

CHEFORNAK WATER AND SEWER UTILITY

1999

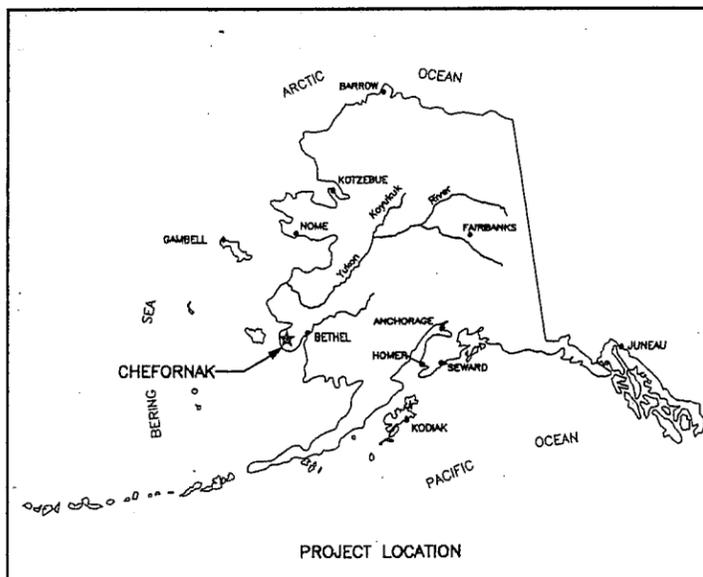
PLUMBING AND RELATED WATER AND WASTEWATER IMPROVEMENTS TO IMPLEMENT TANK HAUL UTILITY SERVICE

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

ISSUED FOR ADEC APPROVAL 2/25/99

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Location Map

CE 2
CONSULTING ENGINEERS
ANCHORAGE, ALASKA

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

Construction Foreman GARRY BOWLEY
Final Design (Date) FEBRUARY 1999
ADEC Approval (Date) _____
Construction Period (From) 2/25/1999 (To) 7/1/1999
As-Built (Date) _____

SCOPE OF WORK

THIS PLAN SET ADDRESSES THE FIRST PHASE OF THE CONSTRUCTION OF A CLOSED TANK AND HAUL SYSTEM FOR WATER AND SEWER SERVICES TO THE COMMUNITY. TEN RESIDENCES, THE COMMUNITY CLINIC AND THE CITY OFFICE COMPLEX WILL RECEIVE THESE IMPROVEMENTS.

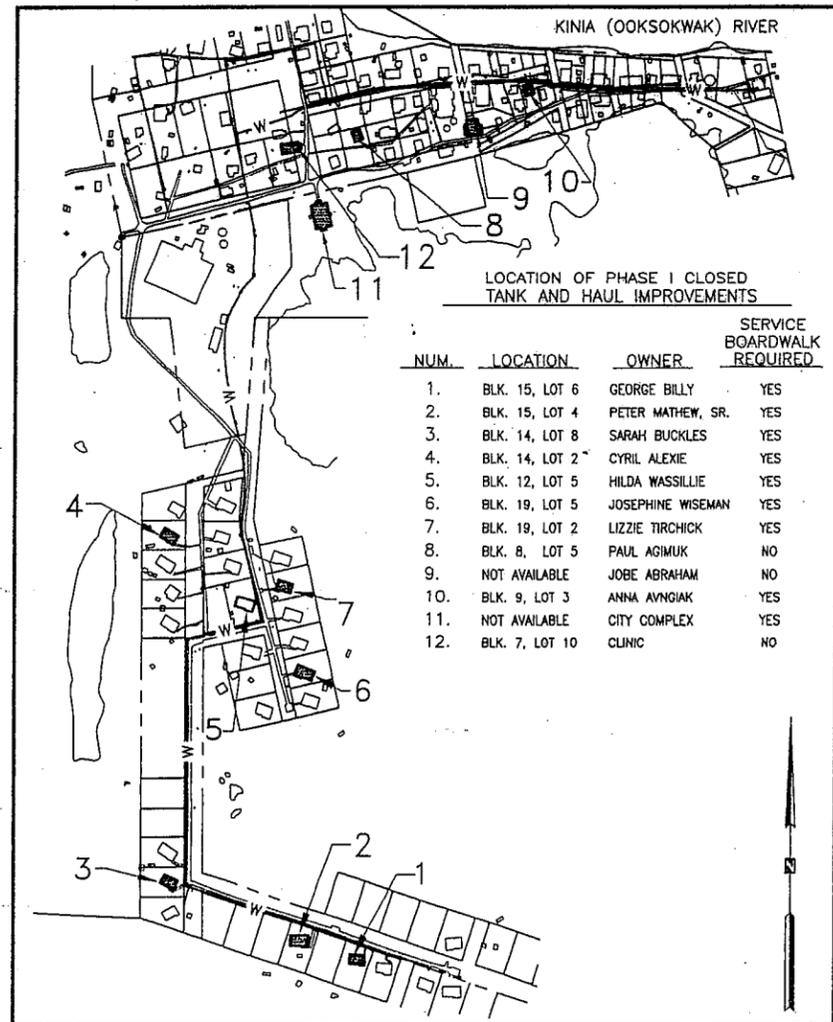
IN GENERAL THESE IMPROVEMENTS INCLUDE:

- 100 GALLON POTABLE WATER HOLDING TANK INSTALLED WITHIN THE HEATED STRUCTURE
- 3.5 GALLON PER MINUTE WATER PRESSURE PUMP AND HYDROCELL
- 1.5 GALLON POINT-OF-USE ELECTRIC WATER HEATER
- LAVATORY SINK, LOW WATER USE FAUCET AND VANITY (IF REQUIRED)
- LOW WATER USE TOILET (0.5 GALLON PER FLUSH)
- 120 GALLON INSULATED WASTEWATER HOLDING TANK INSTALLED ABOVE GROUND OUTSIDE THE BUILDING
- CONTROL AND TANK LEVEL MONITORING EQUIPMENT
- ON PROPERTY BOARDWALK IMPROVEMENTS TO ACCESS THE WATER FILL PORT AND SEWAGE HOLDING TANK FOR EACH UNIT
- TANKER STYLE WATER DELIVERY AND PUMP OFF EQUIPMENT
- TANKER STYLE WASTEWATER WITHDRAWAL AND TRANSPORT EQUIPMENT

CONSTRUCTION WORK IS TO BE DONE BY FORCE ACCOUNT, USING LOCAL LABOR AND IS SCHEDULED FOR WINTER AND SPRING, 1999.

GENERAL NOTES

- PRIOR TO STARTING CONSTRUCTION AT ANY SITE CONTRACTOR SHALL:
 - OBTAIN ALL REQUIRED SIGNATURES ON HOMEOWNER AGREEMENT FORMS TO BE SUPPLIED BY THE CHEFORNAK UTILITY BOARD.
 - FIELD VERIFY THE FLOOR PLANS SHOWN ON THESE DRAWINGS AND ADVISE THE ENGINEER IF CHANGES ARE REQUIRED.
 - FIELD VERIFY THE SUITABILITY OF THE PROPOSED LOCATION FOR THE WATER AND SEWAGE HOLDING TANKS AND ADVISE THE ENGINEER IF CHANGES ARE REQUIRED.
 - COORDINATE THE LOCATION OF THE SERVICE ACCESS BOARDWALK WITH THE HOMEOWNER.
- ALL CONSTRUCTION SHALL BE DONE IN A WORKMANLIKE MANNER, TO INDUSTRY STANDARDS AND IN CONFORMANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A CLEAN SET OF DRAWINGS SHOWING AS-BUILT INFORMATION. DRAWINGS SHALL BE KEPT CURRENT IN RED PENCIL ON A DAILY BASIS IN A NEAT, LEGIBLE FASHION. AS-BUILT DRAWINGS AND MANUFACTURER'S LITERATURE FROM INSTALLED EQUIPMENT SHALL BE GIVEN TO THE ENGINEER AT THE END OF THE PROJECT.
- ALL DOMESTIC WATER PIPING SHALL BE INSTALLED AS SPECIFIED. WHEN "WIRTSBO" PIPING SYSTEM COMPONENTS ARE CALLED OUT, USE ONLY "WIRTSBO" PARTS INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION PROCEDURES. SEE SHEETS M-1, M-3 AND M-4 FOR PLUMBING DETAILS.
- HYDROSTATIC TEST ALL DOMESTIC WATER PIPING. FILL ALL PIPING WITH WATER AND REMOVE AIR PRIOR TO STARTING THE TEST. PRESSURIZE TO 100 PSI AND LEAVE FOR 1-HOUR. AFTER THE INITIAL PERIOD, ADD WATER TO BRING THE PRESSURE TO 100 PSI AND BEGIN A 1-HOUR TEST. THERE SHALL BE NO LOSS IN PRESSURE DURING THE 1-HOUR TEST FOR THE PIPING TO BE ACCEPTED. PRESSURE TEST SHALL BE WITNESSED BY A REPRESENTATIVE OF THE UTILITY BOARD.
- DISINFECT THE POTABLE WATER SYSTEM AFTER CONSTRUCTION AND PRIOR TO USE. FILL THE WATER HOLDING TANK WITH 100 GALLONS OF POTABLE WATER. ACTIVATE THE PRESSURE SYSTEM AND CHARGE THE WATER SYSTEM COMPONENTS (WATER HEATER, TOILET, HOT AND COLD WATER LINES). ADD 25 FLUID OUNCES OF CHLORINE BLEACH (5.25% AVAILABLE CHLORINE) TO THE WATER STORAGE TANK AND MIX WITH A CLEAN PADDLE. OPEN ALL TAPS AND FLUSH THE TOILET UNTIL THE CHLORINE SOLUTION IS PRESENT AT ALL PORTALS. CLOSE TAPS AND ALLOW THE CHLORINE SOLUTION TO CONTACT ALL INTERIOR SURFACES OF THE POTABLE WATER SYSTEM FOR A MINIMUM OF 3 HOURS. AT THE END OF THE CONTACT PERIOD DRAW APPROXIMATELY 1 QUART OF WATER FROM THE COLD WATER TAP AT THE LAVATORY AND DISCARD. TEST THE NEXT 2 OUNCE DRAW FROM THE COLD WATER TAP TO CONFIRM THAT AT LEAST 50 mg/l OF FREE CHLORINE RESIDUAL REMAINS AFTER THE 3 HOURS OF CONTACT. IF LESS THAN 50 mg/l OF FREE CHLORINE RESIDUAL REMAINS, SPIKE THE WATER TANK WITH AN ADDITIONAL 25 FLUID OUNCES OF CHLORINE BLEACH, "TURN-OVER" THE FLUID IN THE SYSTEM AND REPEAT THE TEST UNTIL A MINIMUM OF 50 mg/l OF RESIDUAL IS PRESENT AT THE END OF THE 3 HOUR CONTACT PERIOD. AFTER THE COMPLETION OF THE TEST DISCHARGE THE CONTENTS OF THE WATER HOLDING TANK THROUGH THE TANK DRAIN TO THE GROUND BELOW THE HOUSE OR THROUGH THE COLD WATER TAP ON THE LAVATORY TO THE WASTEWATER HOLDING TANK. EMPTY THE WATER HOLDING TANK COMPLETELY. RECHARGE THE WATER HOLDING TANK WITH 100 GALLONS OF POTABLE WATER. FLUSH THE TOILET AND OPEN ALL TAPS UNTIL A CHLORINE ODOR IS NO LONGER DETECTED AT EACH PORTAL. HAVE THE UTILITY BOARD REPRESENTATIVE WITNESS AND SIGN OFF ON THE SUCCESSFUL DISINFECTION OF THE SYSTEM. ADVISE THE CUSTOMER THAT THE SYSTEM IS READY FOR USE.



