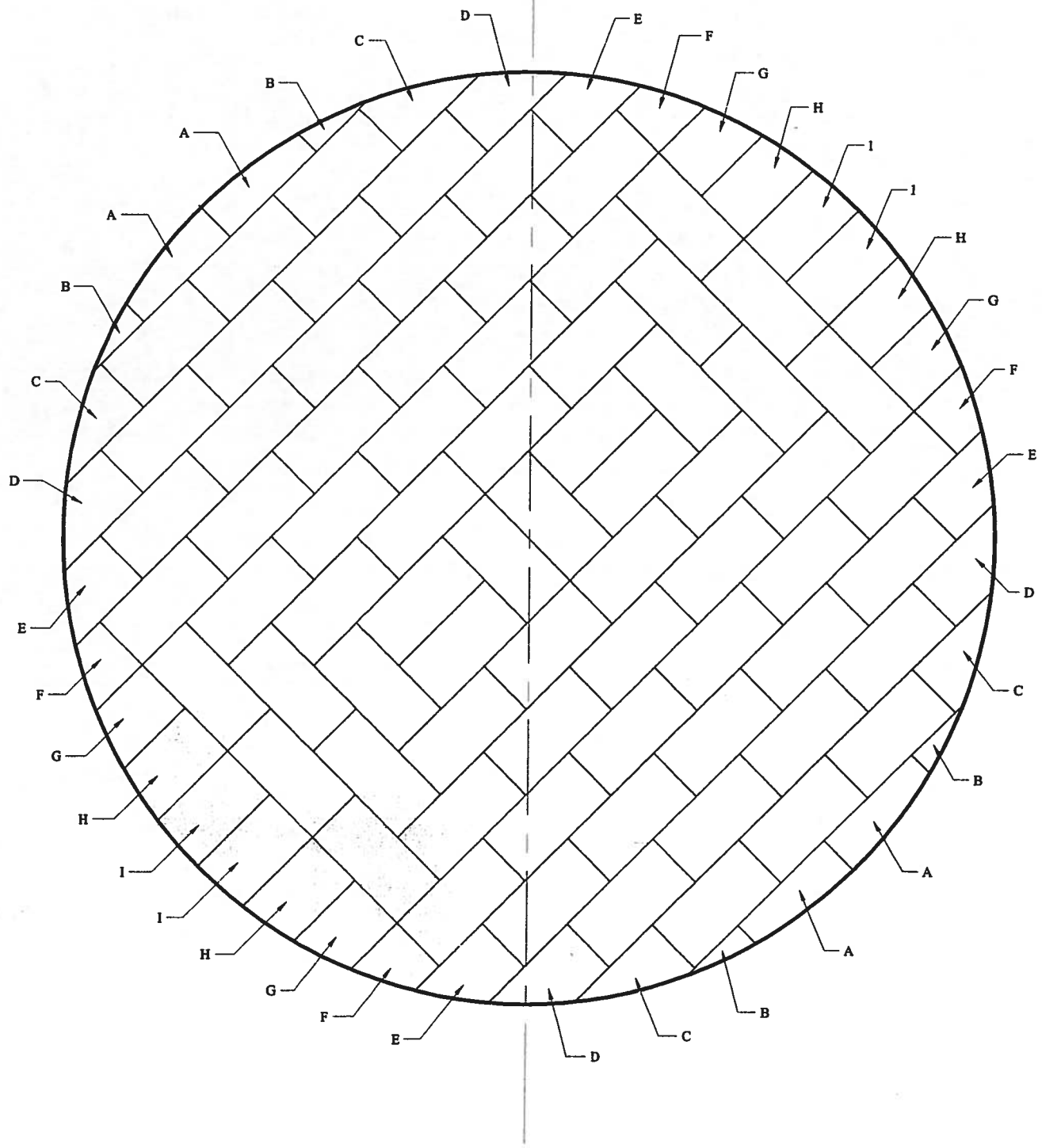
95% DESIGN
ISSUED FOR AGENCY REVIEW

NOTES:

1. TOP LAYER WILL BE LAYED THE SAME AS THE BOTTOM EXCEPT THAT LAYOUT WILL BE ROTATED 45°
2. ALL EDGE BLOCKS ARE CUSTOM CUT BY MANUFACTURER.
3. EDGE BLOCKS A-1 ARE THE SAME FOR ALL FOUR QUADRANTS OF FOUNDATION PLAN.



1 C7 BOTTOM LAYER INSULATION LAYOUT
SCALE: AS SHOWN



2 C7 TOP LAYER INSULATION LAYOUT
SCALE: AS SHOWN

GRAPHIC SCALE
0 5' 10'

95% DESIGN
ISSUED FOR
AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRAUTMAN
NO. CE 11764
R-23-7
REGISTERED PROFESSIONAL ENGINEER

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

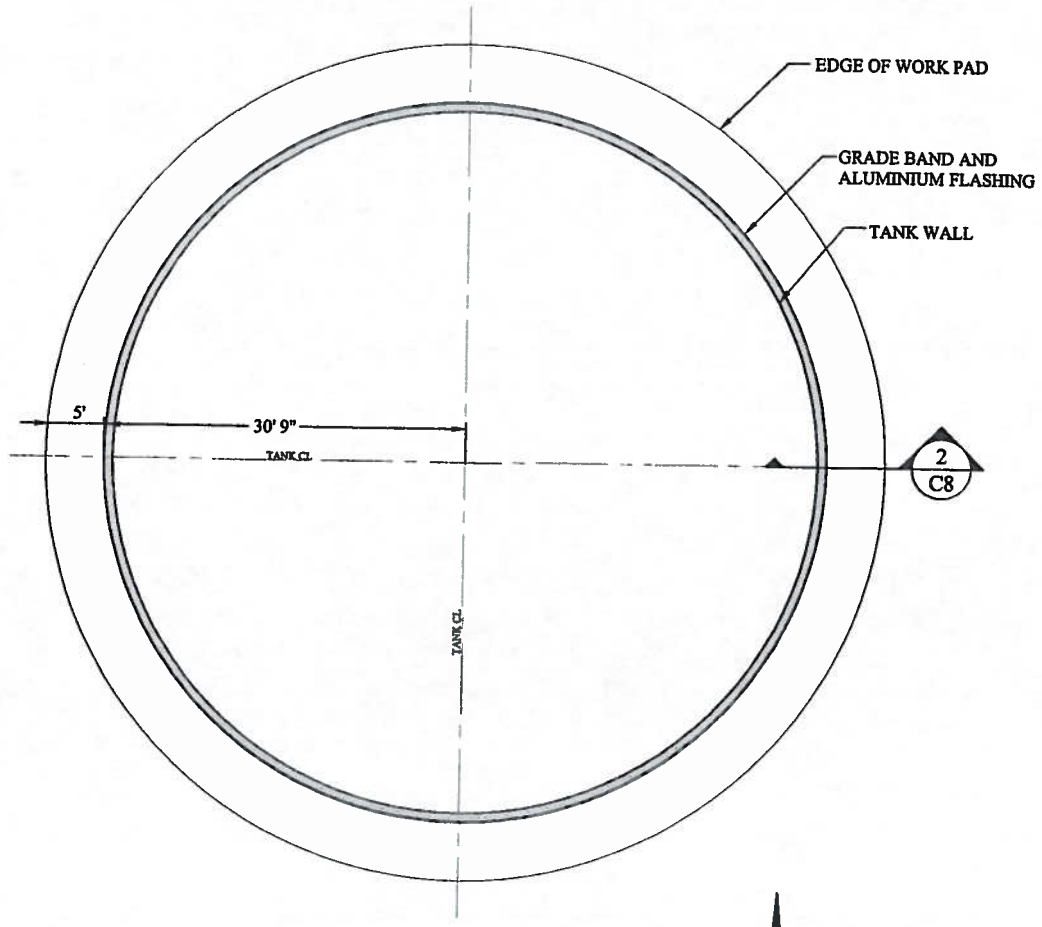
KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

WST GEOFOAM
INSULATION PLAN

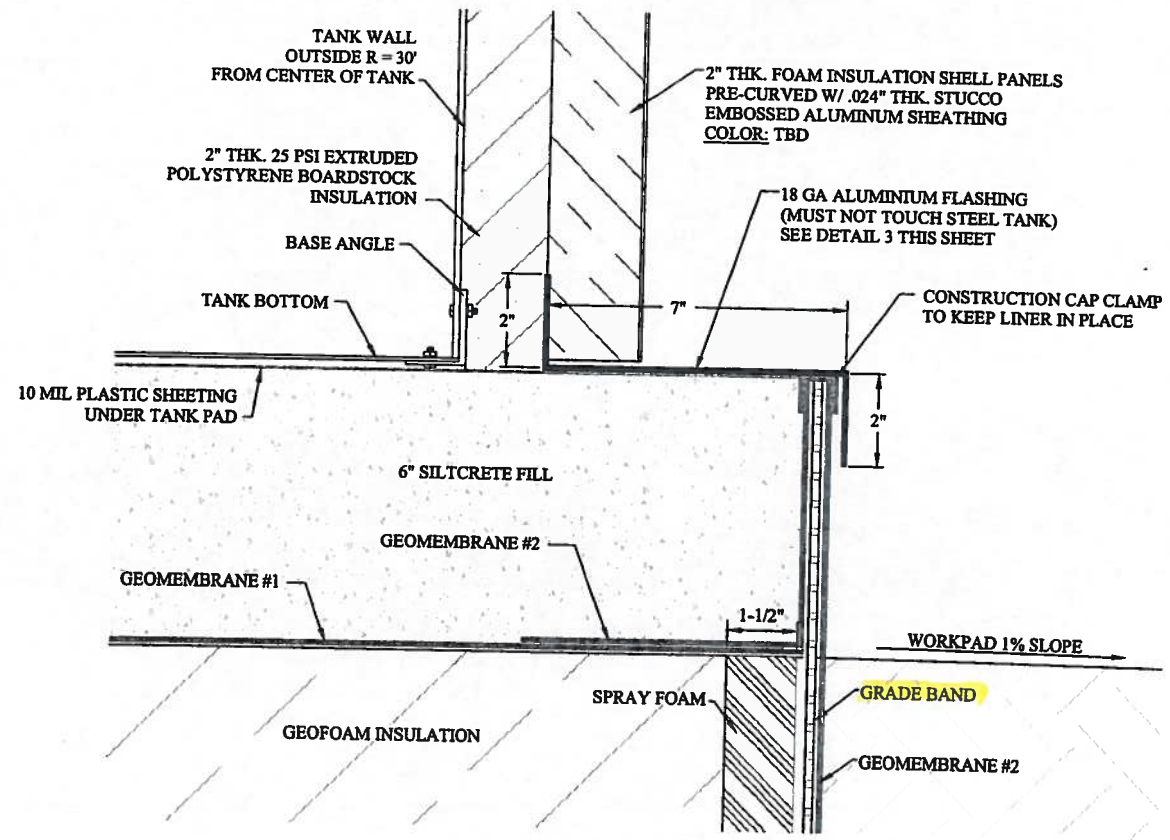
REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
C7

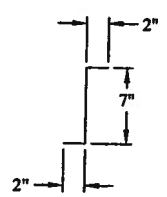


1 C8 ALUMINUM FLASHING PLAN
SCALE:NTS

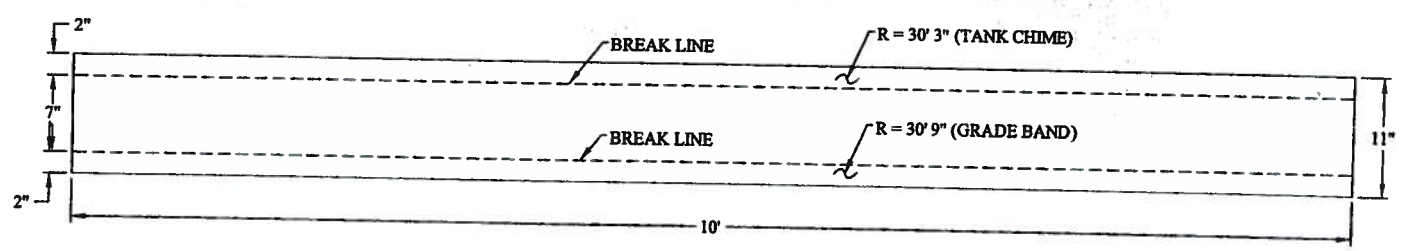


NOTE: DRAWING HAS BEEN EXAGGERATED FOR CLARITY

2 C8 ALUMINUM FLASHING SECTION
SCALE:NTS



END VIEW



3 C8 ALUMINUM FLASHING PANEL (FLAT)
SCALE:NTS

NOTE:

BREAK 10' PANELS OF ALUMINUM ALONG DOTTED LINES, THEN ROLL TO FIT TANK AND GRADE BAND

95% DESIGN
ISSUED FOR AGENCY REVIEW

STATE OF ALASKA — JOHN C. TRAUTMAN — NO. CE 11788 — REGISTERED PROFESSIONAL ENGINEER — 4-23-10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

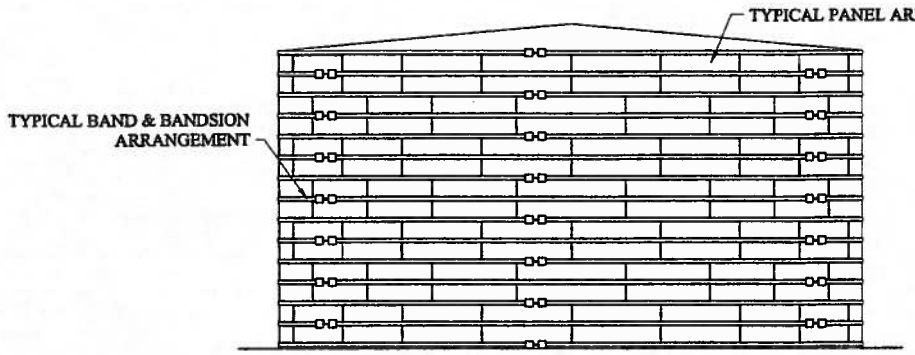
KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

ALUMINUM FLASHING DETAILS

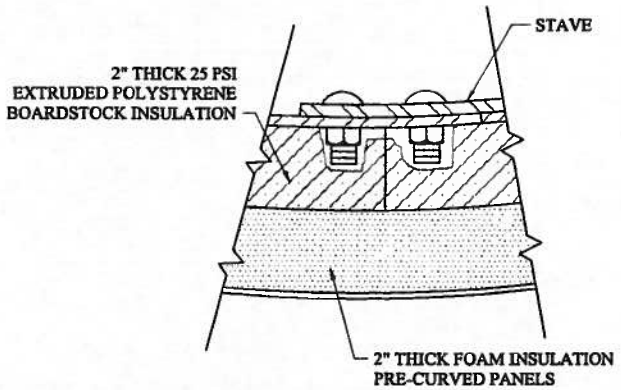
REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