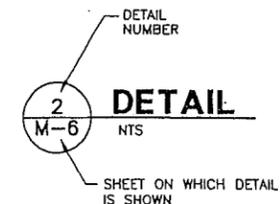
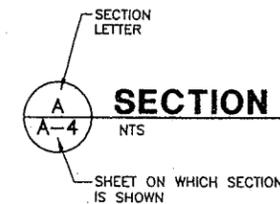
KEY MAP

SCALE: 1" = 250'

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		NEW INSULATED PARTITION WALL (2x4 @ 16" O.C. WITH 1/2" TEXTURED SHEET ROCK OR 1/4" BIRCH PANELING EACH SIDE (MATCH EXISTING). USE R-13 FIBERGLASS INSULATION.
		NEW TOILET
		NEW SINK
		PUMP, PRESSURE TANK MODULE
		ELECTRICAL PANEL
		TUB (TO BE PLUMBED ONLY IF REQUESTED BY THE HOMEOWNER AND APPROVED BY THE CHEFORNAK UTILITY BOARD)
		KITCHEN SINK (TO BE PLUMBED ONLY IF REQUESTED BY THE HOMEOWNER AND APPROVED BY THE CHEFORNAK UTILITY BOARD)
		RANGE / OVEN
		BOILER
		WATER TANK
		WASTEWATER HOLDING TANK
		POINT-OF-USE WATER HEATER
		BUILDING/ STRUCTURE SCHEDULED TO RECEIVE CLOSED TANK AND HAUL IMPROVEMENTS
		BUILDING/ STRUCTURE
		BOARDWALK
		GENERAL ROUTING OF WATER FILL LINE
		GENERAL ROUTING OF DRAIN LINE
		PROPERTY LINE
		BLOCK LINE
		15" ABOVE GROUND WATERMAIN
		BLOCK NUMBER
		UTILITY POLE
		WATERING POINT
		WATERMAIN JUNCTION BOX

SECTION AND DETAIL DESIGNATIONS



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

SCALE: AS SHOWN
THIS IS THE BEST COPY OF ORIGINAL DRAWING.
DATE: 11/1/99
NAME: [Signature]
TITLE: [Title]

CONSTRUCTION RECORD
FIELD BOOK
STARTING: [Date]
FOREMAN: [Name]
AS-BUILT: [Name]
INSPECTOR: [Name]



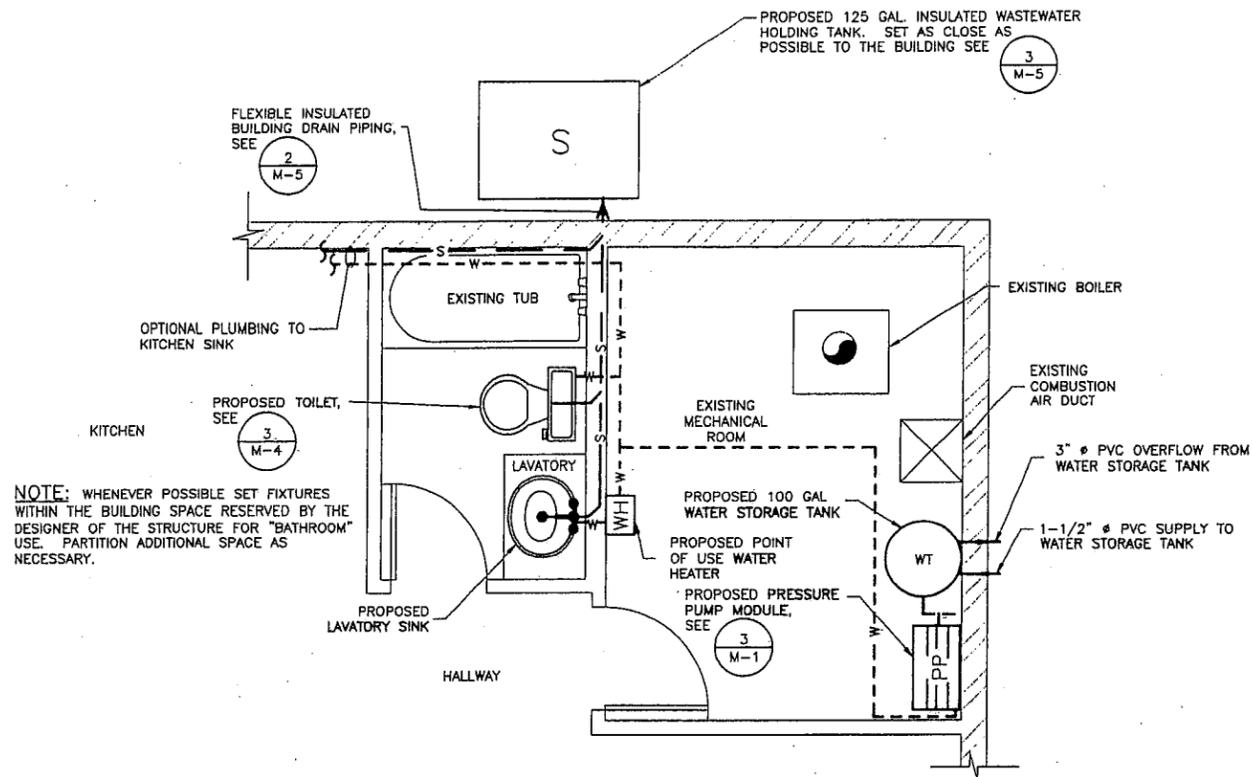
CLOSED TANK AND HAUL SYSTEM CONSTRUCTION
GENERAL NOTES, LEGEND AND KEY MAP
CHEFORNAK, ALASKA

CE2 ENGINEERS, INC.
ANCHORAGE, ALASKA

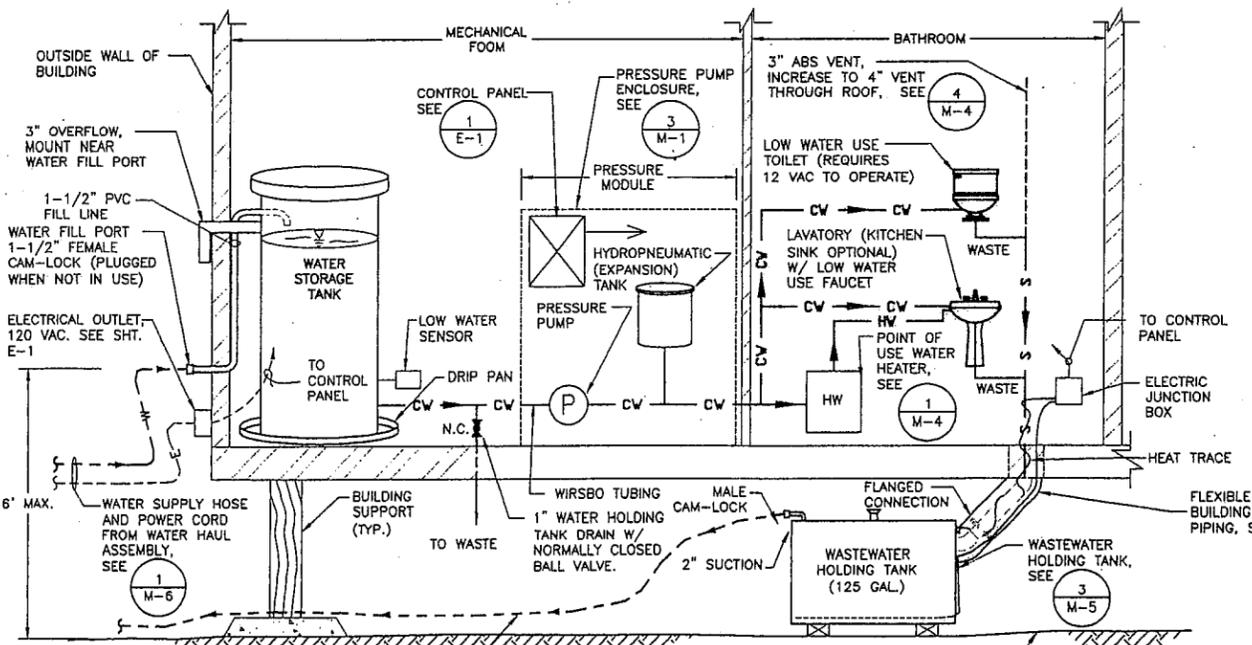
REVISION	BY	DATE

Project No.	Date	Designed	LAP	Drawn	ELR	Approved	CLE
	FEB. 1999						

Sheet No. **G-1**
SHEET 2 OF 12



1 TYPICAL PLUMBING LAYOUT
M-1 NTS



- NOTES**
- FOR DETAILED MECHANICAL FLOOR PLAN SEE SHEETS M-2 AND M-3.
 - LOCATE WATER FILL AND SEWAGE HOLDING TANK WHERE ACCESSIBLE BY MAINTENANCE PERSONNEL FROM SERVICE ACCESS BOARDWALK

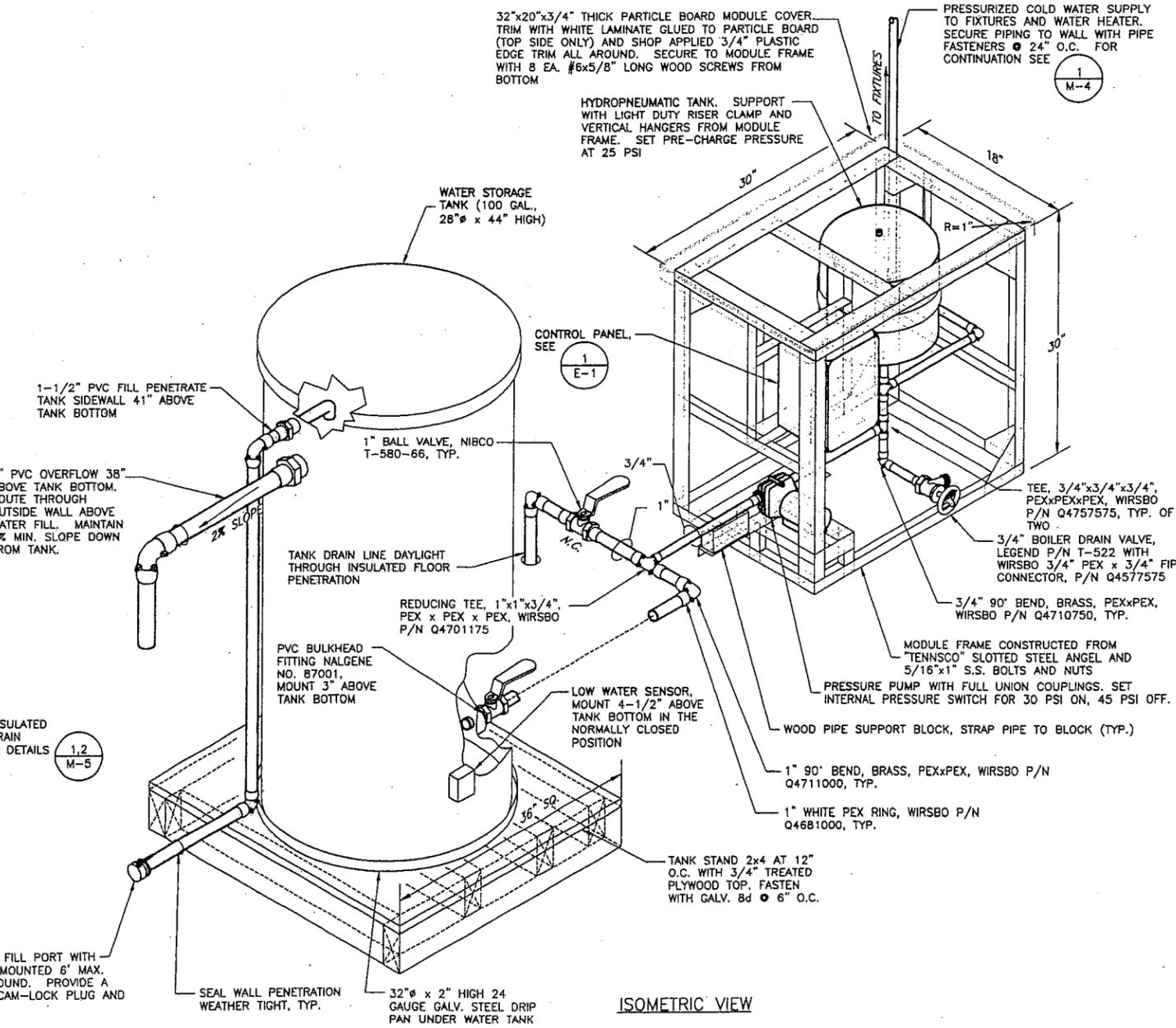
2 PLUMBING IMPROVEMENTS DIAGRAM
M-1 NTS

MATERIALS LIST

WATER STORAGE TANK	100 GALLON, 28" x 44" HIGH, COVERED HDPE TANK, NALGENE P/N 11100-0100
LOW WATER SENSOR	LIQUID LEVEL SWITCH, MADISON P/N M8755
PRESSURE PUMP	3.5 GPM, 30 - 45 PSI, 12 VDC, IIT "JABSCO, PAR-MAX3", P/N 30600-0012 W/ INTERNAL PRESSURE SWITCH
HYDROPNEUMATIC TANK	POTABLE WATER (NSF APPROVED) HYDROCELL EXPANSION TANK, 2 GAL. ACCEPTANCE, AMTROL WELL-X-TROL MOD. WX-102
WATER HEATER	POINT OF USE WATER HEATER, 120 VAC, 1350 WATTS, ARISTON MOD. P10S
LAVATORY SINK	KILGORE P/N 2018C/302, LAVATORY WHITE
FAUCET (LOW WATER USE)	SINGLE HANDLE, CHROME KNOB AND METAL WASTE. MOEN "CHATEAU", SERIES 4821
TOILET	LOW WATER USE, 0.5 GAL. PER FLUSH, 12 VDC, 1.2 AMPS, MICROPHOR MOD. LF-220 W/ "ODER SHUT-ER" P/N 40052-3
JUNCTION BOX	4" x 4" EXTERIOR: NEMA 4X, INTERIOR: NEMA 1R
HEAT TRACE	8 WATTS PER FOOT, SELF LIMITING, 120 VAC, RAYCHEM P/N BXL-1-CT
HOT/ COLD WATER TUBING	CROSS-LINKED POLYETHYLENE TUBING, WIRSBO P/N F1060<PIPE SIZE> WITH WIRSBO BRASS FITTINGS AND "PEX" SUPPORT RINGS.