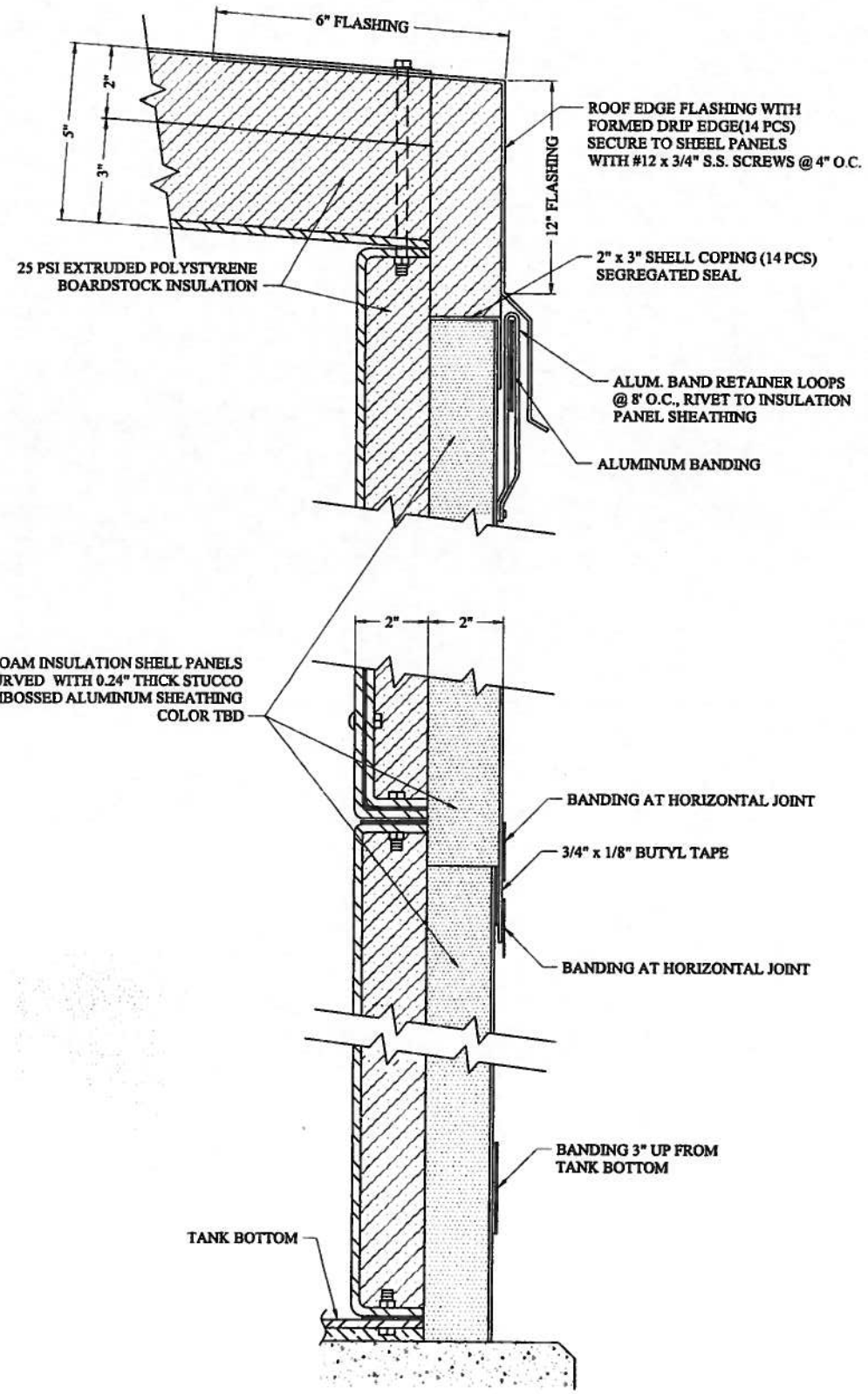
Sheet No.
C8

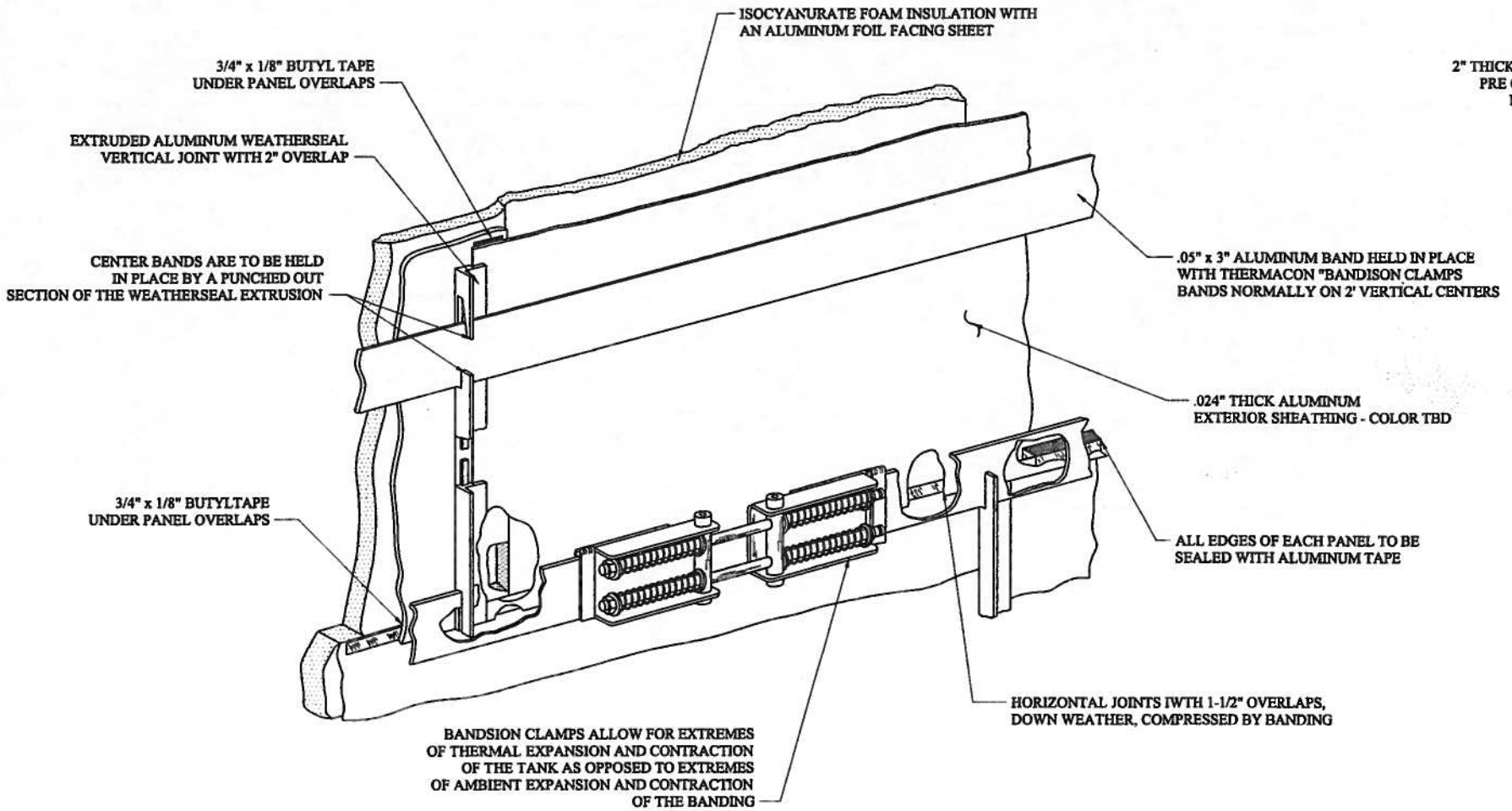


1/C9 TYPICAL TANK ELEVATION
NTS



2/C9 TYPICAL SHELL INSULATION PLAN
NTS





3/C9 TYPICAL TANK INSULATION SYSTEM
NTS

NOTE: DETAILS SHOWN ARE TYPICAL. THE INSULATION SUPPLIERS & INSTALLERS SHALL PROVIDE THEIR DETAILS FOR APPROVAL.

4/C9 TYPICAL TANK SHELL SECTION
NTS

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ISSUED FOR AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRAPP
REGISTERED PROFESSIONAL ENGINEER
4-23-10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

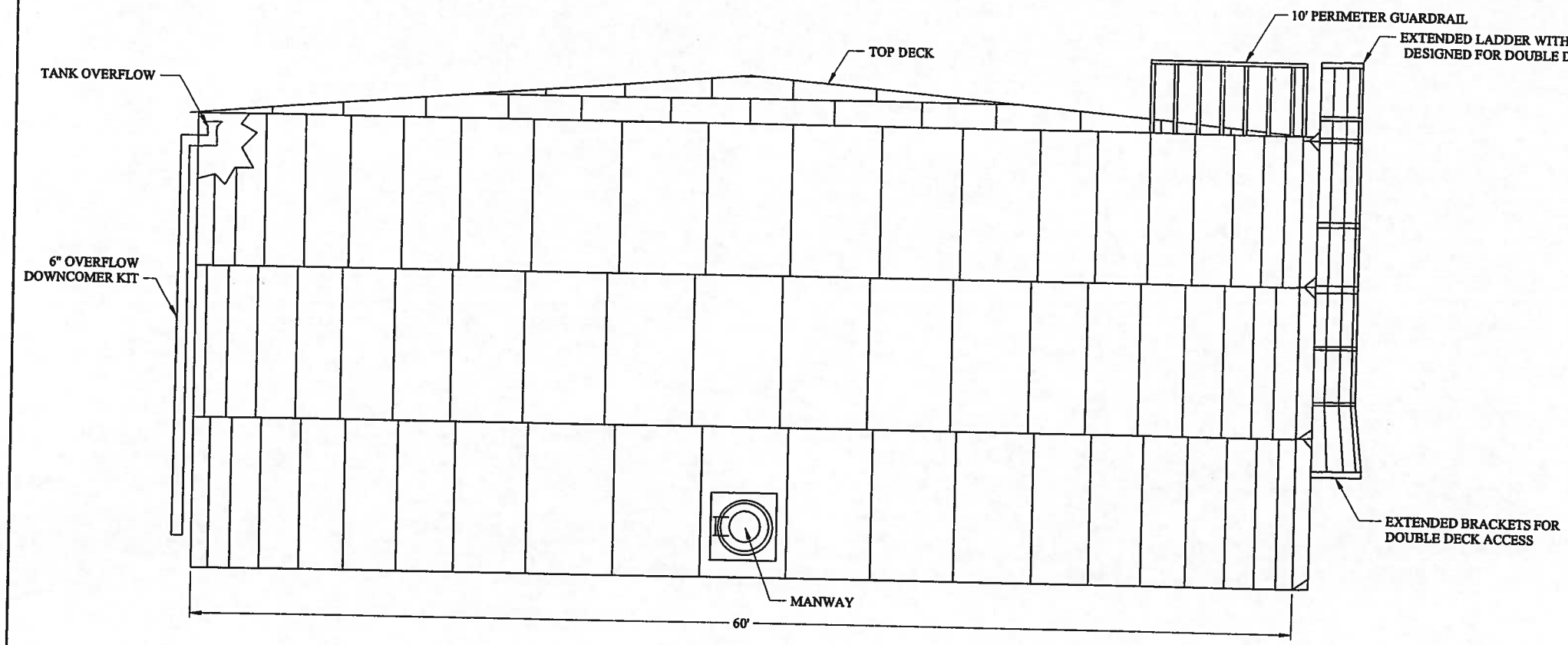
TYPICAL TANK INSULATION DETAILS

REVISION	BY	DATE

PROJECT NO.
DATE 4/22/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
C9

User: Rory Bryant Date/Time: 4/23/2010 2:42 PM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\0.5 MO Tank\95%\C9 - TANK INSULATION.DWG Sheet: C14

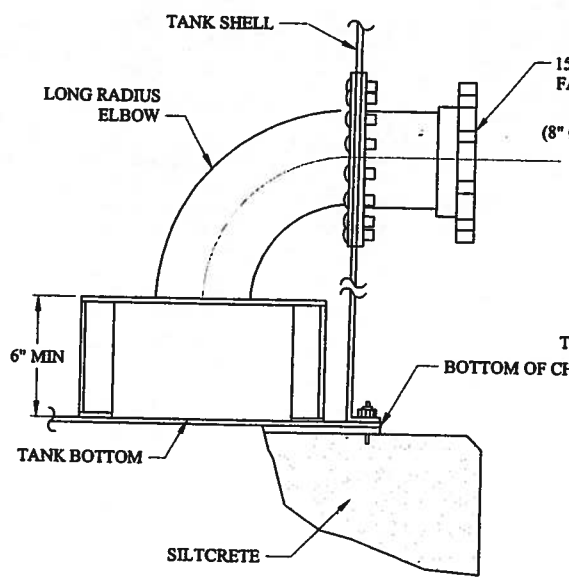


1 C10 TANK ELEVATION
SCALE: AS SHOWN

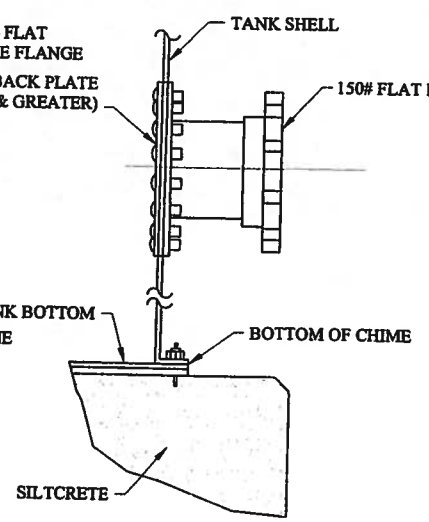
GRAPHIC SCALE
0 4' 8'

NOTES:

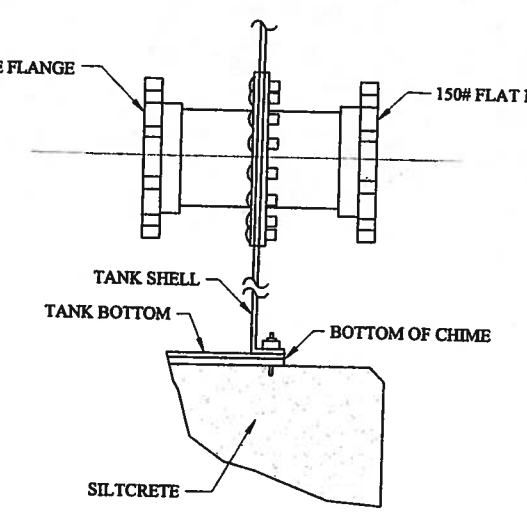
1. TANK DRAWINGS CONTAIN CONFIDENTIAL/TRADE SECRETS OF COLUMBIAN TECTANK AND CANNOT BE RELEASED WITHOUT WRITTEN PERMISSION FROM COLUMBIAN TECTANK.
2. THESE DRAWINGS ARE FOR DESIGN PURPOSES ONLY. TANK MANUFACTURER WILL PROVIDE FIELD DRAWINGS FOR TANK INSTALLATION.
3. INTERIOR AND BOTH SIDES OF BOTTOM PAINTED ONE COAT TRICO BOND EP THERMOSET CORROSION RESISTANT POWDER EPOXY. EXTERIOR PAINTED ONE COAT OF TRICO BOND EP THERMOSET CORROSION RESISTANT POWDER EPOXY WITH FINISH COAT OF TANK PERFORMANCE URETHANE.
4. WATER STORAGE TANK DESIGNED IN ACCORDANCE WITH AWWA D103-97 SPEC SEISMIC ZONE 2B = I - 125, Rw = 350, S = 150, 100 MPH WINDLOAD, 30 PSF LIVE DECK LOAD, SPECIFIC GRAVITY = 1.0.
5. STAVE SHOP DRAWINGS ARE REQUIRED FOR FABRICATION.
6. STANDARD CENTER DOME WITH VENT (20") WILL RELIEVE 24 CFS (11,000 GPM) WHEN CLEAN.



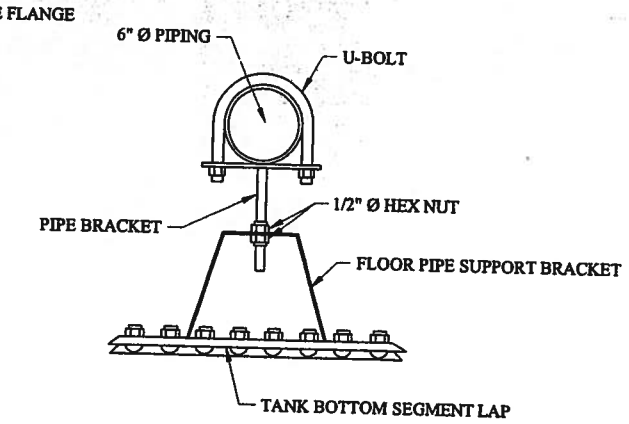
2 C10 TYPICAL SUCTION NOZZLE INSTALLATION
NTS



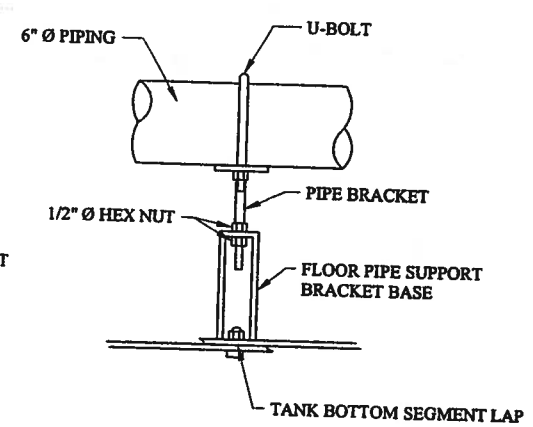
3 C10 TYPICAL EXTERIOR NOZZLE INSTALLATION
NTS



4 C10 TYPICAL DOUBLE NOZZLE INSTALLATION
NTS



5 C10 TYPICAL FLOOR BRACKET FRONT DETAIL
NTS



6 C10 TYPICAL FLOOR BRACKET SIDE DETAIL
NTS

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STATE OF ALASKA
JOHN C. TRAPP
NO. CE 11797
REGISTERED PROFESSIONAL ENGINEER
49th

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

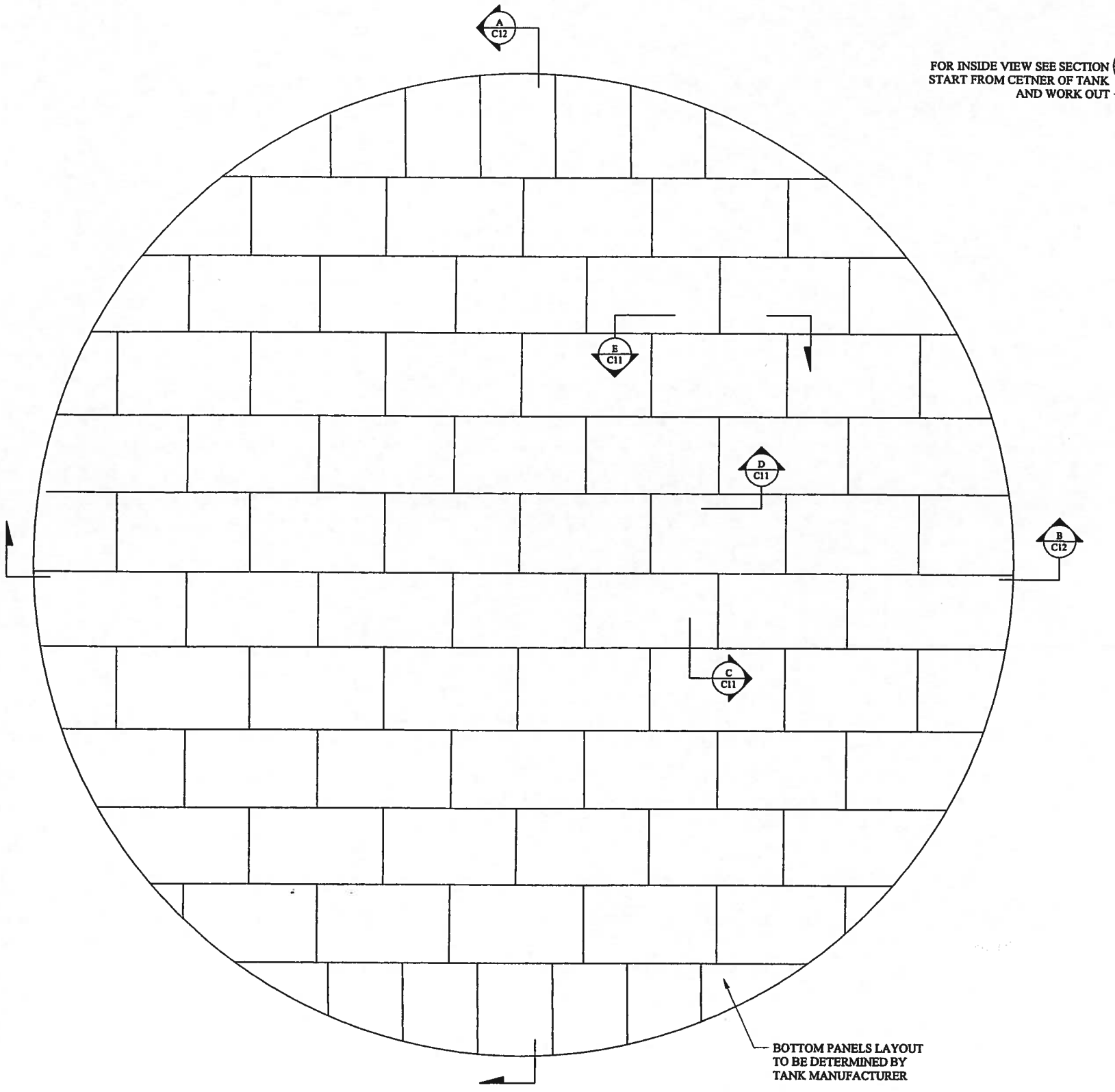
TANK ELEVATION &
NOZZLE DETAILS

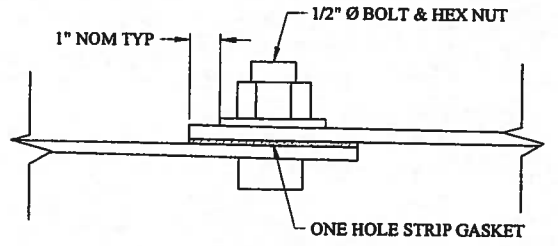
REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

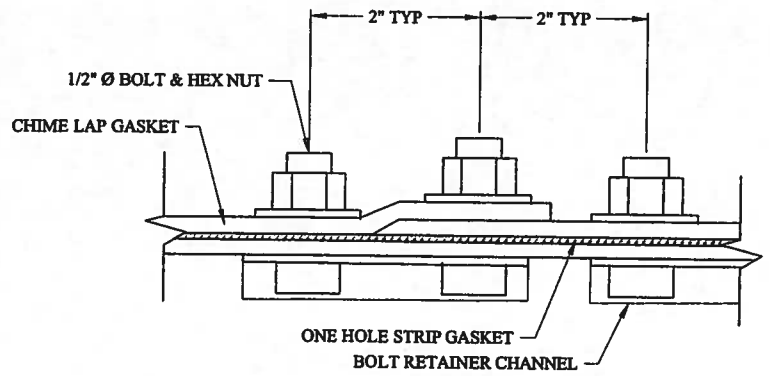
Sheet No.
C10

User: Rory Bryant Date/Time: 4/23/2010 2:05 PM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\0.5 MG Tank\095%\C10 - C15 - TANK DETAILS.DWG Sheet: C10

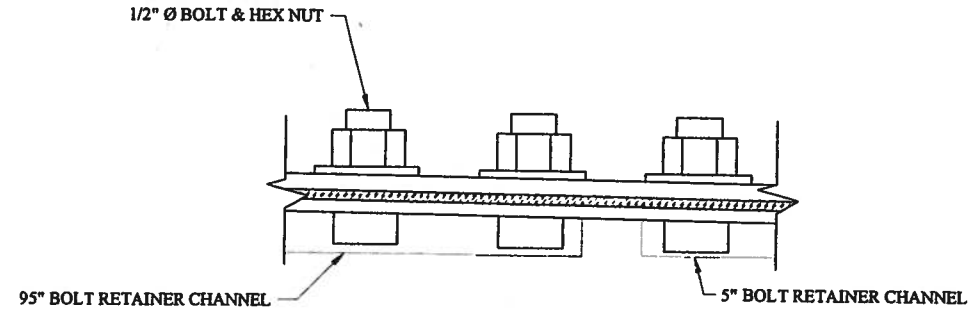




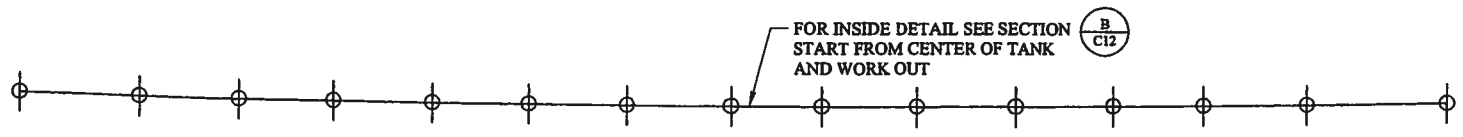
C C11 BOTTOM SEGMENT LAP SECTION NTS



D C11 BOTTOM SEGMENT OVERLAP SECTION NTS



F C11 TYP BOLT CHANNEL @ 8'-6" BOTTOM SHEET NTS



1 C11 TANK BOTTOM PLAN VIEW SCALE: AS NOTED

NOTES:

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2. THESE DRAWINGS ARE FOR DESIGN PURPOSES ONLY. TANK MANUFACTURER WILL PROVIDE FIELD DRAWINGS FOR TANK INSTALLATION.

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AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRAUTMAN
REGISTERED PROFESSIONAL ENGINEER
4-23-10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

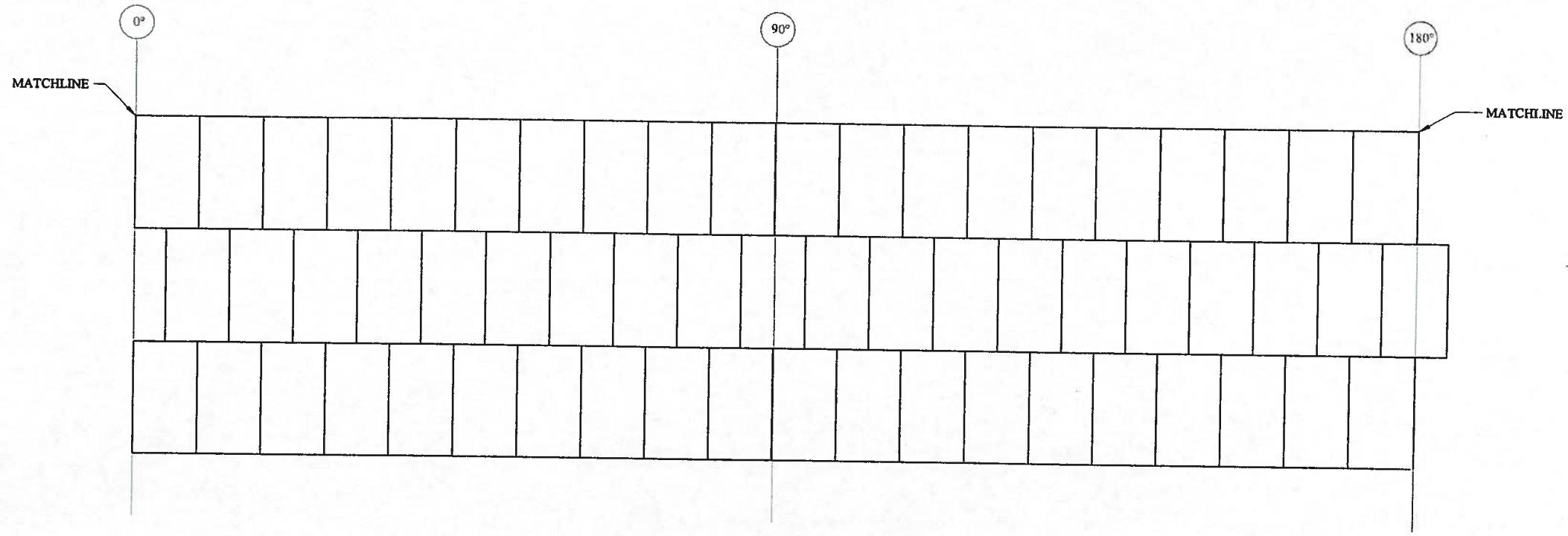
KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

TANK BOTTOM PLAN VIEW
& DETAILS

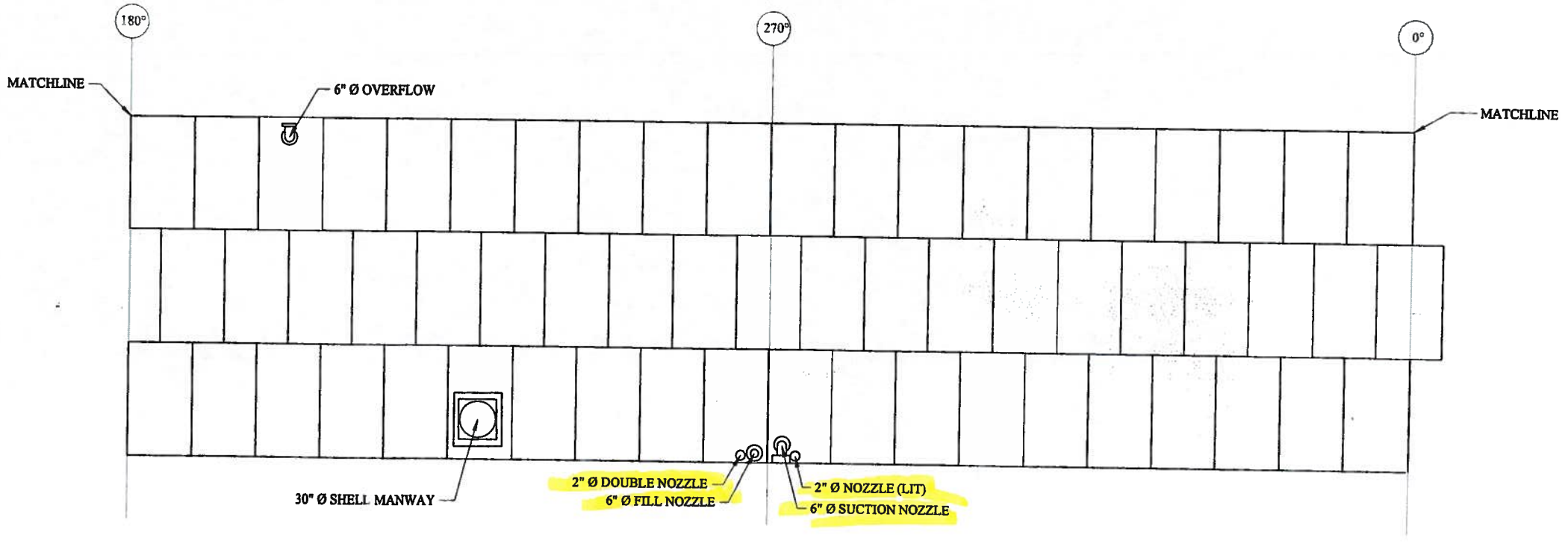
REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
C11



A C12 PARTIAL TANK STRETCH-OUT
NTS



B C12 PARTIAL TANK STRETCH-OUT
NTS

NOTES:

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3. STRETCHED OUT DRAWINGS ARE VIEWED FROM THE INSIDE OF THE TANK LOOKING OUT.