LEGEND

---	S	---	ABS DWV DRAIN PIPING
---	W	---	PVC WATER TANK FILL AND OVERFLOW
---	W	---	WATER SUPPLY TUBING (HOT AND COLD)
---	CW	---	COLD WATER TUBING
---	HW	---	HOT WATER TUBING



3 TYPICAL WATER TANK AND PRESSURE PUMP MODULE PIPING
M-1 NTS

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SCALE: AS NOTED

CONSTRUCTION RECORD

FIELD BOOK

STARTING

FOREMAN

AS-BUILT

INSPECTOR

STATE OF ALASKA

48181

REGISTERED PROFESSIONAL ENGINEER

WATER SYSTEM DETAILS

CHEFORNAK, ALASKA

ANCHORAGE, ALASKA

CE2 ENGINEERS, INC.

REVISION	DATE

Project No. FEB. 1999

Date: FEB. 1999

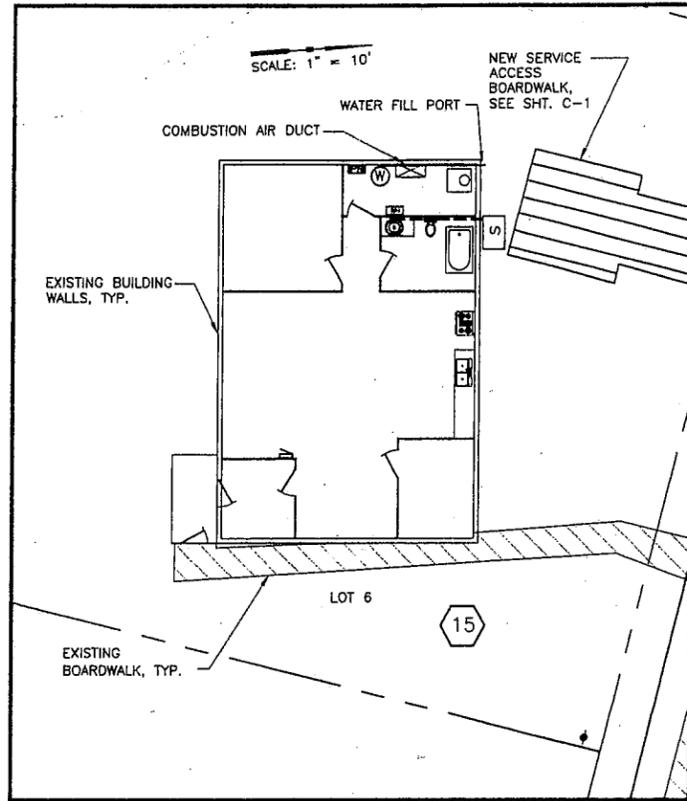
Designed: LAP

Drawn: D-J.W.

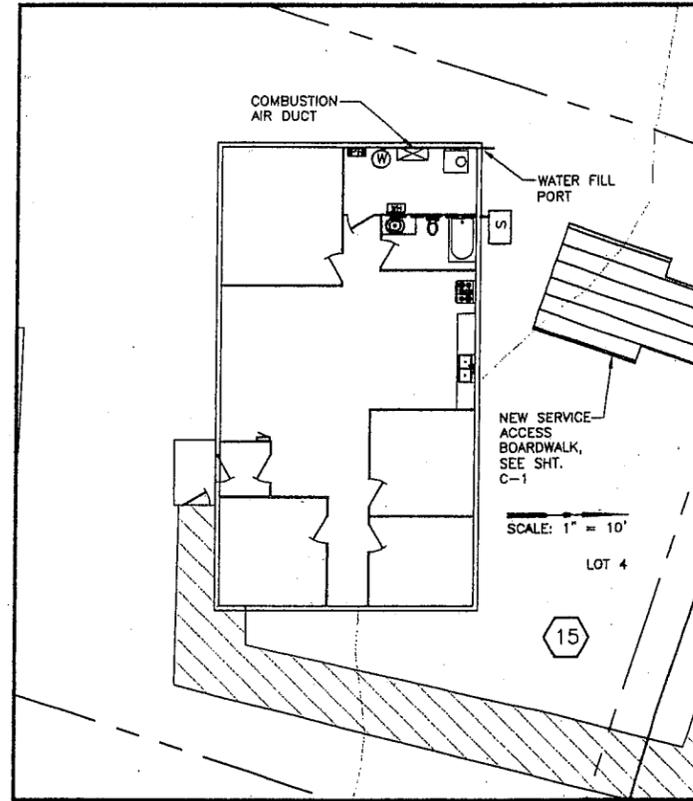
Approved: GLE

Sheet No. M-1

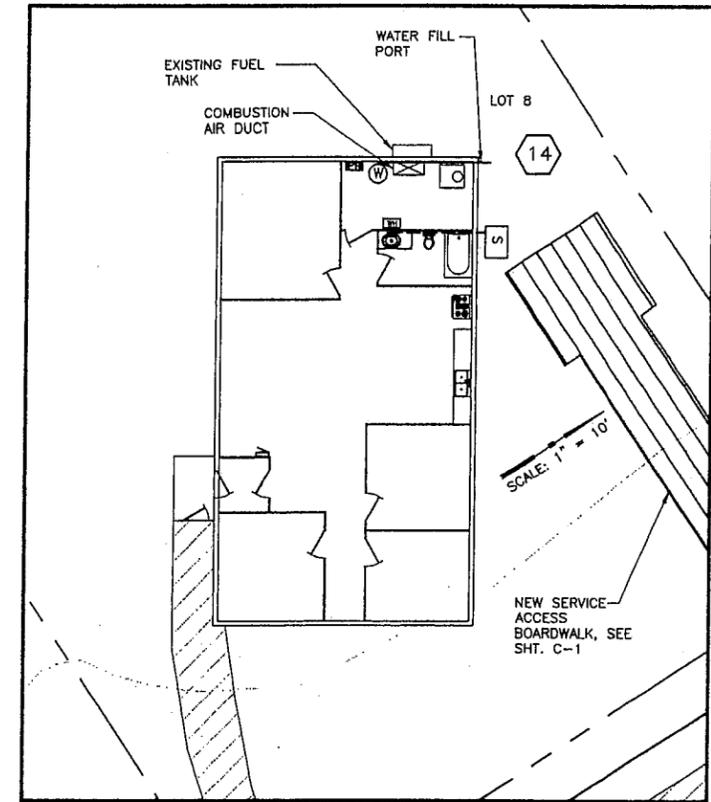
SHEET 3 OF 12



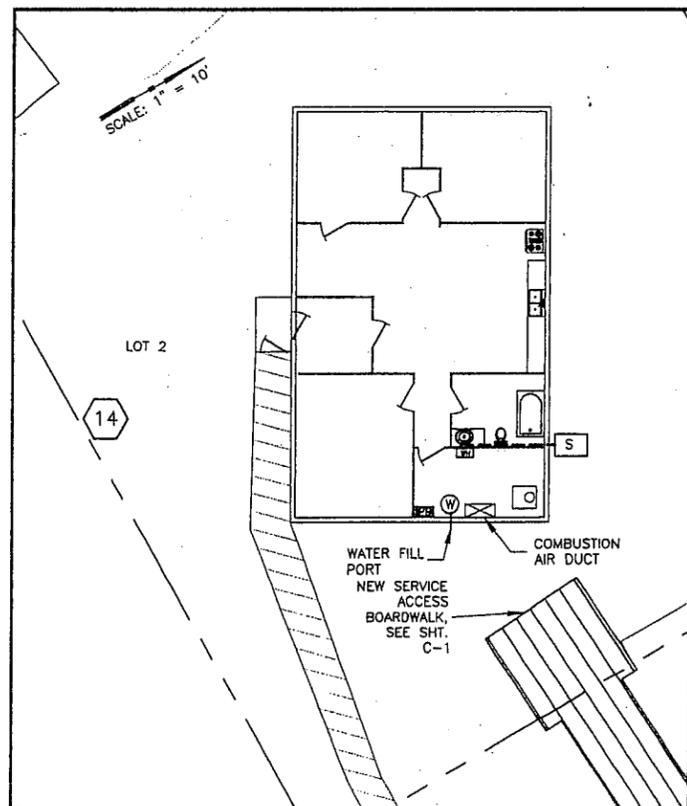
HOME NO. 1: GEORGE BILLY - BLOCK 15, LOT 6



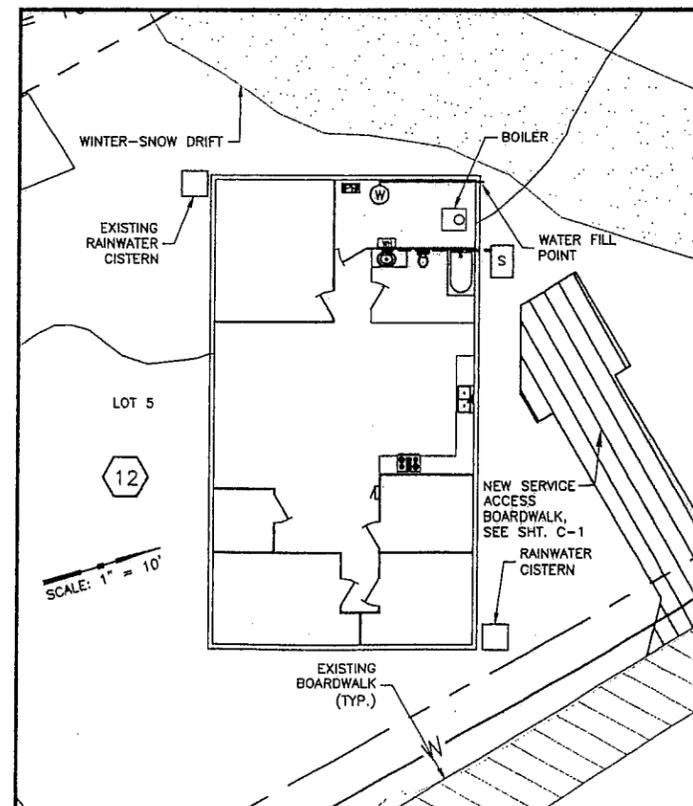
HOME NO. 2: PETER MATHEW, SR. - BLOCK 15, LOT 4



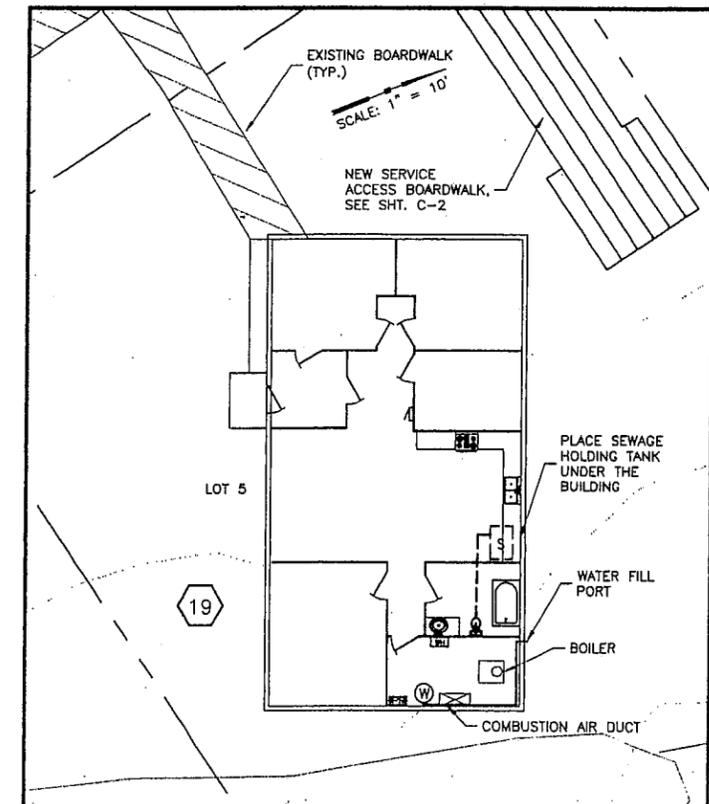
HOME NO. 3: SARAH BUCKLES - BLOCK 14, LOT 8



HOME NO. 4: CYRIL ALEXIE - BLOCK 14, LOT 2



HOME NO. 5: HILDA WASSILLIE - BLOCK 12, LOT 5



HOME NO. 6: JOSEPHINE WISEMAN - BLOCK 19, LOT 5

RECORD DRAWING CERTIFICATE

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NAME _____ DATE _____

SCALE: 1" = 10'

CONSTRUCTION RECORD

FIELD BOOK _____

STAMPING _____

FOREMAN _____

AS-BUILT _____

INSPECTOR _____

STATE OF ALASKA

REGISTERED PROFESSIONAL ENGINEER

4931

PLUMBING

FLOOR PLANS

CHEFORKNAK, ALASKA

CLOSED TANK AND HAUL SYSTEM CONSTRUCTION

CE2 ENGINEERS, INC.