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AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRUAX
No. 9849
REGISTERED PROFESSIONAL ENGINEER
4/23/10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

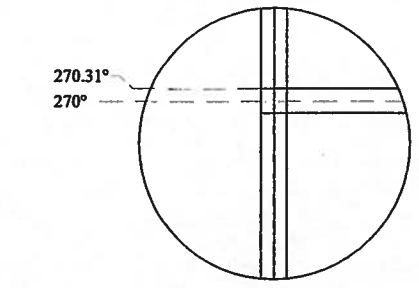
TANK STRETCH OUT SECTIONS

REVISION	BY	DATE

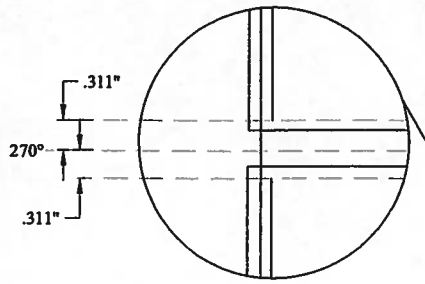
PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
C12

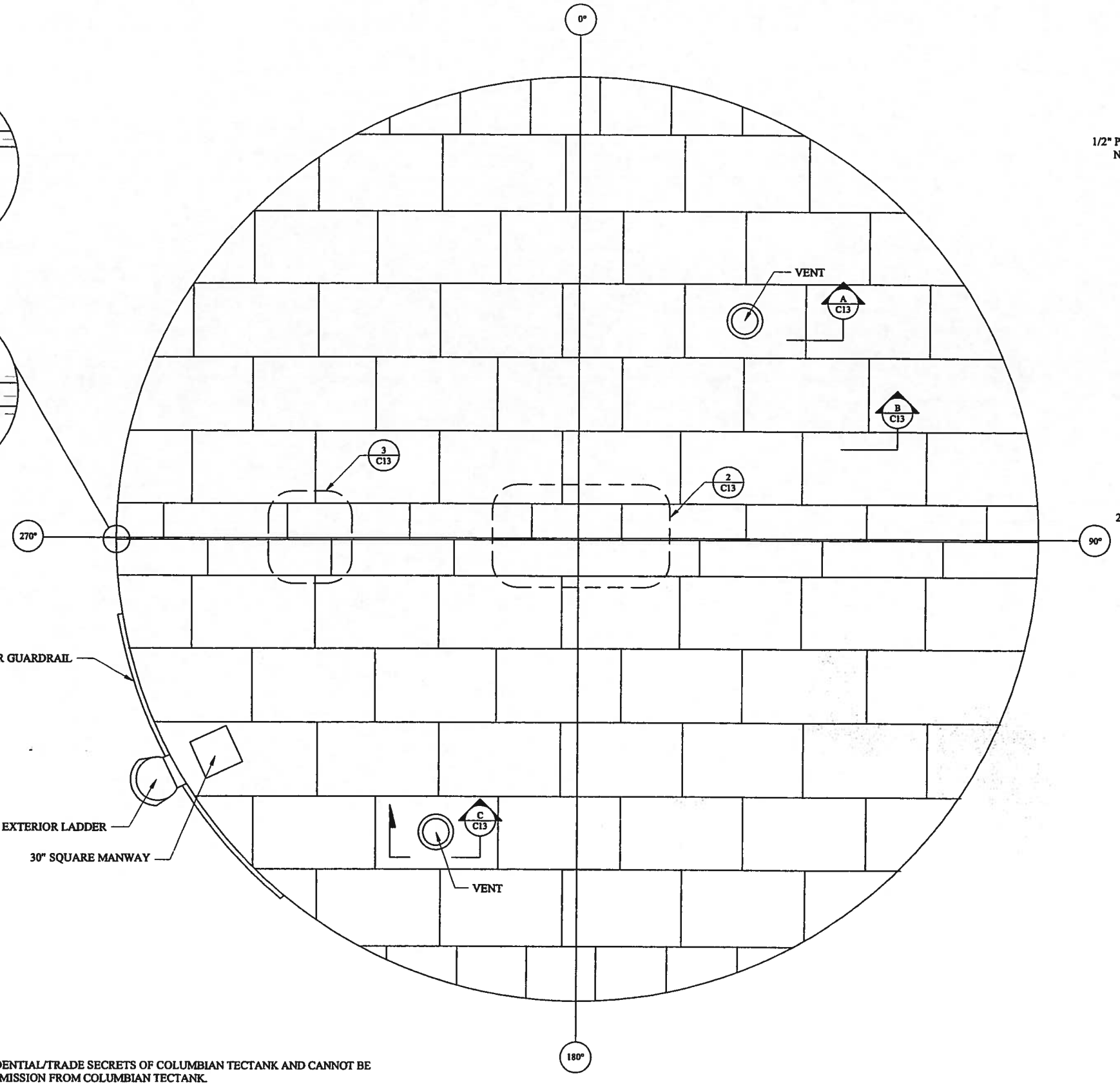
User: Rory Bryant Date/Time: 4/23/2010 10:15 AM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\0.5MG Tank\95%\C10 - C15 - TANK DETAILS.DWG Sheet: C12



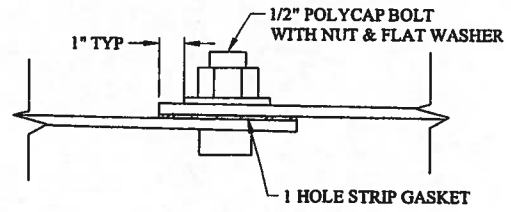
ASSEMBLED VIEW



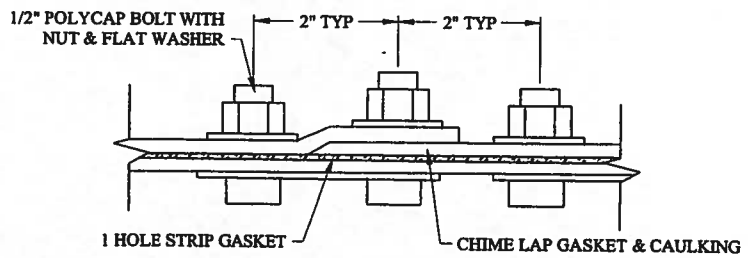
FLAT VIEW



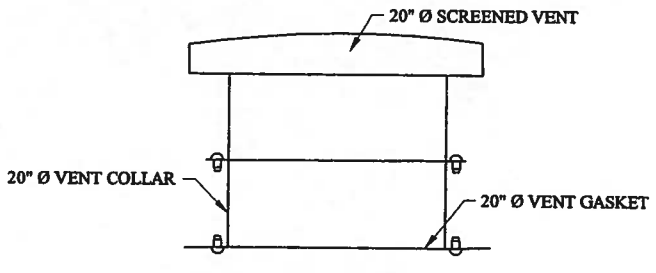
1 C13 TANK INNER DECK PLAN NTS



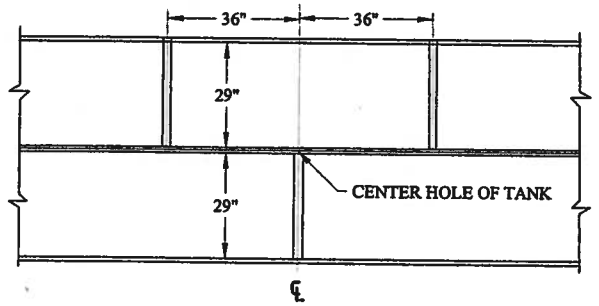
1 C13 TANK INNER DECK PLAN NTS



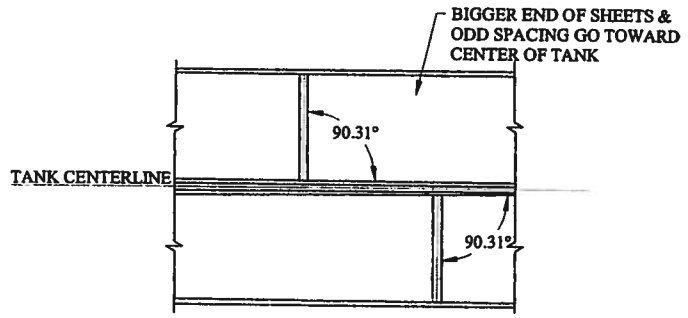
1 C13 TANK INNER DECK PLAN NTS



C C13 20" VENT DETAIL NTS



2 C13 TANK INNER DECK PANEL CONNECTION NTS



3 C13 TANK INNER DECK PANEL CONNECTION NTS

NOTES:

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ISSUED FOR
AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRUAX
REGISTERED PROFESSIONAL ENGINEER
4-23-10

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

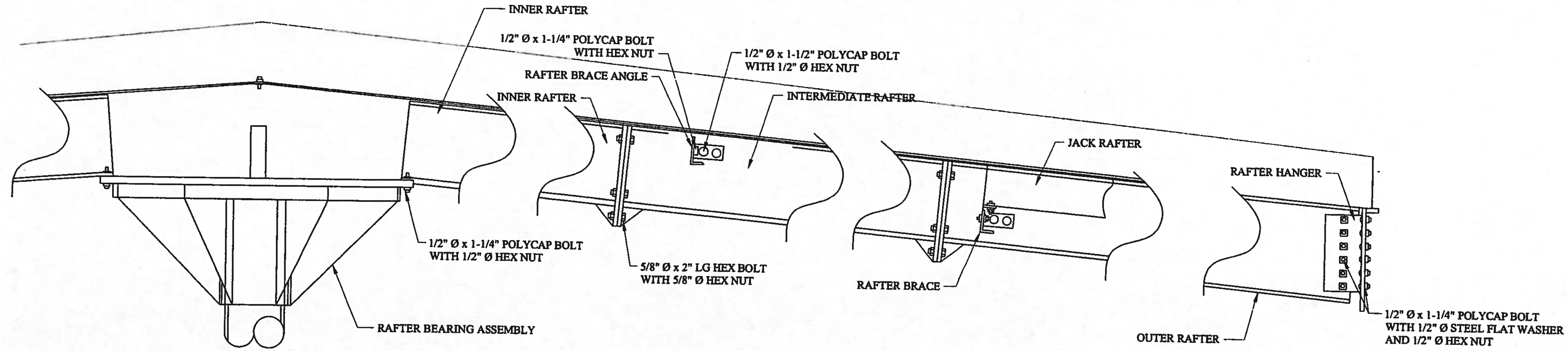
TANK INNER DECK PLAN
& DETAILS

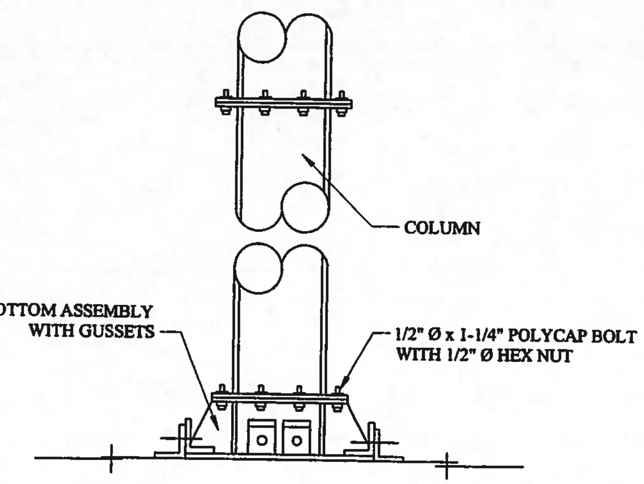
REVISION	BY	DATE

PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

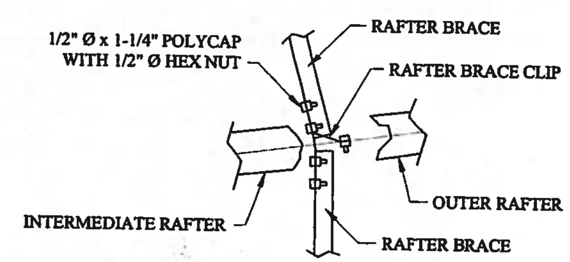
Sheet No.
C13

User: Roy Boyuk Date/Time: 4/23/2010 10:16 AM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\6.5 MG Tank\95%\C10 - C15 - TANK DETAILS.DWG Sheet: C13

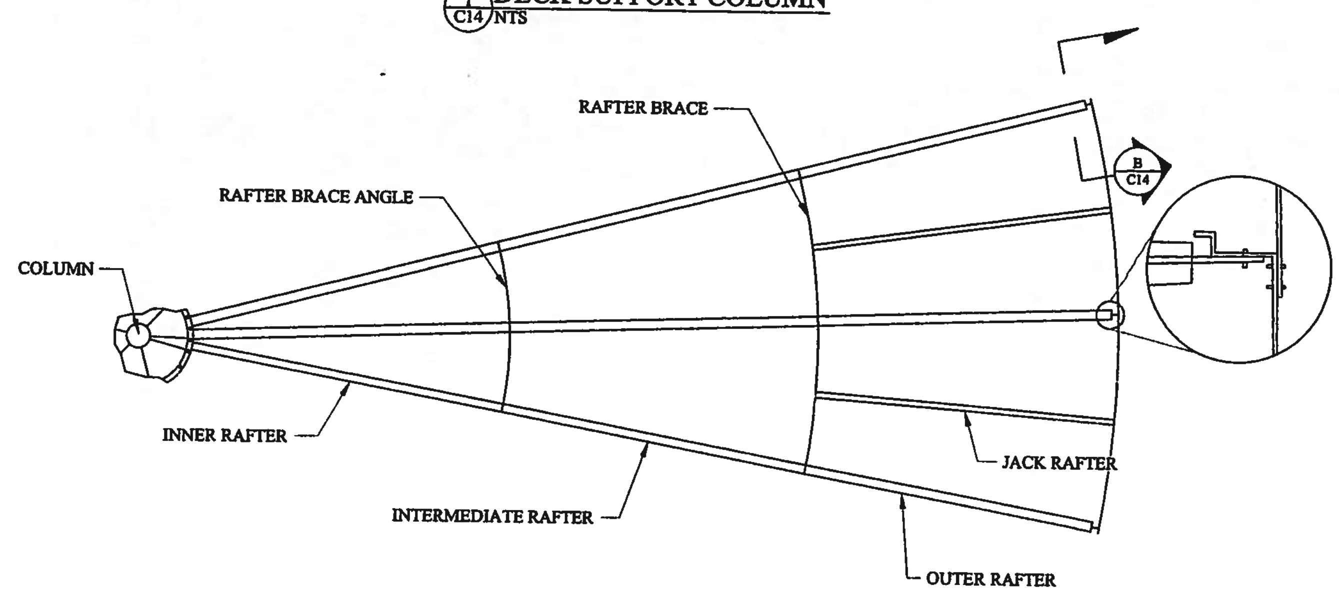




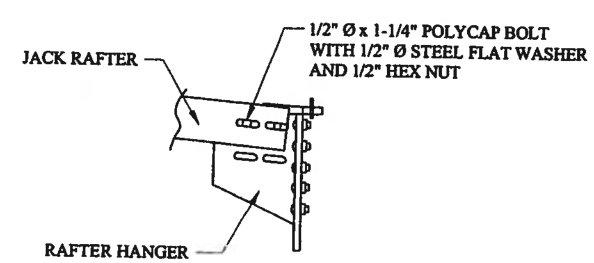
(1/C14) **DECK SUPPORT COLUMN**
NTS



(A/C14) **JACK RAFTER SUPPORT CLIPS**
NTS



(2/C14) **PARTIAL STRUCTURE PLAN**
NTS



(B/C14) **JACK RAFTER & HANGER**
NTS

NOTES:

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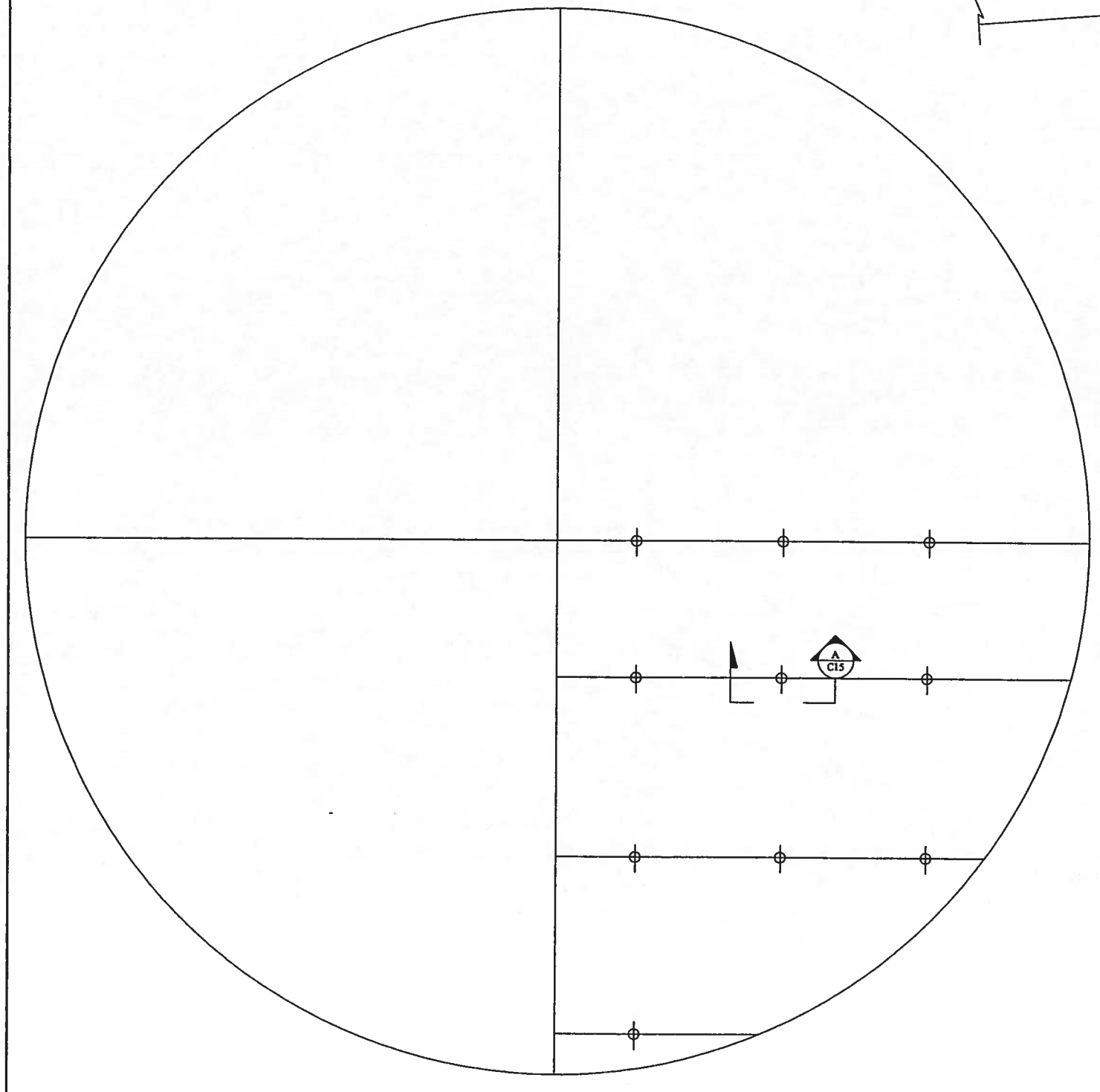
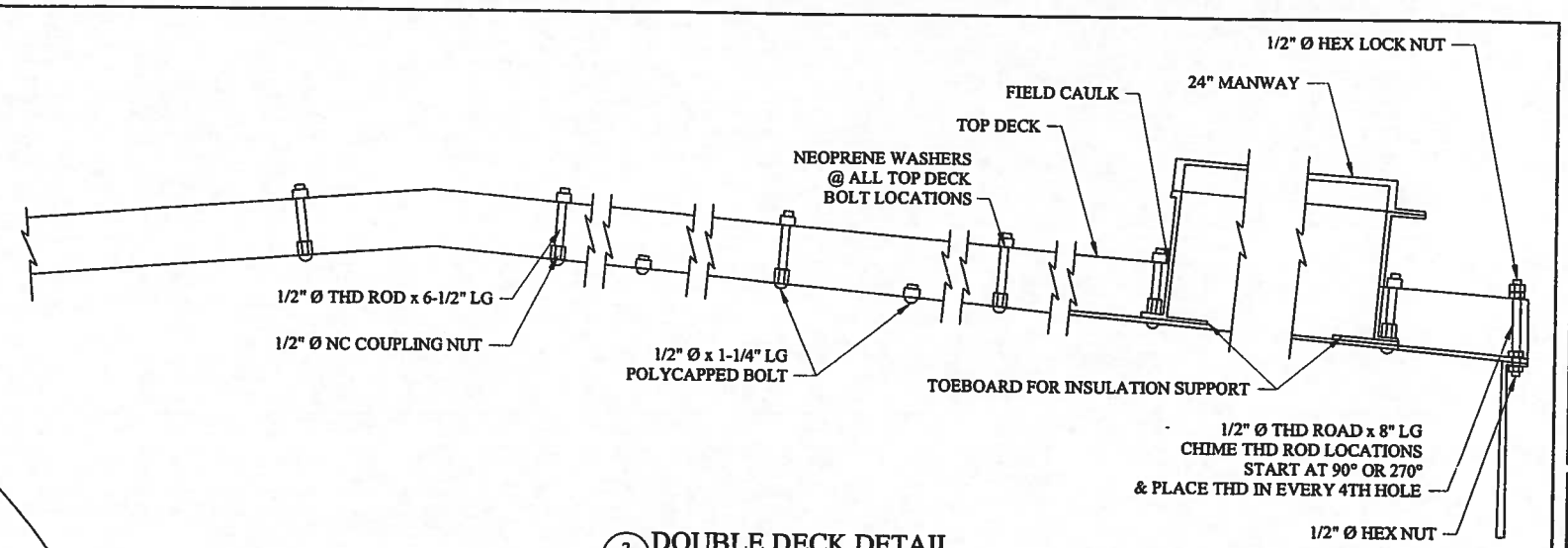
3. RAFTER HANGERS MUST BE INSTALLED ON ALTERNATING VERTICAL SEAMS.

Sheet No.	PROJECT NO.	REVISION	BY	DATE				
C14	DATE 4/23/10 DESIGNED JT DRAWN RKB APPROVED CA				KONGIGANAK WATER STORAGE TANK REPLACEMENT TANK DECK SUPPORT DETAILS	SUMMIT CONSULTING SERVICES Remote Project Construction Management & Design	VILLAGE SAFE WATER	95% DESIGN ISSUED FOR AGENCY REVIEW

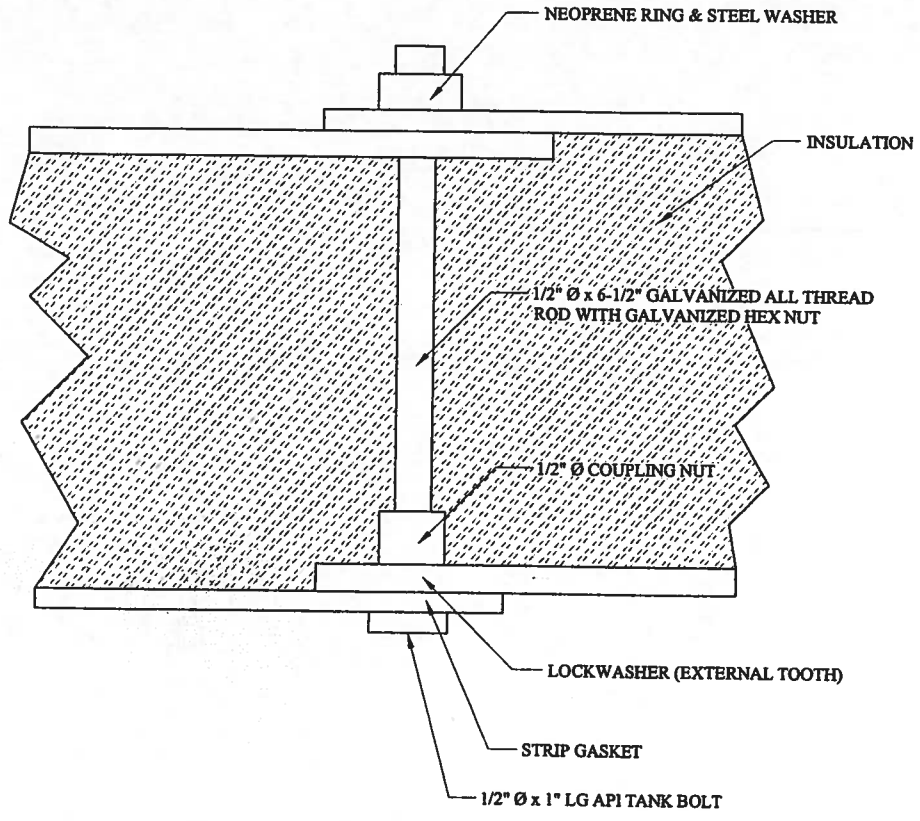
STATE OF ALASKA 49th JOHN C. TRAPP No. CE 11790 REGISTERED PROFESSIONAL ENGINEER



1 C15 PLAN VIEW OF THRU BOLTS
NTS



2 C15 DOUBLE DECK DETAIL
NTS



A C15 ROOF BOLT EXTENSION ASSEMBLY
NTS

NOTES:

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3. THRU BOLT LOCATIONS ARE AS SHOWN IN THIS ¼ QUADRANT. SYMMETRICAL ABOUT TANK