ANCHORAGE, ALASKA

REVISION	BY	DATE

Project No. _____ Date FEB. 1999

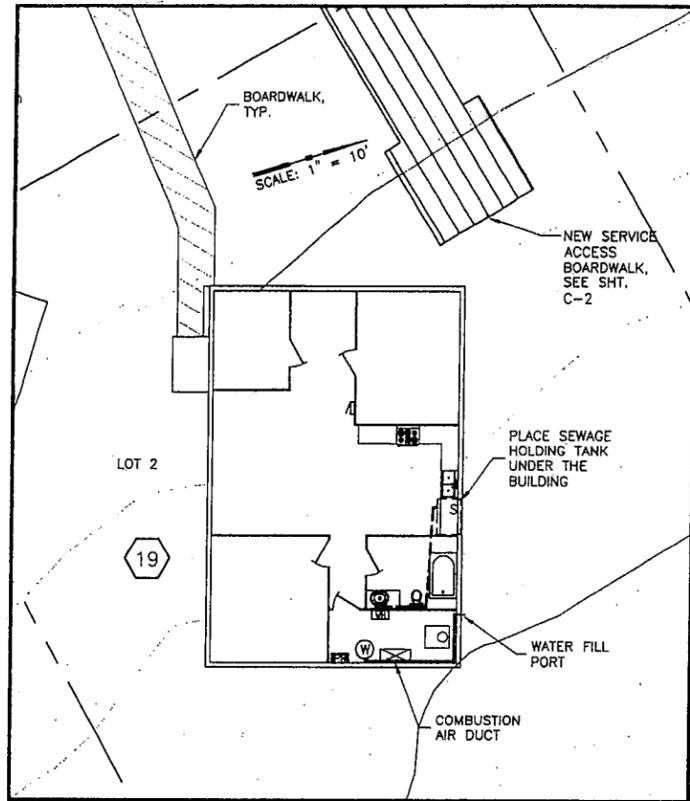
Designed LAP

Drawn D-J.W.

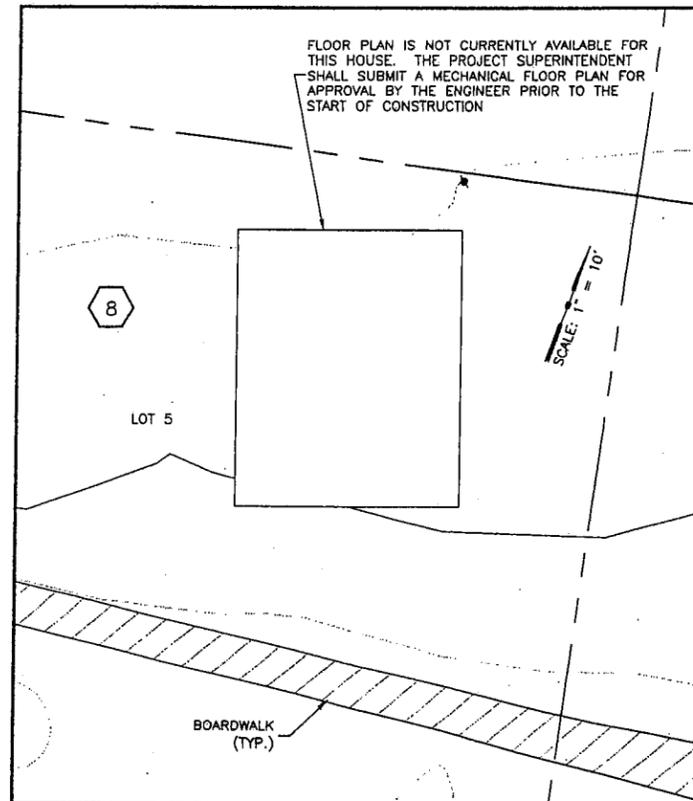
Approved CLE

Sheet No. M-2

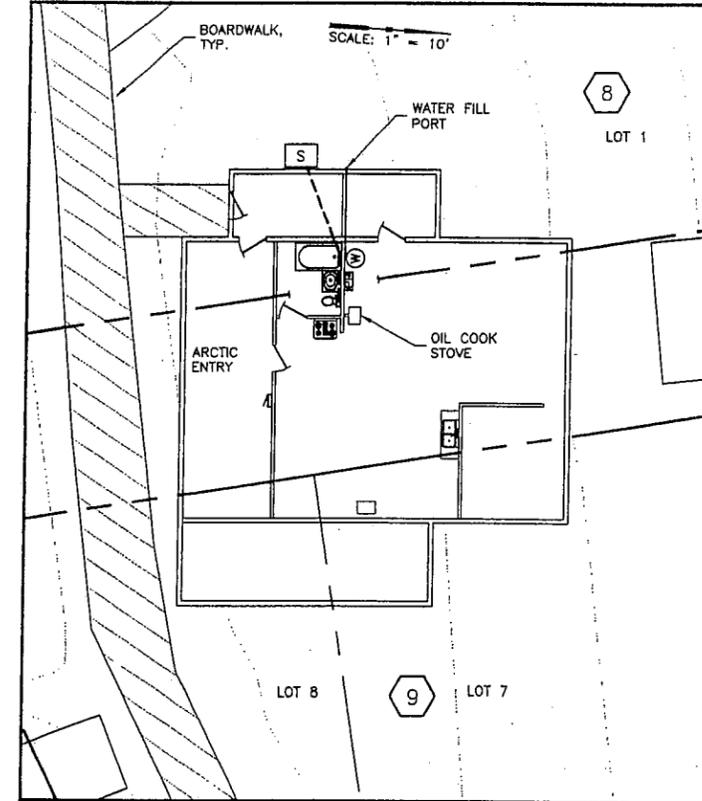
SHEET 4 OF 12



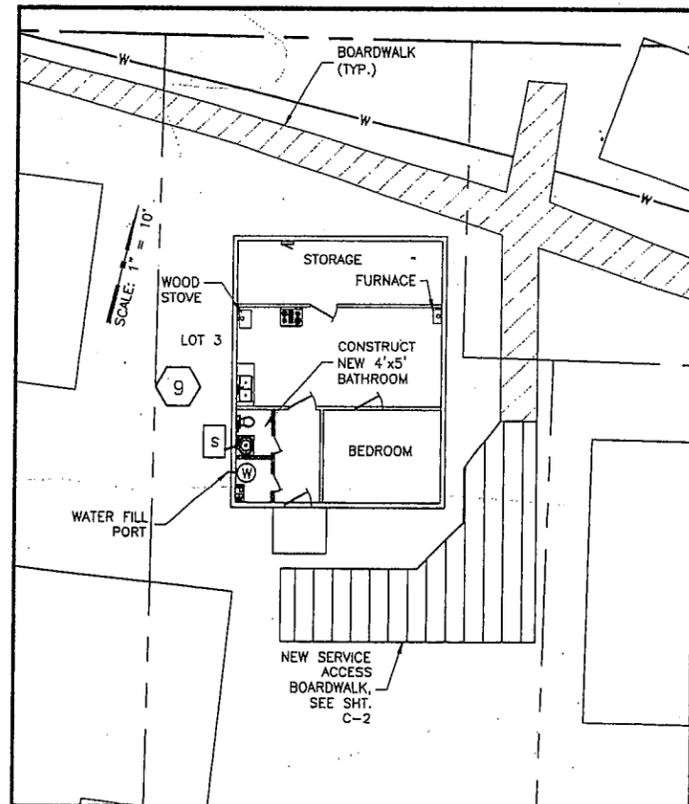
HOME NO. 7: LIZZIE TIRCHICK - BLOCK 19, LOT 2



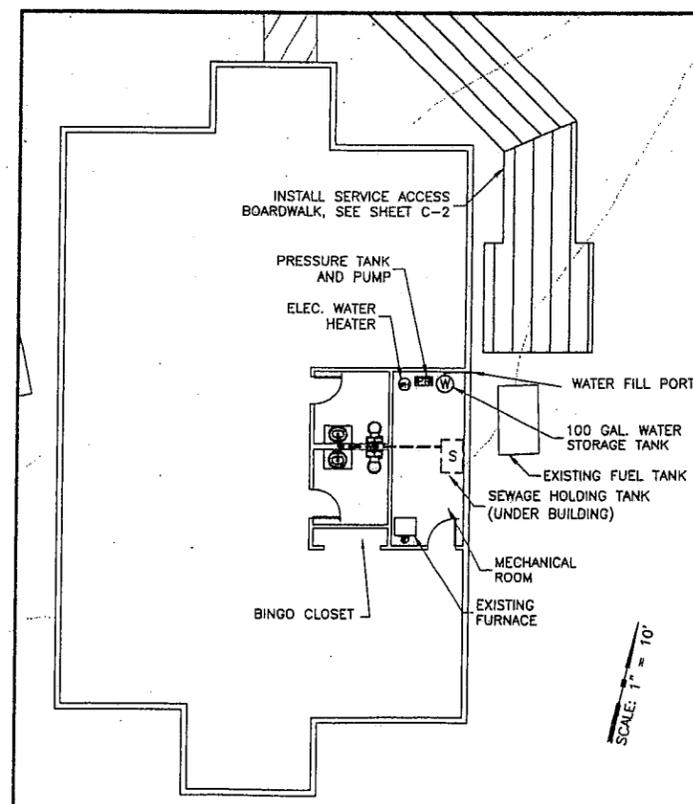
HOME NO. 8: PAUL AGUMUK - BLOCK 8, LOT 5



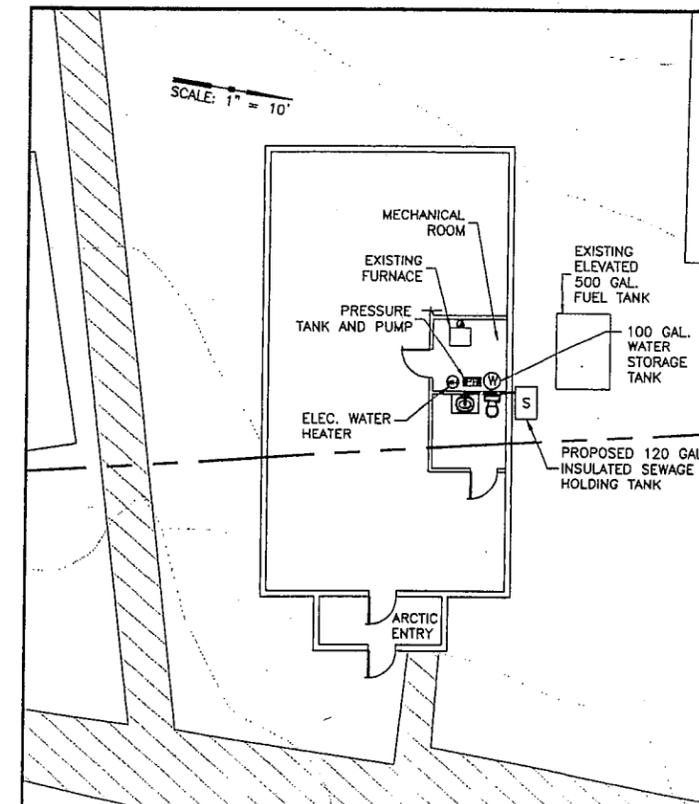
HOME NO. 9: JOBE ABRAHAM



HOME NO. 10: ANNA AVNGIAK - BLOCK 9, LOT 3



CITY OFFICE COMPLEX
(LOCATED ON CHEFARNMUTE CORP. PROPERTY NO BLOCK OR LOT AVAILABLE)



CLINIC BUILDING: BLOCK 7, LOT 10

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SCALE: AS NOTED
SCALE IS ONE INCH TO ONE FOOT UNLESS OTHERWISE NOTED
IF NOT ONE INCH TO ONE FOOT THE SCALES ACCORDINGLY