95% DESIGN
ISSUED FOR
AGENCY REVIEW

STATE OF ALASKA
JOHN C. TRAPP
49th
4-22-10
REGISTERED PROFESSIONAL ENGINEER

VILLAGE SAFE WATER

SUMMIT CONSULTING SERVICES
Remote Project Construction Management & Design

KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

ROOF BOLTING &
DOUBLE DECK DETAILS

REVISION	BY	DATE

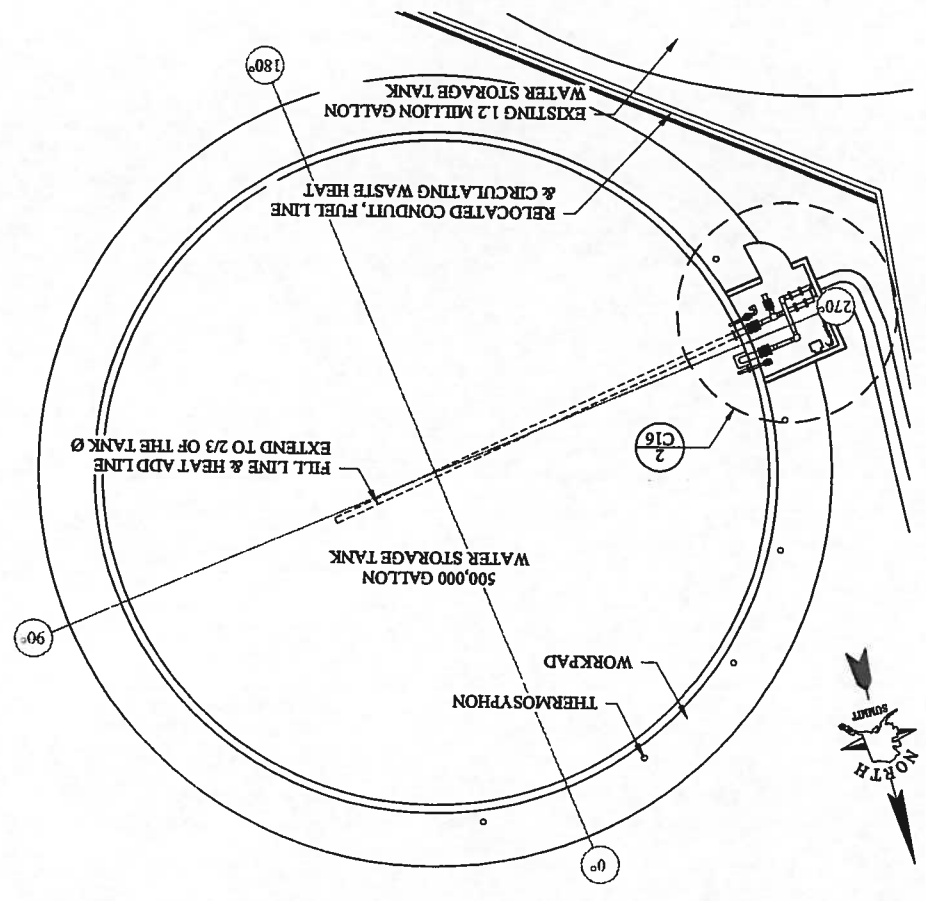
PROJECT NO.
DATE 4/23/10
DESIGNED JT
DRAWN RKB
APPROVED CA

Sheet No.
C15

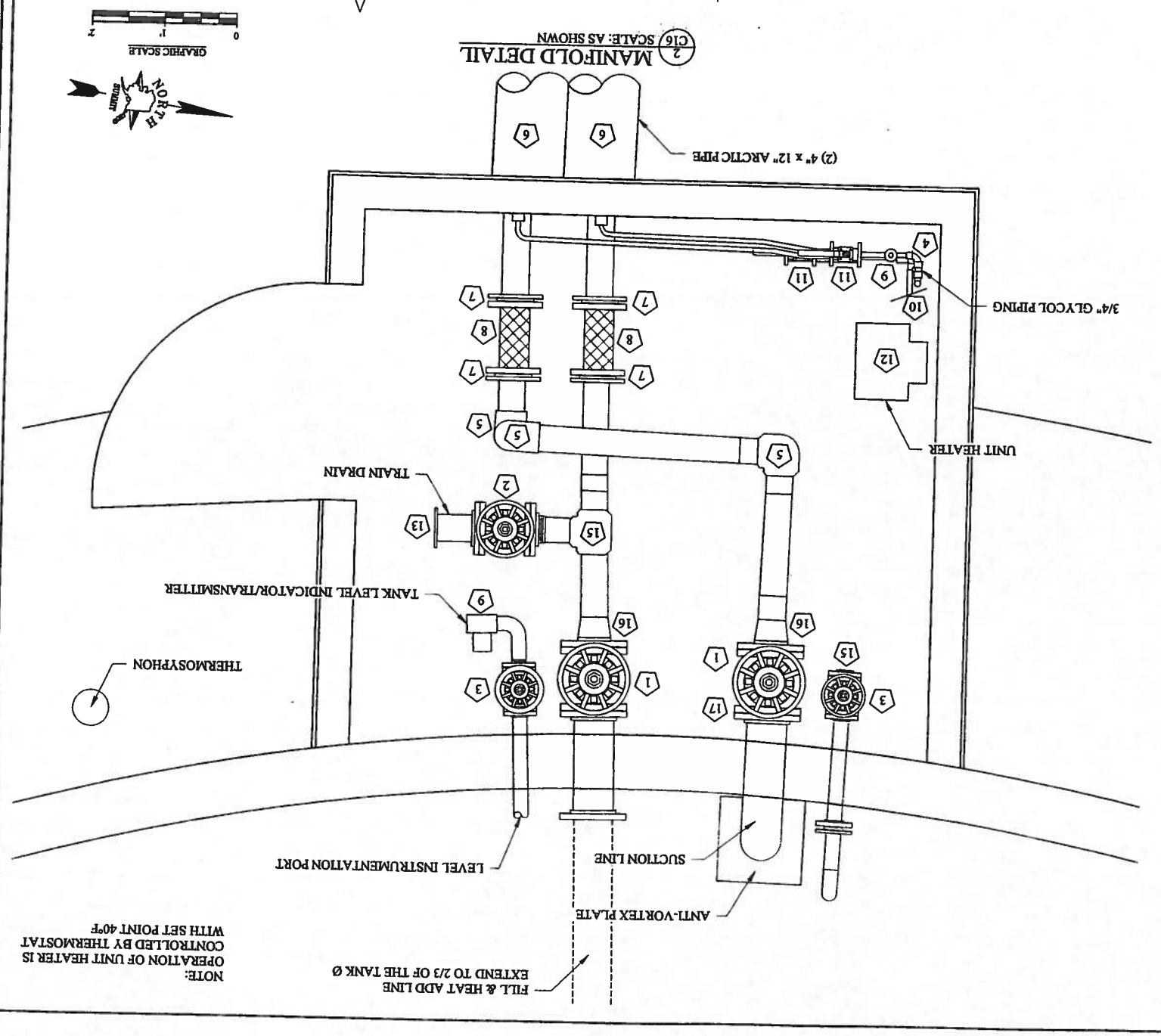
PIPING & MANIFOLD SCHEDULE

ITEM	COUNT	SIZE	DESCRIPTION
1	2 EA	6"	"SURE FLOW" FULL PORT BALL VALVE BV1251S, FLANGED ENDS, CAST IRON BODY, STAINLESS STEEL BALL AND STEM, FUSED EPOXY COATING, SUITABLE FOR USE WITH POTABLE WATER AWWA C509
2	1 EA	4"	SAME DESCRIPTION AS ITEM #1
3	2 EA	2"	SAME DESCRIPTION AS ITEM #1
4	3 EA	3/4"	GLYCOL SUPPLY AND RETURN LINES
5	125 FT FIELD VERIFY	4"	MOLDED HDPE, BUTT FUSED, 90° ELBOW
6	4 EA	4"	HDPE SDR 17 ARCTIC PIPE, 12" CORRUGATED METAL OUTER JACKET
7	2 EA	4"	HDPE STUB ENDS WITH BACKING RING, RED RUBBER GASKET & 8 EA 5/8" x 3-1/2", B7 STUDS, NUTS & WASHERS
8	1 EA	4"	FLEXIBLE SS HOSE AND SS BRAID, 4" SS 150#, FLAT FACE, FLANGES EACH END, HOSE ASSEMBLY LENGTH IS 12', PENEFLEX SERIES 700 AS FABRICATED BY ALASKA RUBBER & SUPPLY OR EQUAL
9	1 EA	-	INDICATING LEVEL TRANSMITTER: FOXBORO MODEL 861G, ROSEMOUNT ALPHALINE MODEL 1151GP
10	1 EA	2"	AUTO AIR VENT ON RETURN LINE
11	2 EA	2"	ISOLATION BALL VALVE
12	1 EA	-	GLYCOL LOOP UNIT HEATER, MODINE HS18 RR EQUAL WITH HONEYWELL T6514A9018,120 VAC THERMOSTAT
13	1 EA	4"	FLAT FACE, BLIND, 150#, A105 GR. B. FLANGE AND RED RUBBER GASKET & 4 EA 5/8" x 2-1/2" B7 STUDS, NUTS & WASHERS
14	1 EA	2"	SAME SPEC AS ITEM #13
15	1 EA	4" x 4" x 4"	HDPE TEE
16	2 EA	6" x 4"	FLAT FACE, THREADED, REDUCING 150# A105 GR B, FLANGE AND RED RUBBER GASKET AND 8 EA 5/8" x 3-1/2" B7 STUDS, NUTS & WASHERS
17	4 EA	6"	FLAT FACE 150#, A105 GR B FLANGE AND RED RUBBER GASKET AND 8 EA 5/8" x 3-1/2" B7 STUDS, NUTS & WASHERS

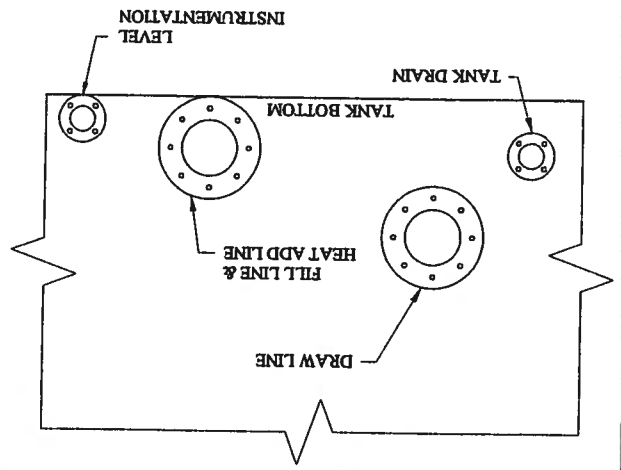
1 OVERVIEW
C16 NOT TO SCALE



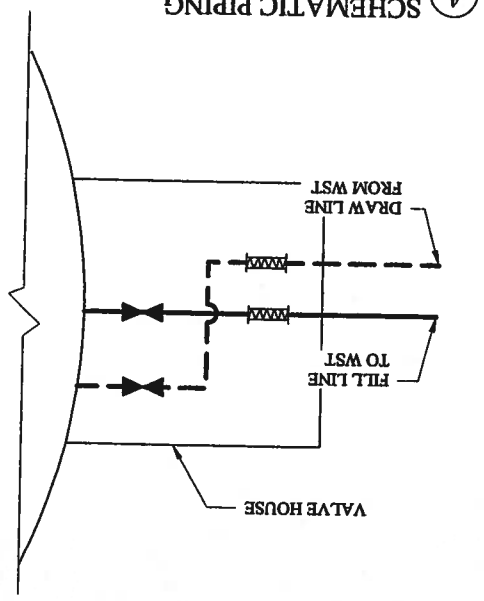
2 MANIFOLD DETAIL
C16 SCALE: AS SHOWN



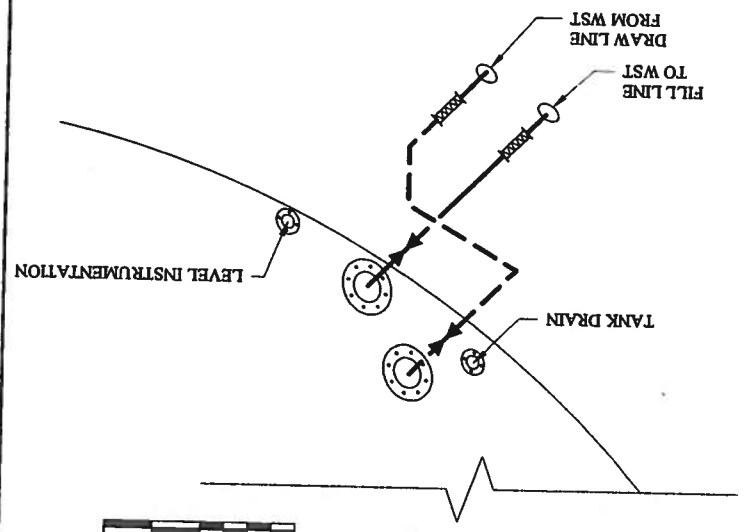
3 NOZZLE LOCATION DETAIL
C16 NOT TO SCALE



4 SCHEMATIC PIPING
C16 SCALE: NOT TO SCALE



4 ISOMETRIC PIPING
C16 SCALE: NOT TO SCALE



KONGIGANAK WATER STORAGE TANK REPLACEMENT

VALVE HOUSE & MANIFOLD PIPING

REVISION	BY	DATE

PROJECT NO.

DATE 4/22/10

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DRAWN RKB

APPROVED CA

Sheet No. C16

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VILLAGE SAFE WATER

REGISTERED PROFESSIONAL ENGINEER — JOHN C. TRAPP — STATE OF ALASKA

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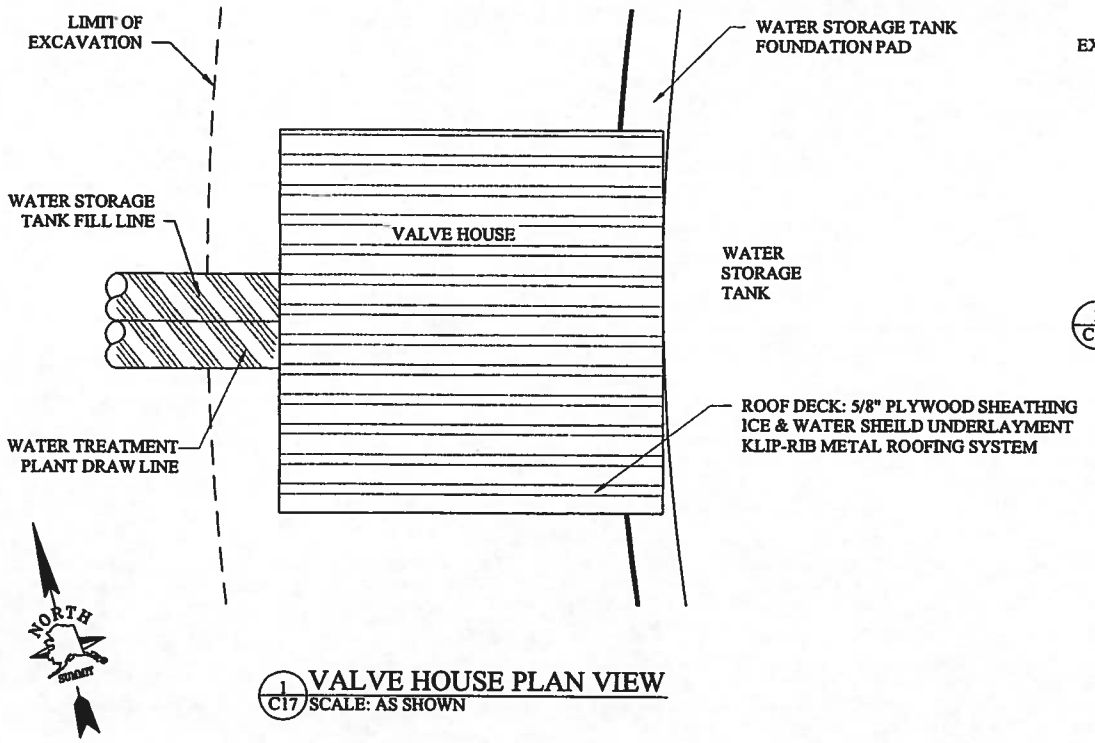
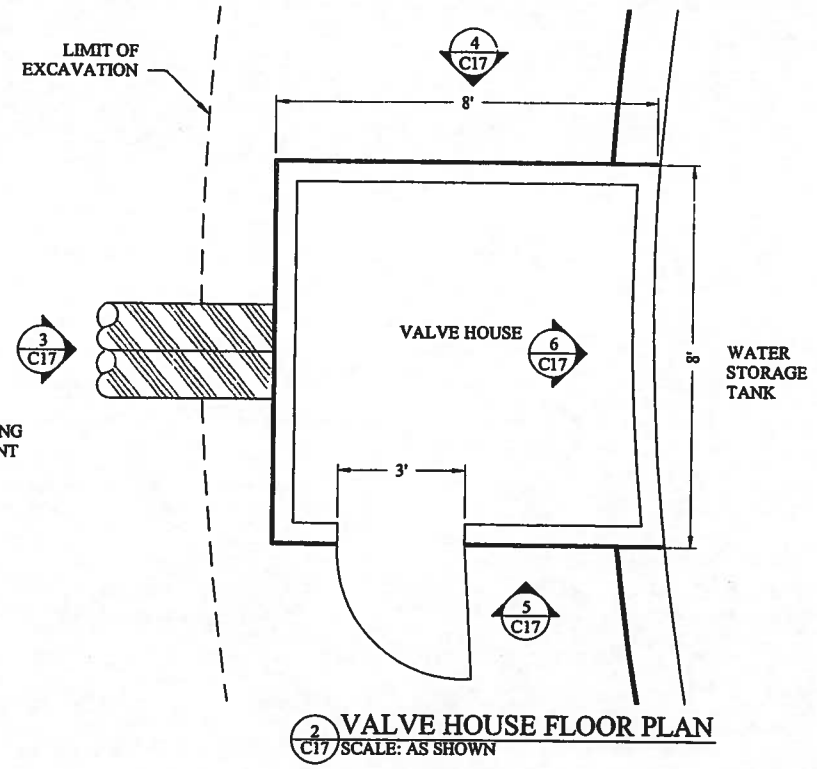