CONSTRUCTION RECORD
FIELD BOOK
STAMPING
FOREMAN
AS-BUILT
INSPECTOR



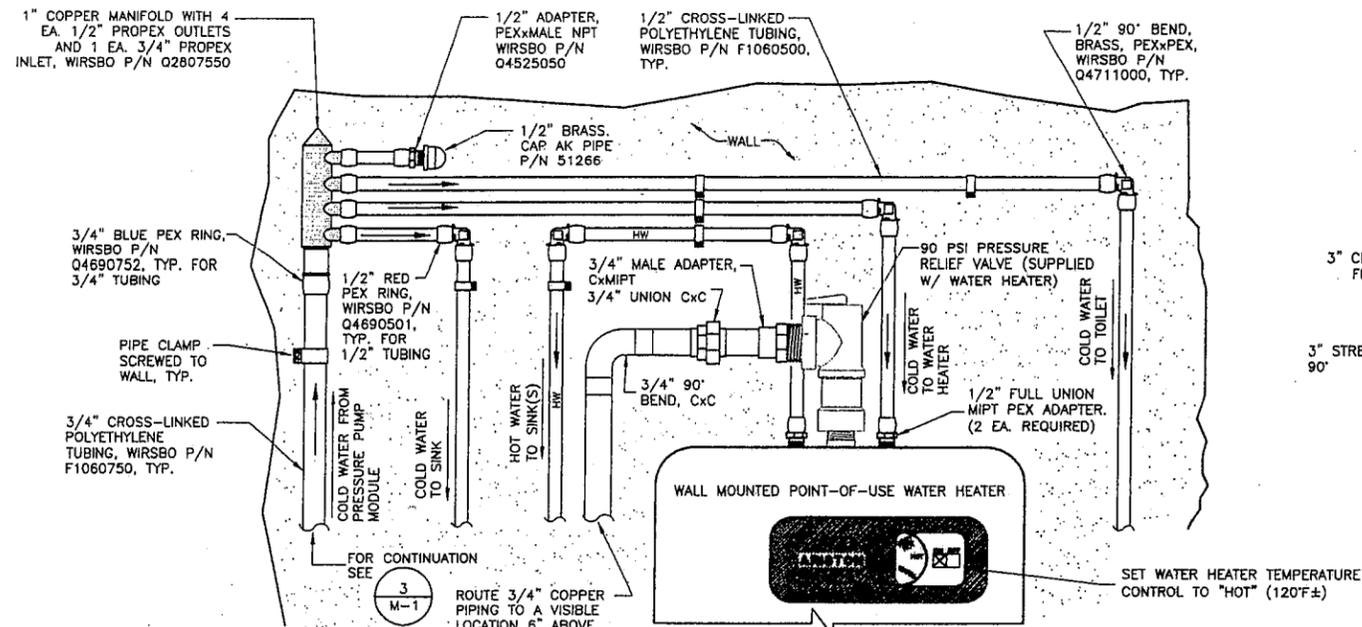
CLOSED TANK AND HAUL
SYSTEM CONSTRUCTION
PLUMBING
FLOOR PLANS
CHEFORKNAK, ALASKA

CE2
ENGINEERS,
INC.
ANCHORAGE, ALASKA

REVISION	BY	DATE

Project No. _____ Date FEB. 1999
Designed LAP
Drawn D-J.W.
Approved CLE

Sheet No. M-3
SHEET 5 OF 12

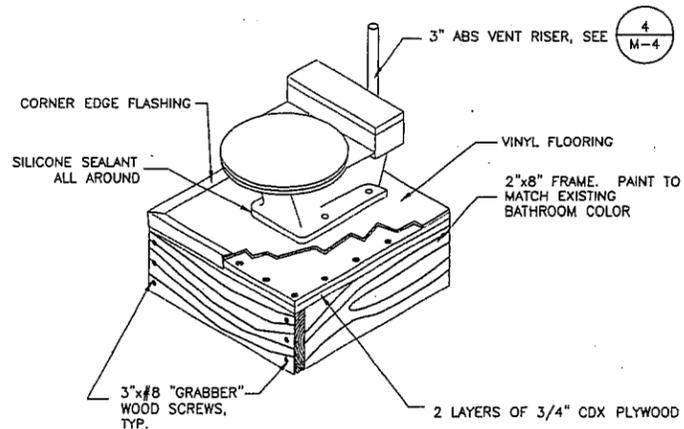


NOTES:

1. ALL PIPING SHALL BE SURFACE MOUNTED WITH LOW POINT DRAIN VALVES WHERE REQUIRED. SECURE PIPING WITH FASTENERS AT 24" O.C.
2. WHENEVER POSSIBLE, MOUNT THE HOT AND COLD WATER MANIFOLDS BEHIND THE LAVATORY IN THE MECHANICAL ROOM.
3. ISOLATION VALVES (ANGLE STOPS) SHALL BE PROVIDED AT EACH FIXTURE AS APPROPRIATE.

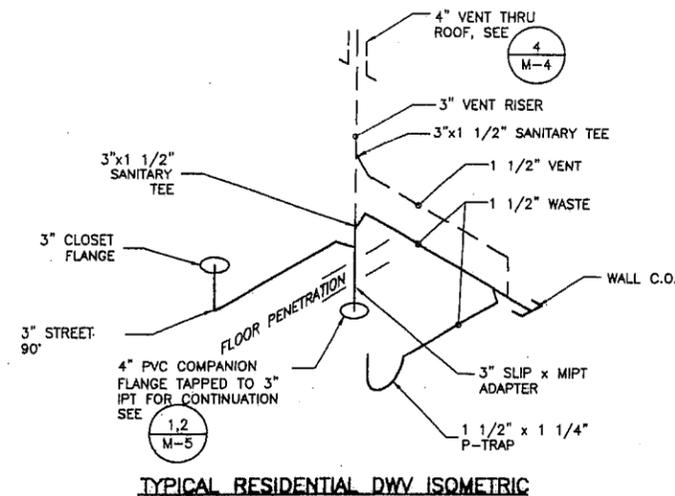
PROFILE VIEW OF WALL MOUNTED HOT AND COLD WATER PIPING MANIFOLD

1 M-4 NTS

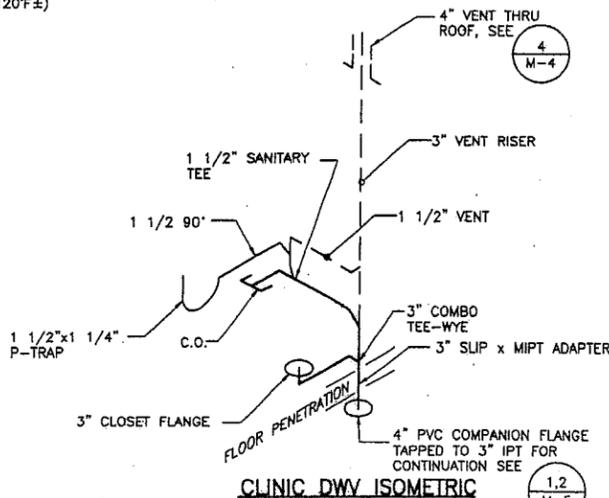


TOILET PLATFORM DETAIL

3 M-4 NTS

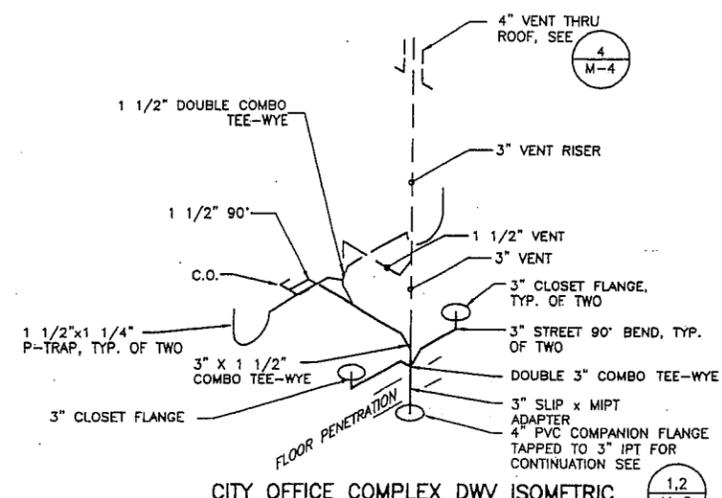


TYPICAL RESIDENTIAL DWV ISOMETRIC



CLINIC DWV ISOMETRIC

1.2 M-5



CITY OFFICE COMPLEX DWV ISOMETRIC

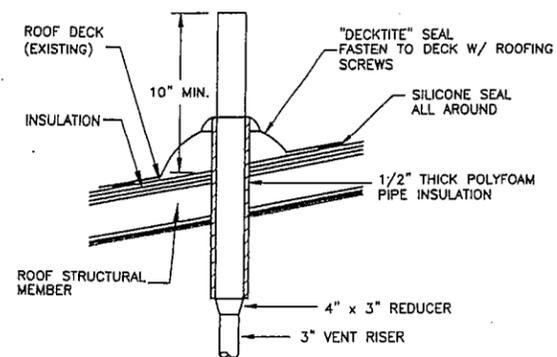
1.2 M-5

NOTES

1. ALL DRAIN PIPING SHALL BE ABS PLASTIC AND HAVE A MINIMUM 1/4" DROP PER 1'-0" OF RUN TOWARDS OUTLET AS SHOWN. ALL WORK SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE UNIFORM PLUMBING CODE AS ACCEPTED BY THE STATE OF ALASKA AND THE LOCAL BUILDING AUTHORITY.
2. ALL PIPING SHALL BE SCHEDULE 40 ABS PLASTIC. USE A MISSION TYPE FLEXIBLE COUPLING TO ADAPT SINK P-TRAP AND A CLOSET FLANGE ADAPTER WITH WAX SEAL TO CONNECT TO THE TOILET.
3. ALL VENT PIPING SHALL HAVE A MINIMUM 1/4" RISE PER 1'-0" RUN TOWARDS VERTICAL VENT.
4. ALL FLOOR AND WALL PENETRATIONS SHALL BE SEALED WITH FIBERGLASS INSULATION OR SPRAY FOAM.
5. ALL DRAIN PIPING SHALL BE TESTED PRIOR TO USE.

TEST PROCEDURE: 1) CAP ALL OPENINGS. 2) INSTALL A "RISER" 10' ABOVE THE HIGHEST FIXTURE TO BE TESTED. 3) FILL THE SYSTEM WITH WATER TO THE TOP OF THE "RISER". CHECK FOR ANY OBVIOUS LEAKS. 4) LET THE HYDROSTATIC WATER COLUMN REMAIN UNDISTURBED FOR A MINIMUM OF 12 HOURS. 5) IF THERE HAS BEEN NO DROP IN WATER LEVEL (I.E. NO LEAKS IN THE PIPING) THE PORTION TESTED HAS PASSED. ANY FAILED PORTION MUST BE REPAIRED AND RETESTED.

2 M-4 NTS DRAIN WASTE VENT PIPING DETAIL



4 M-4 NTS 4\"/>

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SCALE: NONE

DATE: _____

CONSTRUCTION RECORD

FIELD BOOK

STARTING _____

FOREMAN _____

AS-BUILT _____

INSPECTOR _____



CLOSED TANK AND HAUL SYSTEM CONSTRUCTION

WATER AND SWER SYSTEM DETAILS

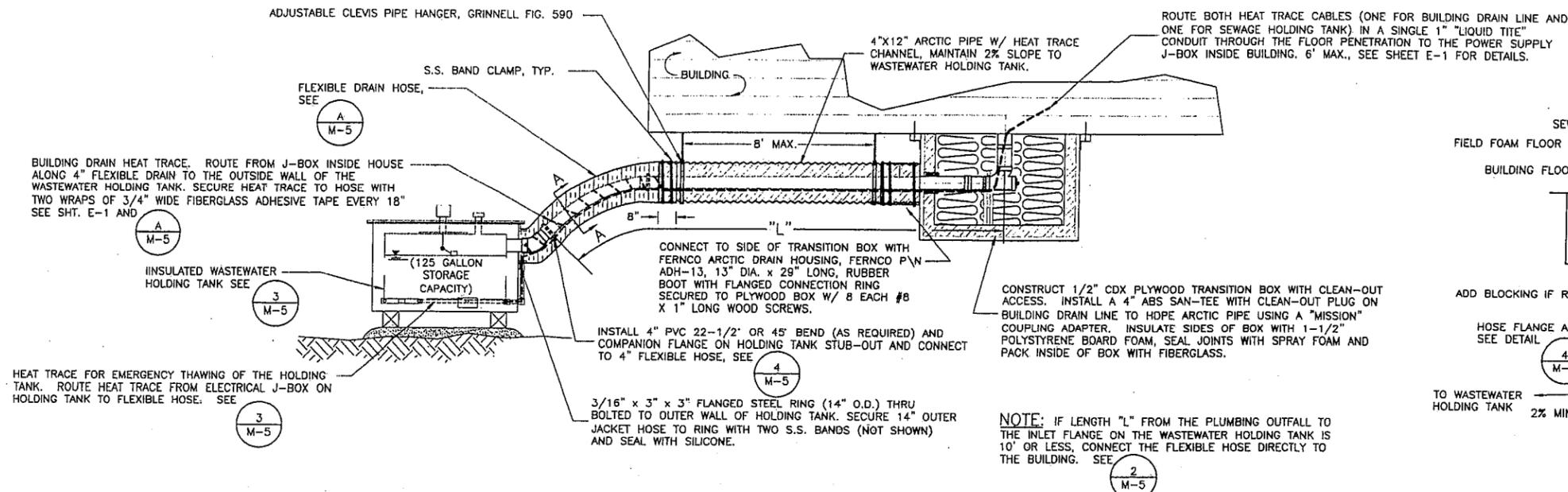
CHEFORNAK, ALASKA

CE2 ENGINEERS, INC.