1 C17 VALVE HOUSE PLAN VIEW
SCALE: AS SHOWN

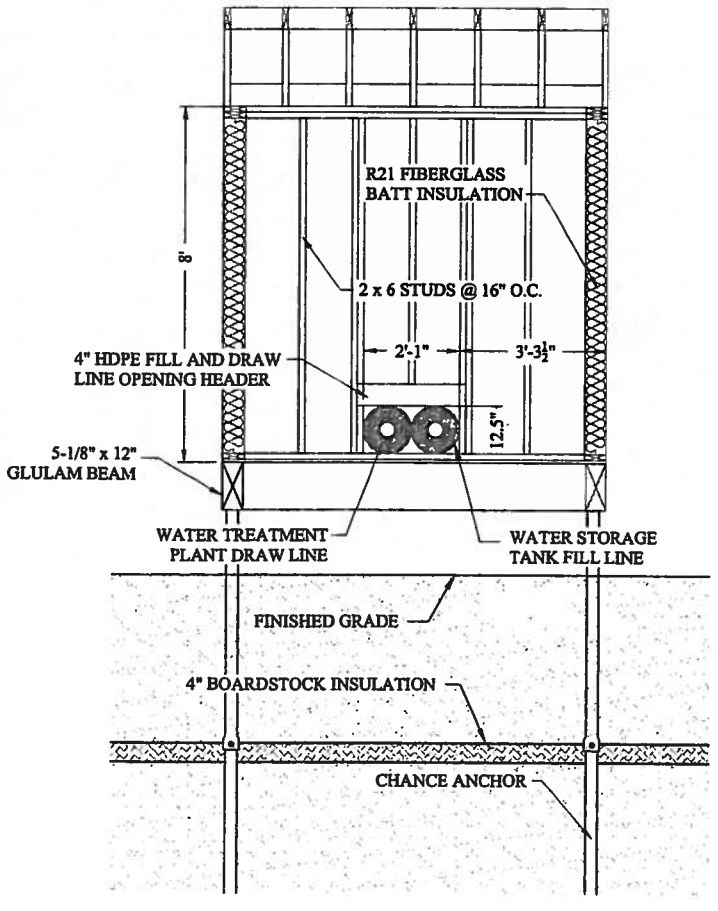


2 C17 VALVE HOUSE FLOOR PLAN
SCALE: AS SHOWN

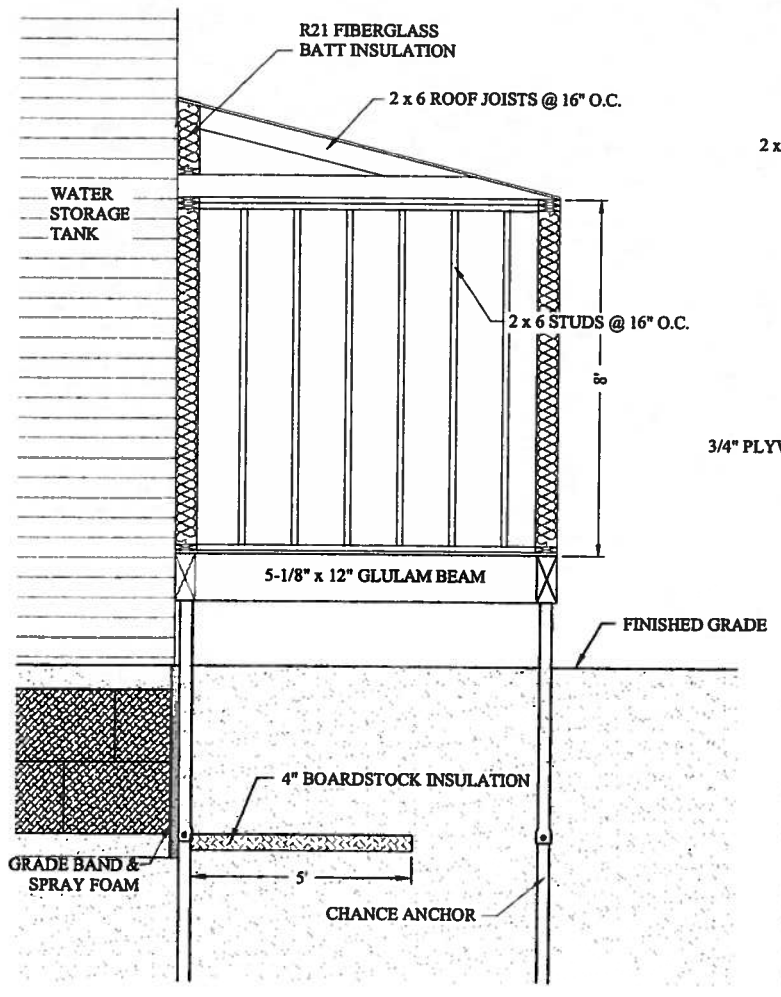
NOTES:

1. ALL STUD SPACES, ROOF JOIST SPACES & FLOOR JOIST SPACES TO BE INSULATED WITH R21 FIBERGLASS BATT INSULATION.
2. INSTALL MINIMUM 6 MIL. VAPOR BARRIER ON INTERIOR WALL STUDS & ROOF JOISTS.
3. INTERIOR WALLS AND CEILING TO BE SHEATHED WITH 1/2" PLYWOOD OR OSB.
4. ROOF SPACE TO BE VENTILATED. INSTALL 2x6 BLOCKING IN RAFTER SPACES ON TOP OF TOP PLATES. INSTALL BIRD/BUG SCREENING BETWEEN TOP OF BLOCKING AND ROOF SHEATHING.
5. KLIP-RIB® ROOFING SYSTEM TO BE INSTALLED IN ACCORDANCE WITH MFR'S INSTRUCTIONS.

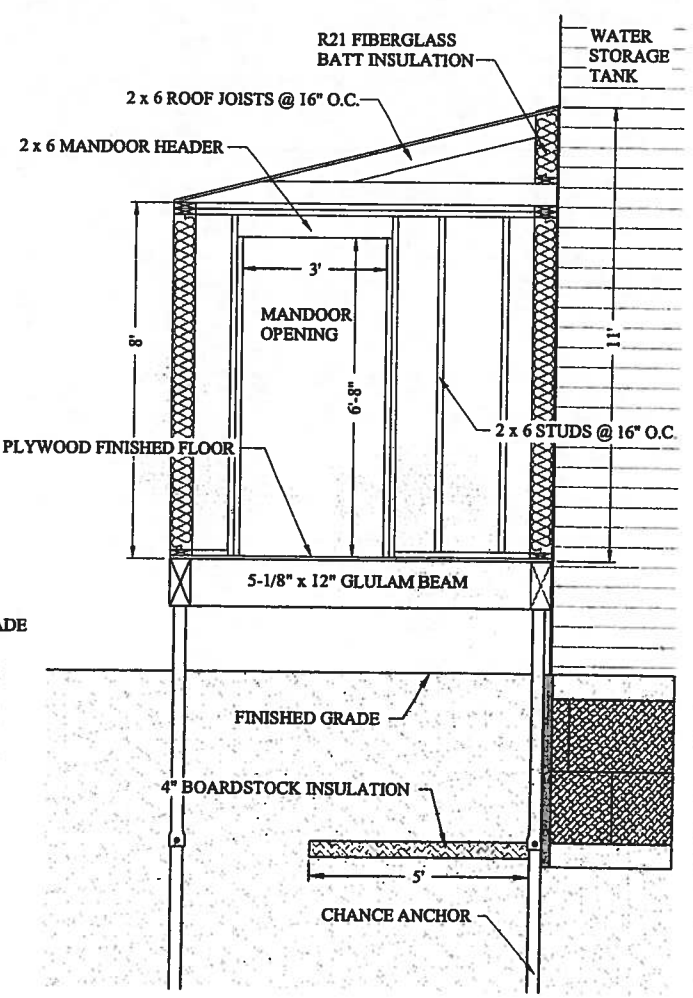
GRAPHIC SCALE
0 2' 4'



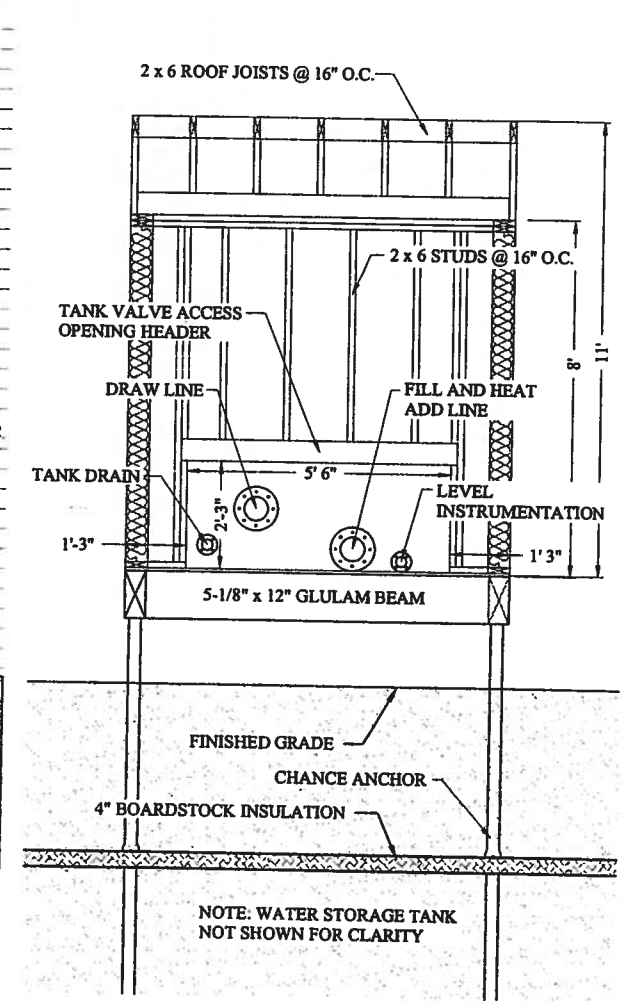
3 C17 WEST WALL FRAMING ELEVATION
SCALE: AS SHOWN



4 C17 NORTH WALL FRAMING ELEVATION
SCALE: AS SHOWN



5 C17 SOUTH WALL FRAMING ELEVATION
SCALE: AS SHOWN



6 C17 EAST WALL FRAMING ELEVATION
SCALE: AS SHOWN

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VILLAGE SAFE WATER

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KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

VALVE HOUSE PLAN VIEW
& FRAMING DETAILS

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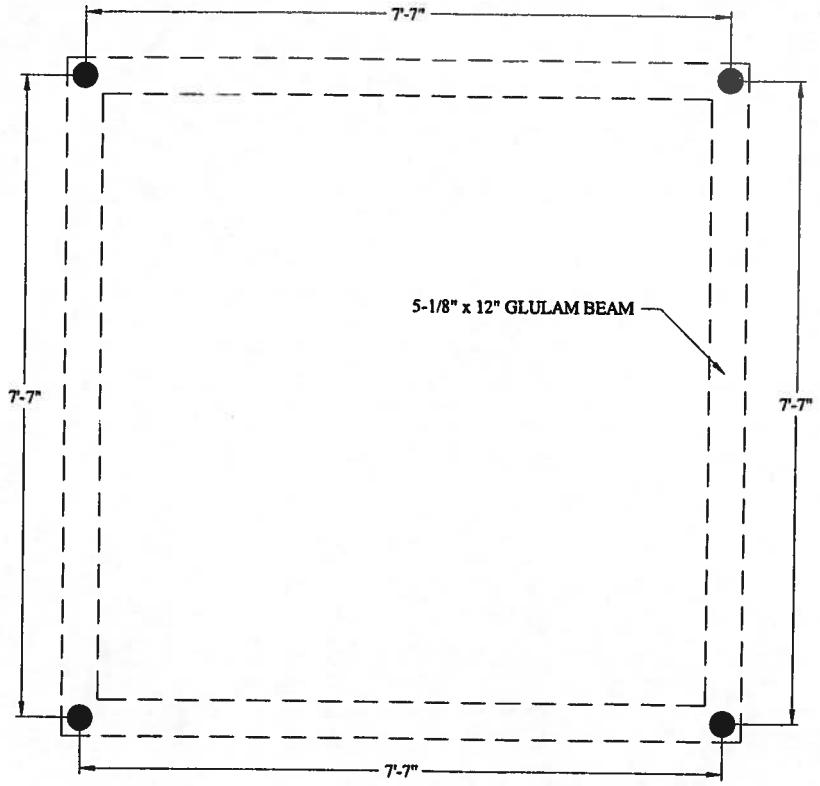
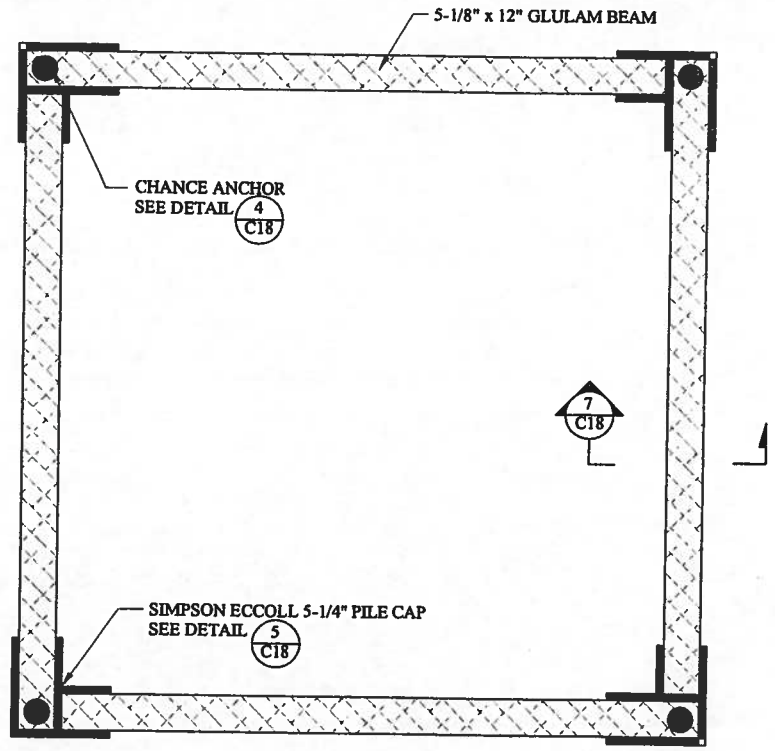
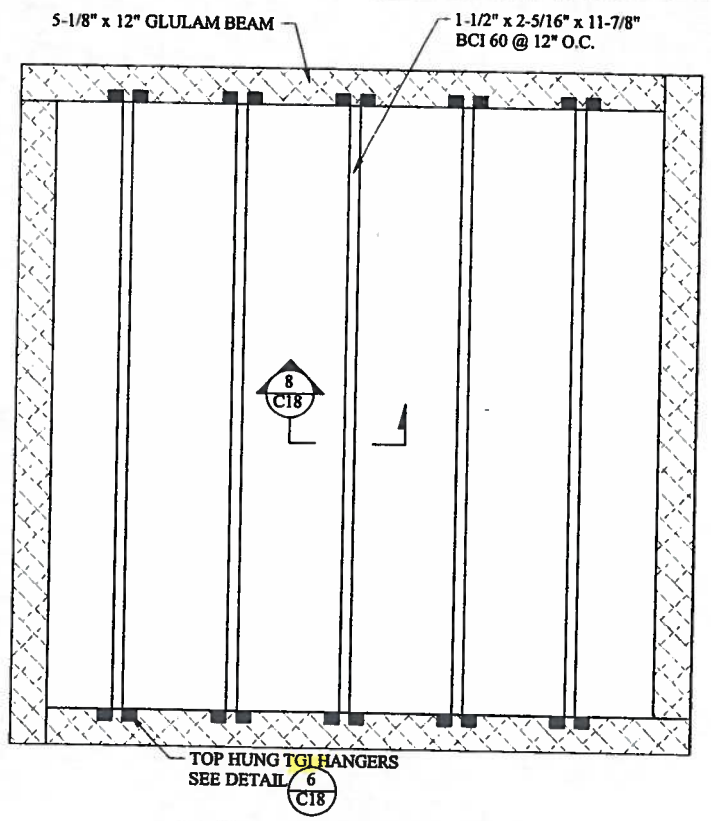


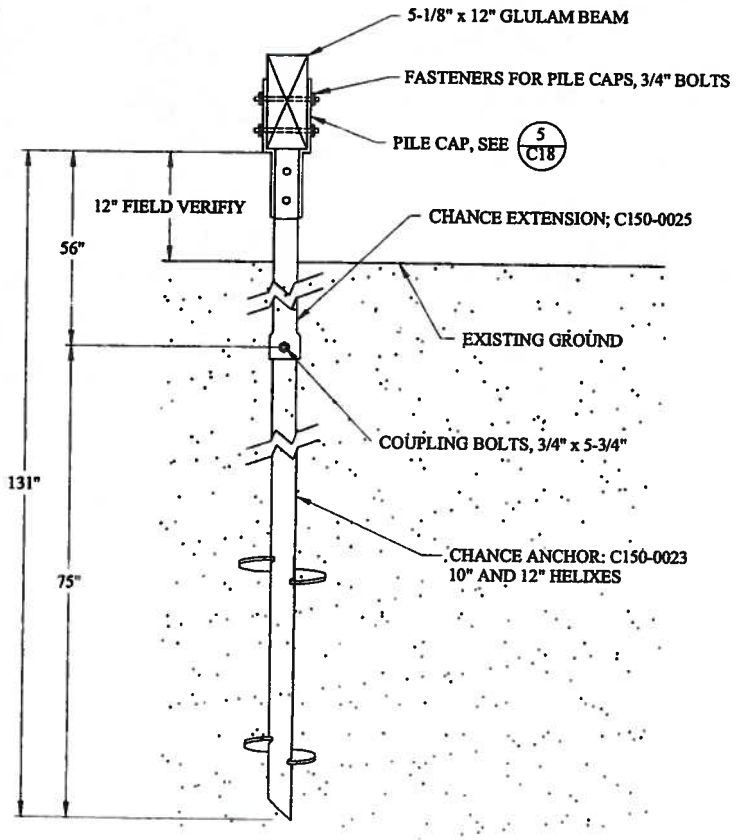
1/C18 PILE LOCATION
C18 NTS



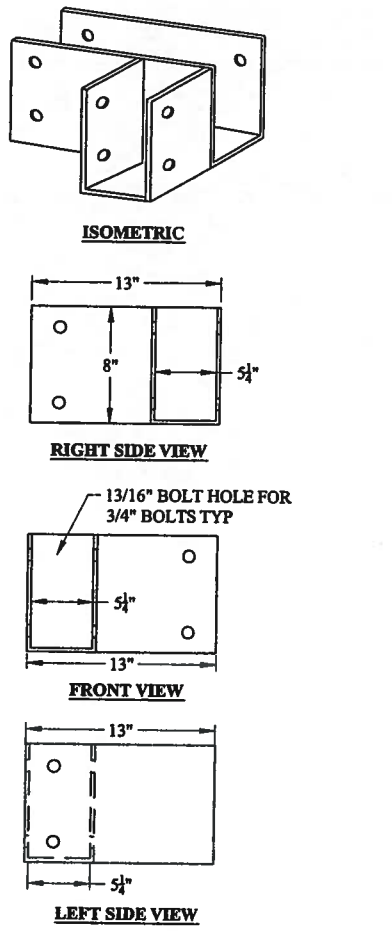
2/C18 FOUNDATION CONNECTION PLAN
C18 NTS



3/C18 FLOOR FRAMING PLAN
C18 NTS

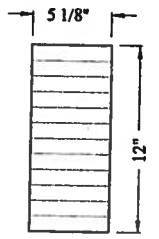


4/C18 CHANCE ANCHOR & BEAM CONNECTION
C18 NTS

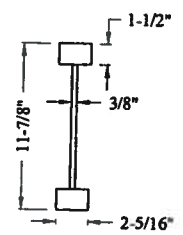


5/C18 SIMPSON ECCOLL 5-1/4" PILE CAP
C18 NTS

6/C18 TOP HUNG TGI HANGER
C18 NTS



7/C18 GLULAM BEAM CROSS SECTION
C18 NTS



8/C18 BCI 60 FLOOR JOIST CROSS SECTION
C18 NTS

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KONGIGANAK
WATER STORAGE TANK
REPLACEMENT

VALVE HOUSE FOUNDATION
LAYOUT & DETAILS

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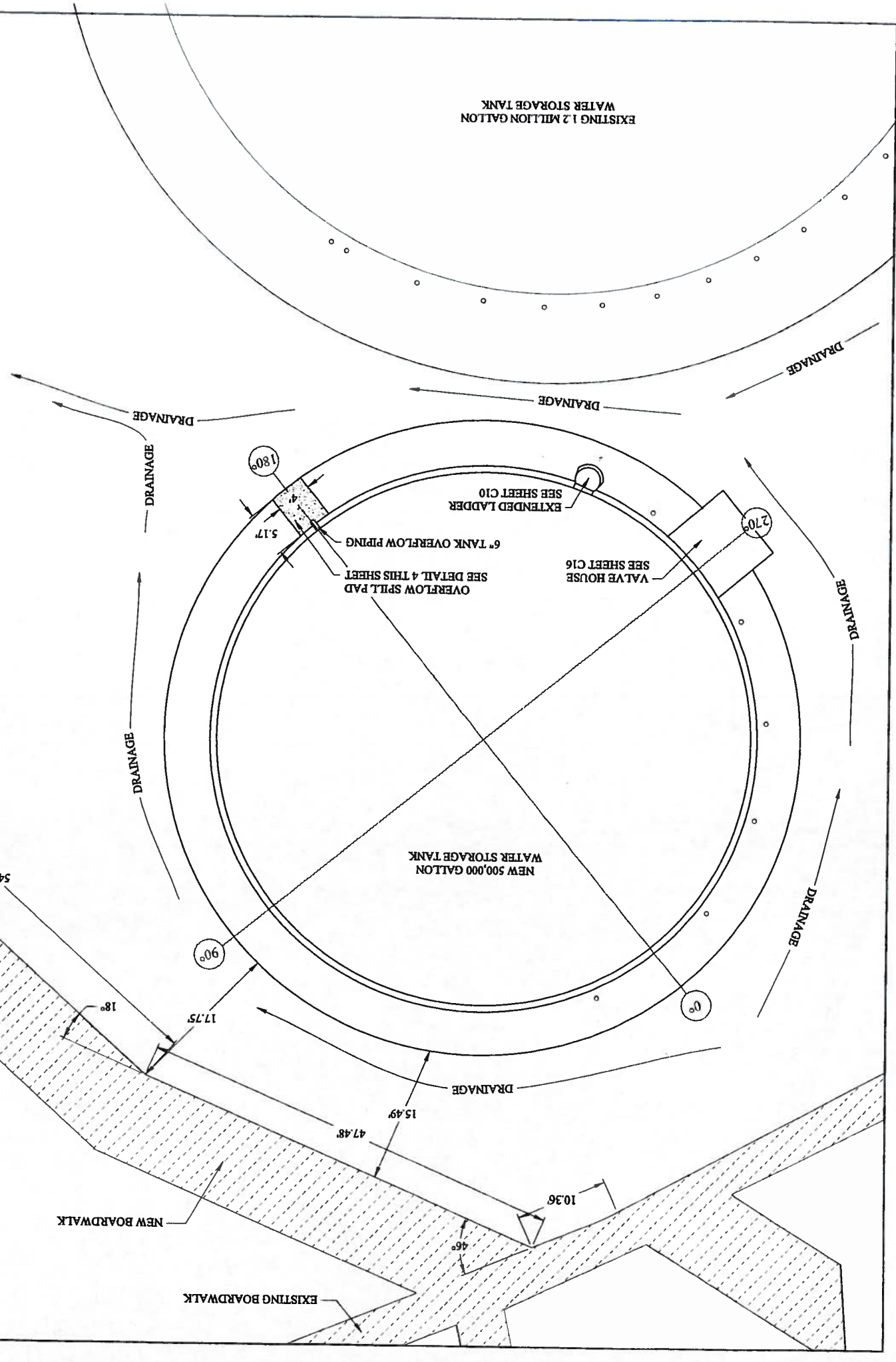
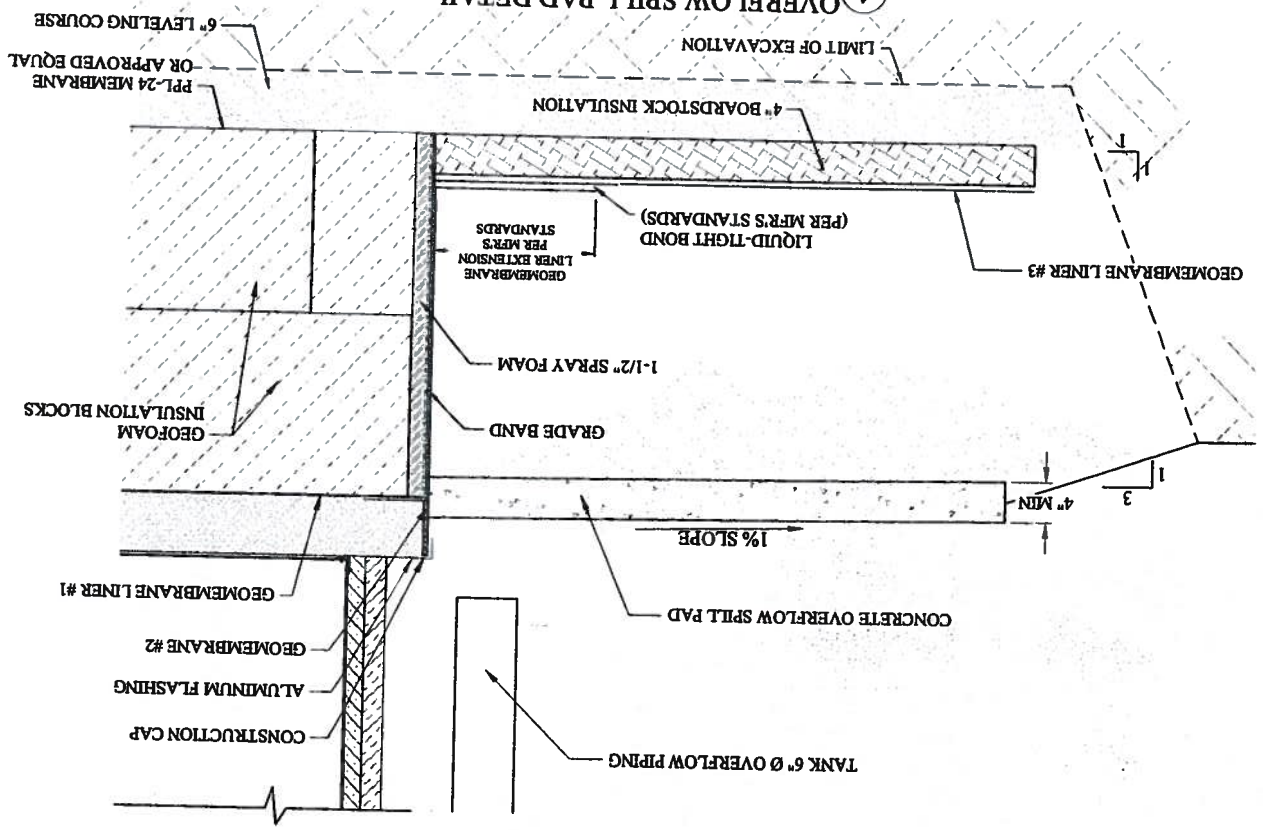
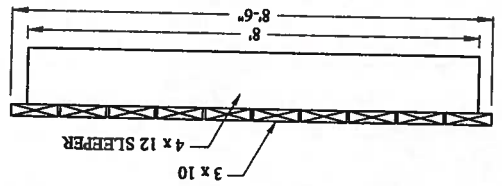
User: Rory Bryant Date/Time: 4/23/2010 11:31 AM Plot Style: Monochrome.ctb
Drawing: S:\CAD\Projects\Kongiganak\Water Storage Tank\95%\C18 - VALVE HOUSE FOUNDATION.DWG Sheet: C9



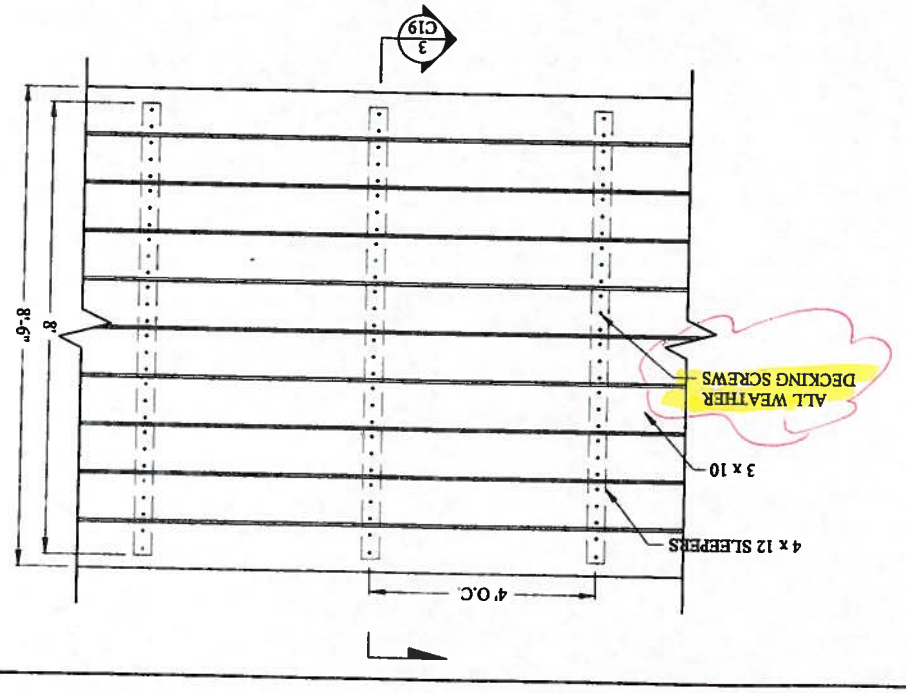
OVERFLOW SPILL PAD DETAIL
C19 4 NTS



TYPICAL BOARDWALK CROSS SECTION
C19 3 NTS



TYPICAL BOARDWALK DETAIL
C19 2 NTS



KONGIGANAK WATER STORAGE TANK REPLACEMENT

BOARDWALK & TANK OVERFLOW DETAILS

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