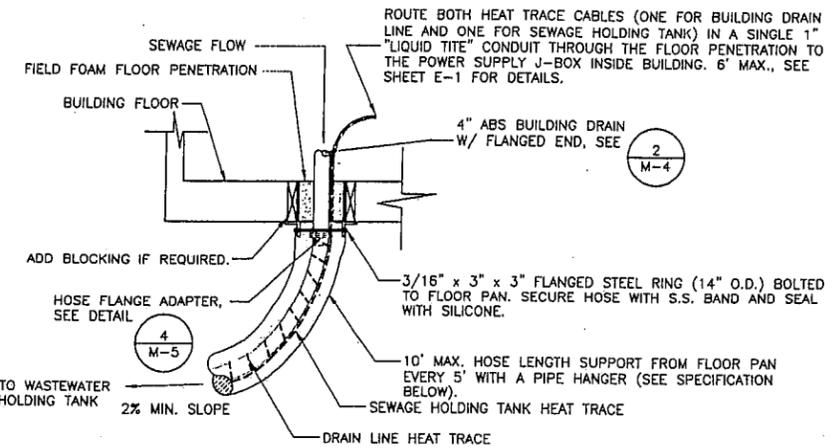
ANCHORAGE, ALASKA

REVISION	BY	DATE

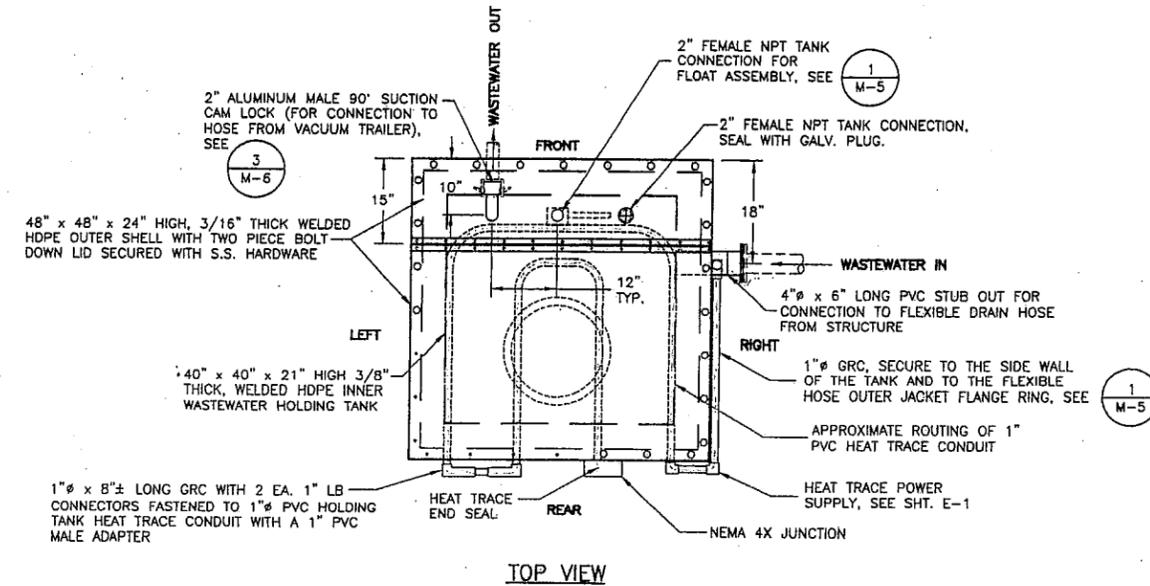
Project No. _____	Date: FEB. 1999	Designed: LAP	Drawn: D-U.W.	Approved: CLE
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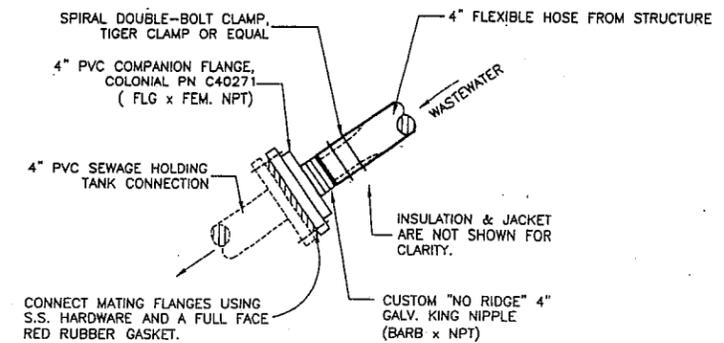
1 TYPICAL BUILDING DRAIN CONNECTION DETAIL
NTS



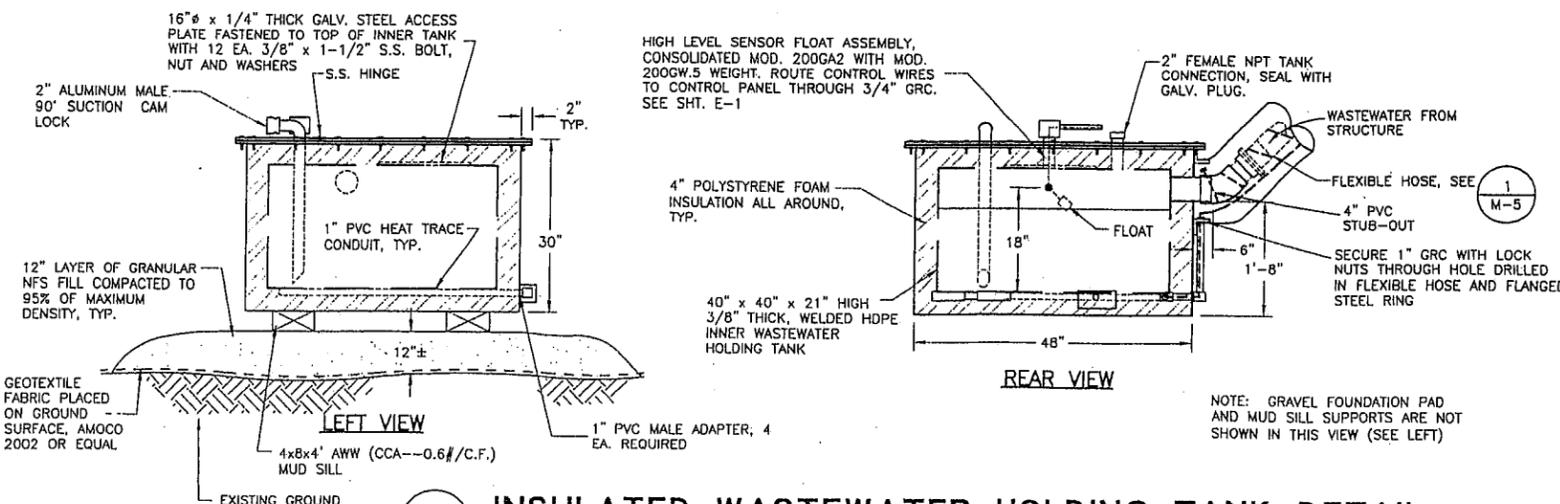
2 FLEXIBLE DRAIN HOSE CONNECTION DIRECTLY TO BUILDING
NTS (FOR USE WHEN THE PLUMBING OUTFALL IS LESS THAN 10 FT FROM THE INLET FLANGE ON THE WASTEWATER HOLDING TANK)



3 INSULATED WASTEWATER HOLDING TANK DETAIL
SCALE: 3/4" = 1'-0"



4 FLEXIBLE HOSE TO HOLDING TANK DETAIL
NTS



A FLEXIBLE HOSE SECTION A-A
NTS

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SCALE: AS SHOWN
THIS 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
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STATE OF ALASKA
Professional Engineer
No. 4918
JAMES A. PERKINS
ANCHORAGE, ALASKA

CLOSED TANK AND HAUL SYSTEM CONSTRUCTION

WASTEWATER HOLDING TANK

CHEFNAK, ALASKA

ANCHORAGE, ALASKA

CE2 ENGINEERS, INC.

Project No.	Date	Designed	LAP	Approved	CLE
	FEB. 1999	D-J.W.			

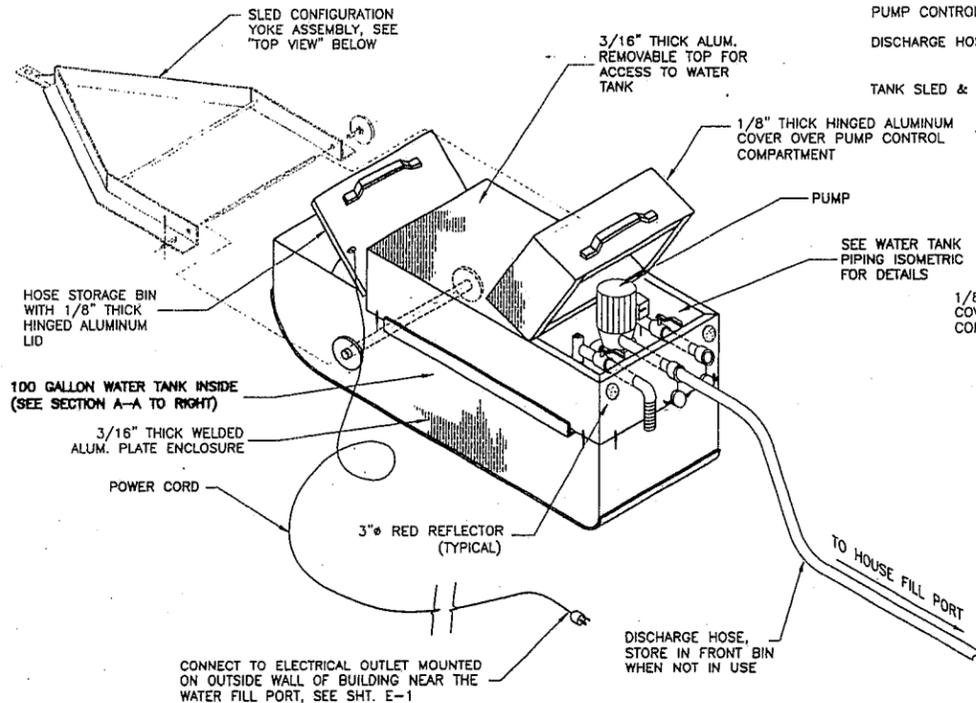
BY DATE

REVISION	DATE

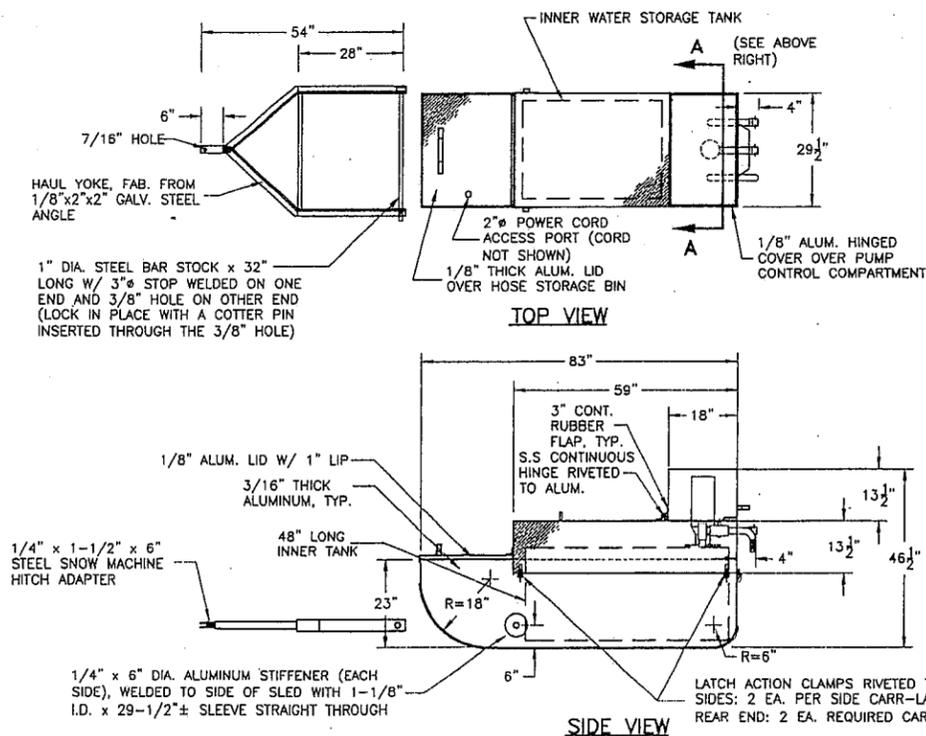
Sheet No. M-5
SHEET 7 OF 12

SPECIFICATIONS FOR WATER HAUL TANK AND TRAILER

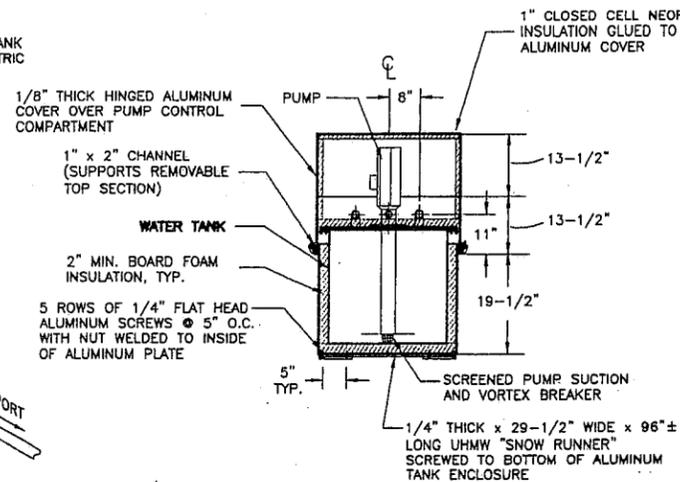
- CAPACITY 120 GALLONS
- WATER TANK 48" LONG x 24" HIGH x 24" WIDE, 3/8" THICK, FLAT FLANGE, RECTANGULAR, XLPE WATER TANK, NALGENE #12300-0035 OR EQUAL.
- PUMP GRUNDFOS #SPK8-12/2 W/ VORTEX BREAKER (115 VAC).
- POWER CORD 40 LF #SEPWA-12/3-BLK-1000R WITH PLUG.
- PUMP CONTROLS PUMP MOUNTED ON/OFF SWITCH, CCT-1-20 1G RT SP 20A SW CVR.
- DISCHARGE HOSE THREE (3) 20 LF SECTIONS OF GOODYEAR 1-1/2" POTABLE WATER OIL FIELD HOSE (MALE x FEMALE CAMLOCK) SHALL BE SUPPLIED WITH THE UNIT.
- TANK SLED & INSULATION THE SLED SHALL BE CONSTRUCTED FROM WELDED ALUMINUM (6061-T60) PLATE. TANK INSULATION SHALL BE 2" MIN. THICKNESS RIGID FOAM.



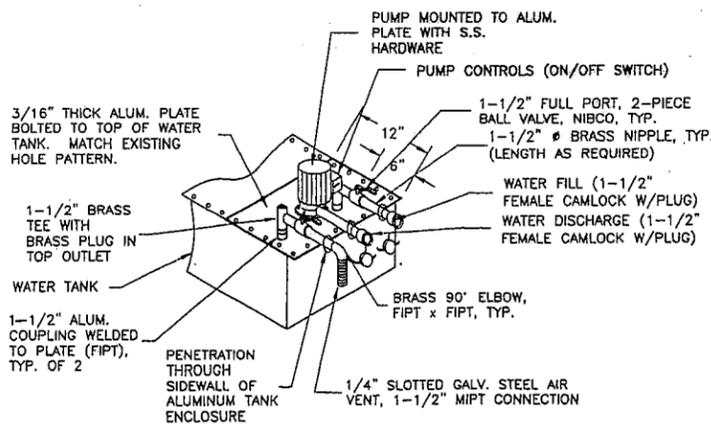
ALUMINUM WATER HAUL ASSEMBLY IN "SLED CONFIGURATION"
(TANK, ELECTRIC PUMP, HOSES AND PERIPHERAL EQUIPMENT HOUSED IN A COMPARTMENTALIZED ALUMINUM ENCLOSURE)



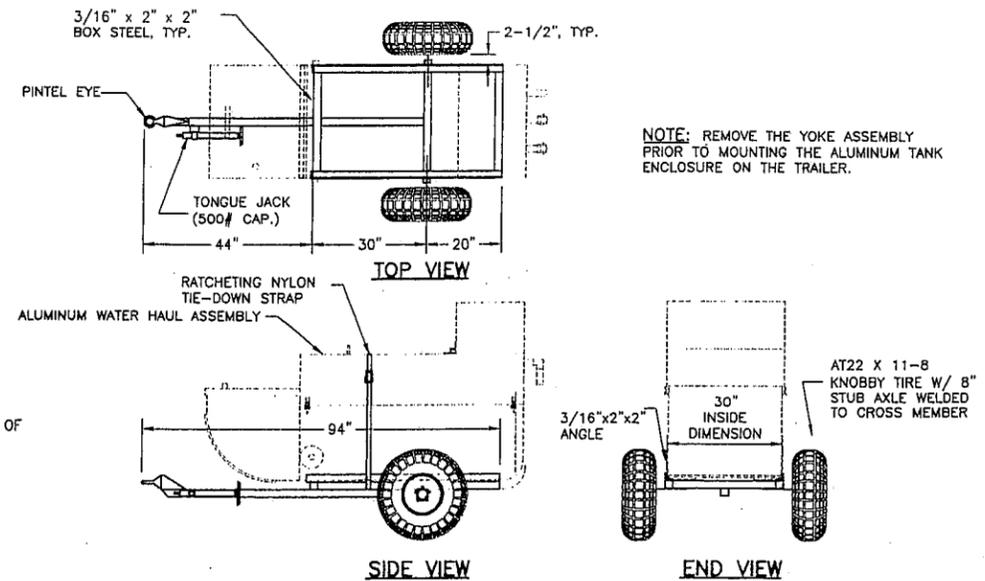
1 ALUMINUM WATER TANK ASSEMBLY SLED CONFIGURATION
SCALE: 1" = 2'-0"



SECTION A-A
NTS



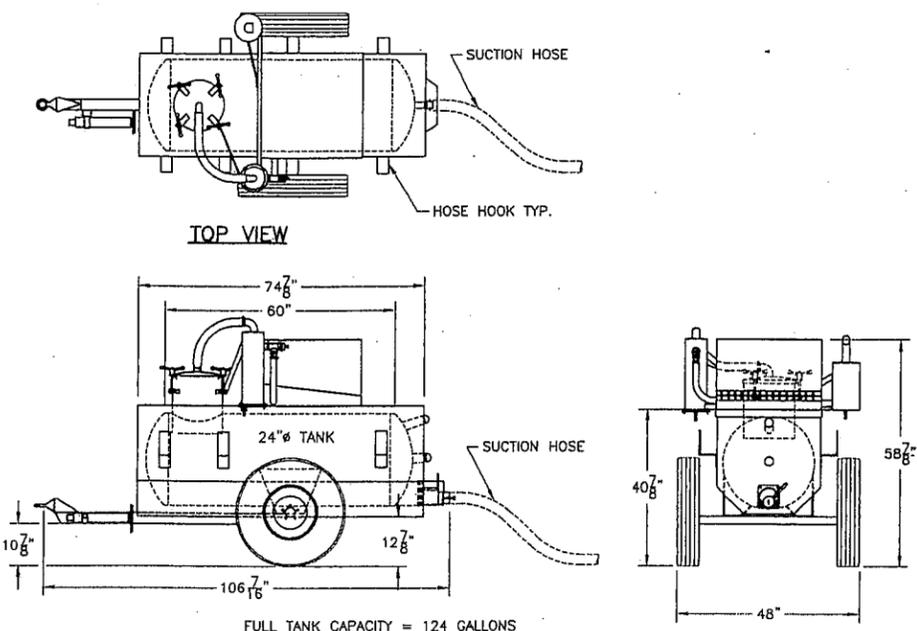
WATER TANK PIPING ISOMETRIC



TRAILER DETAILS - FOR ALUMINUM WATER TANK ASSEMBLY IN WHEELED CONFIGURATION
SCALE: 1" = 2'-0"

SPECIFICATIONS FOR WASTEWATER VACUUM TRAILER

- MODEL MODEL TM1.2-CS-M1-GE-1
- CAPACITY 120 GALLONS
- TANK DIMENSIONS 24" DIAMETER HEADS x 5' SHELL
- TANK MATERIAL 3/16" A-36 CARBON STEEL ROLLED AND SUBARC WELDED FOR TANK SHELL. 3/16" A-36 CARBON STEEL HEADS.
- RELIEF VALVES ONE (1) AUTO RELIEF VALVE SET TO 10 PSI. ONE (1) MANUAL RELIEF BALL VALVE, AND ONE (1) VACUUM RELIEF VALVE SET AT 18" Hg.
- LEVEL INDICATOR TWO (2) SIGHT GLASSES. ONE SET AT HALF TANK AND ONE SET NEAR TOP OF TANK. MASPORT MODEL M1 VACUUM PRESSURE-/PUMP.
- VACUUM/PRESSURE PUMP AND ENGINE PUMP RATED AT 29 CFM, AND 12.5 PSI DISCHARGE. PUMP TO BE DIRECT DRIVEN BY A 5.5 HP GAS ENGINE. PUMP AND ENGINE TO BE MOUNTED ON TOP OF UNIT. PUMP AND ENGINE TO BE COVERED WITH A REMOVABLE SHROUD CONSTRUCTED OF ALUMINUM TREAD PLATE.
- SUCTION HOSE FOUR (4) 10 LF SECTIONS OF 2" SUCTION / DISCHARGE HOSE (MALE x FEMALE CAMLOCK) SHALL BE SUPPLIED WITH THE UNIT. SIX (6) STAND OFF HOSE HOOKS SHALL BE WELDED TO THE SHROUD.
- TANK SHROUD & INSULATION THE EXTERIOR OF TANK SHALL BE COVERED WITH AT LEAST 1-1/2" OF FOAM RIGID TYPE INSULATION. TANK INSULATION TO BE COVERED BY A COFFIN-TYPE SHROUD CONSTRUCTED OF ALUMINUM TREAD PLATE.



4 WASTEWATER VACUUM TRAILER
SCALE: 1" = 2'-0"

RECORD DRAWING CERTIFICATE
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CONSTRUCTION RECORD
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INSPECTOR

STATE OF ALASKA
19th
ANCHORAGE, ALASKA

CLOSED TANK AND HAUL SYSTEM CONSTRUCTION
WATER AND SEWER HAUL VEHICLES, TRAILER AND TANKS
CHEFONAK, ALASKA

CE2 ENGINEERS INC.
ANCHORAGE, ALASKA

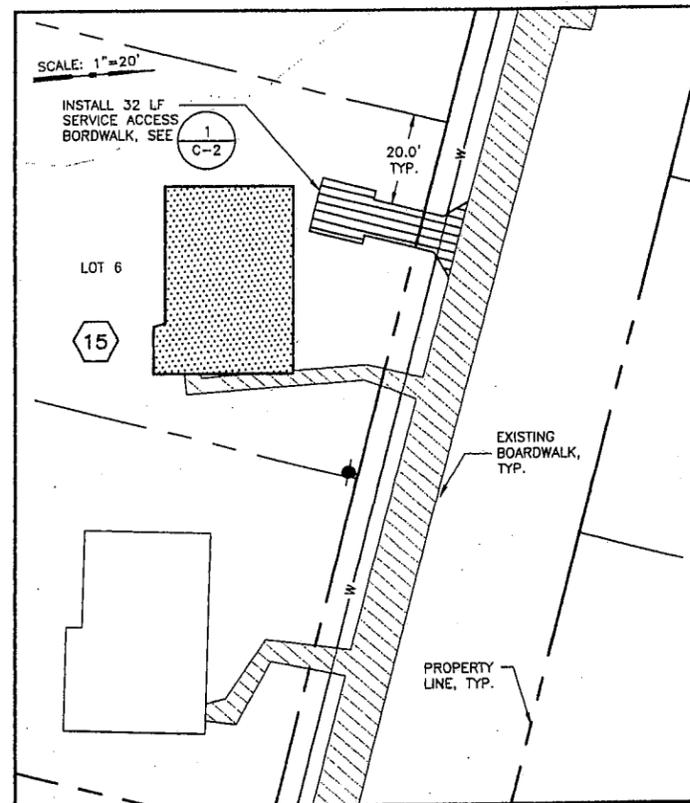
BY DATE
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Project No. Date FEB. 1999 Designed LAP Drawn D-J.W. Approved CLE

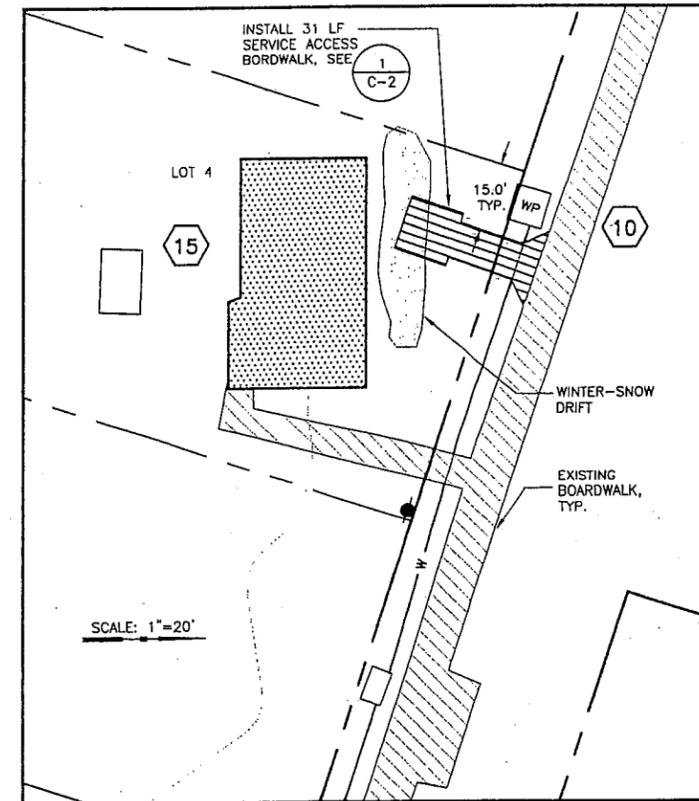
Sheet No. **M-6**
SHEET 8 OF 12

NOTES:

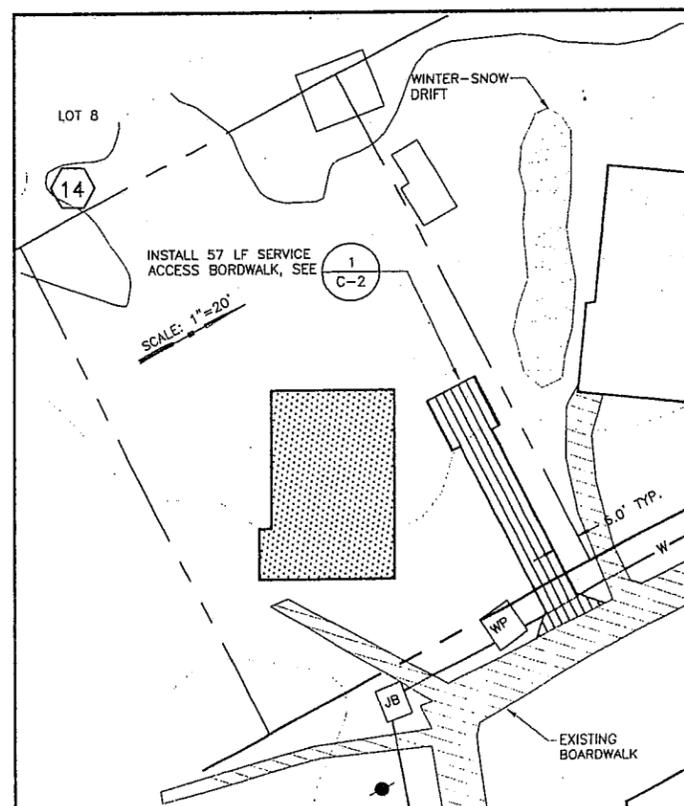
1. SEE GENERAL NOTES ON SHEET C-1.
2. THE ROUTING OF ON-PROPERTY SERVICE BOARDWALKS TO THE VICINITY OF THE WATER FILL PORT AND THE WASTEWATER HOLDING TANK, SHALL BE COORDINATED WITH THE PROPERTY OWNER. FIELD ADJUSTMENT OF SERVICE BOARDWALK ROUTING IS PERMITTED PROVIDED THE SERVICE BOARDWALK DOES NOT CROSS A SIDE LOT LINE AND THE BOARDWALK TERMINATES NEAR THE WATER TANK FILL PORT AND THE WASTEWATER HOLDING TANK, AT A LOCATION SUITABLE TO THE PROPERTY OWNER. SEE SHEETS M-1, M-2 AND M-3 FOR PROPOSED FILL PORT AND WASTEWATER TANK LOCATION.



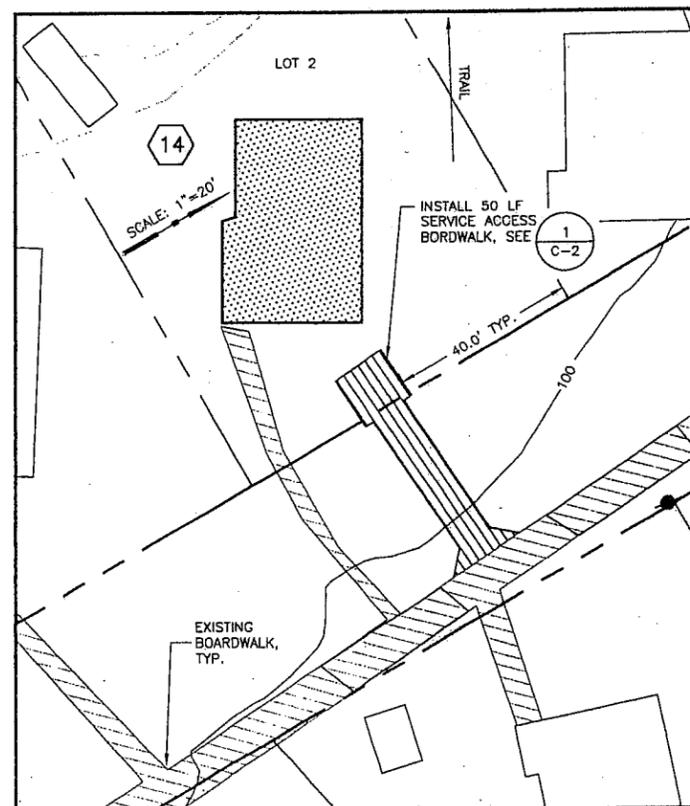
HOME NO. 1: GEORGE BILLY - BLOCK 15, LOT 6



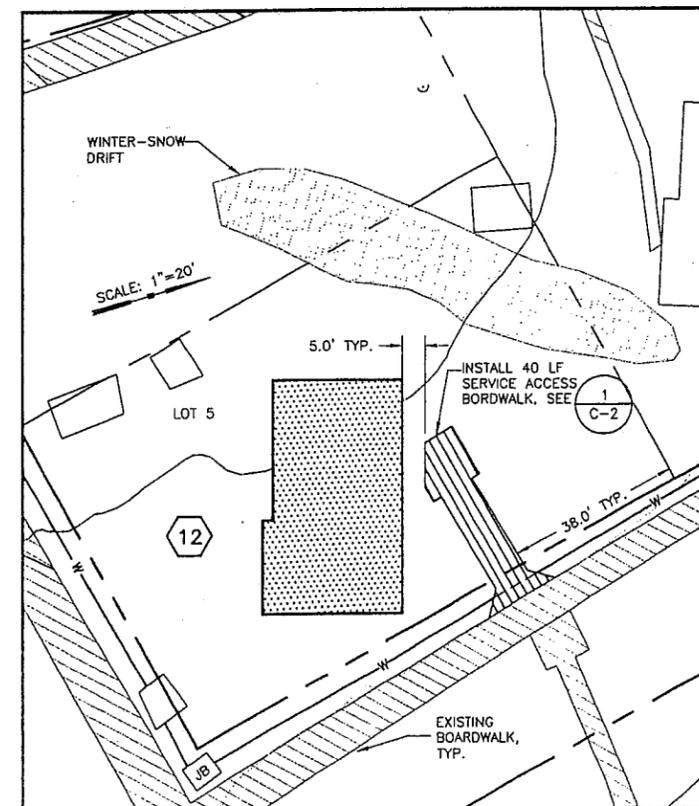
HOME NO. 2: PETER MATHEW, SR. - BLOCK 15, LOT 4



HOME NO. 3: SARAH BUCKLES - BLOCK 14, LOT 8

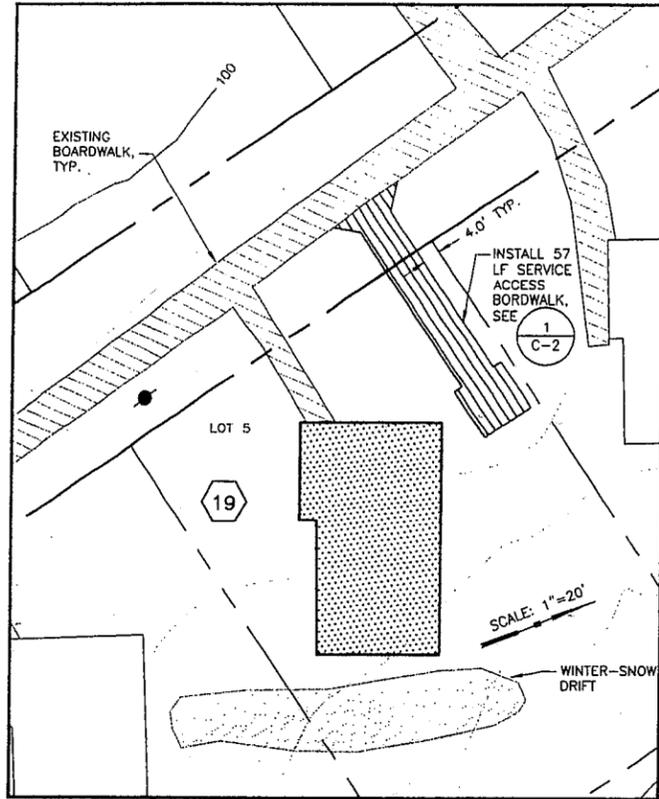


HOME NO. 4: CYRIL ALEXIE - BLOCK 14, LOT 2

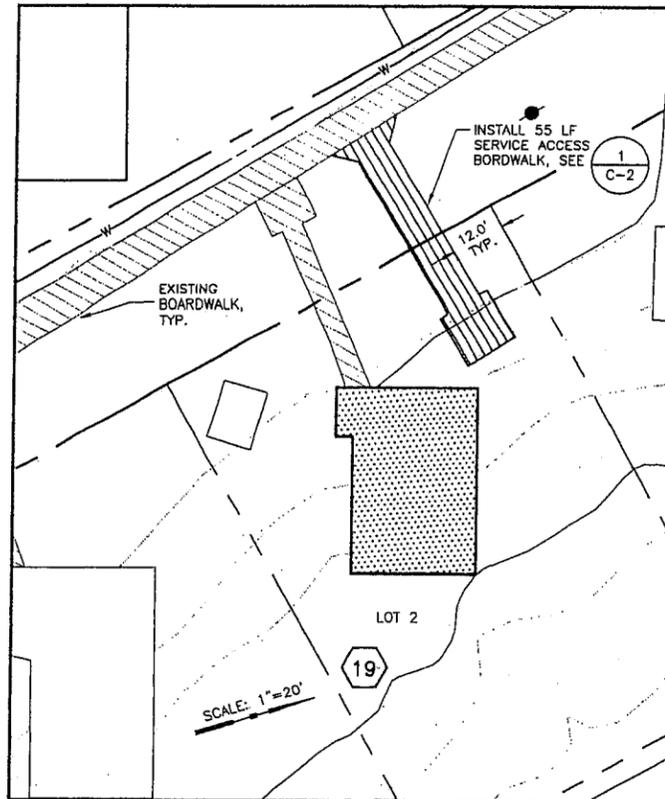


HOME NO. 5: HILDA WASSILLIE - BLOCK 12, LOT 5

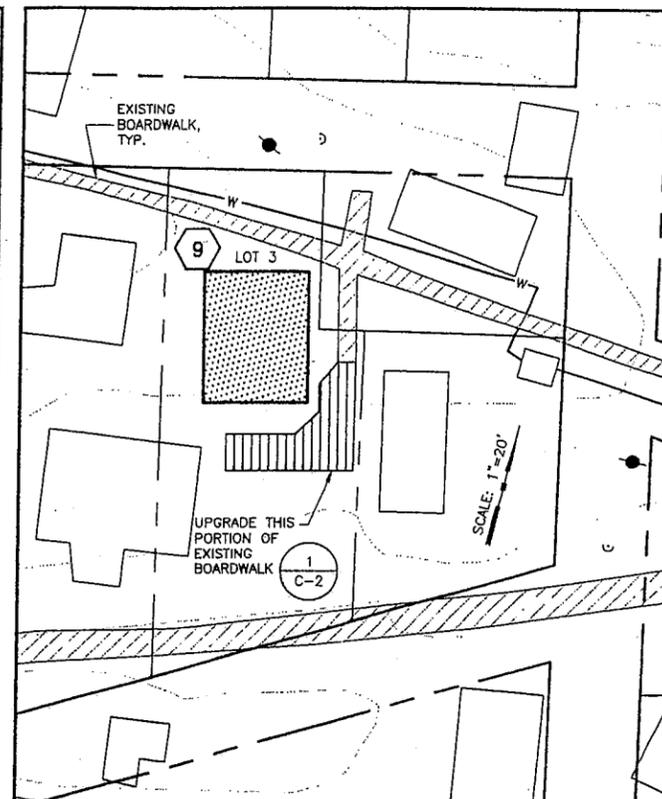
RECORD DRAWING CERTIFICATE		NAME	DATE
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.			
SCALE:	AS SHOWN	THIS IS ONE COPY OF ORIGINAL DRAWING	
CONSTRUCTION RECORD	FIELD BOOK	STARTING	FOREMAN
		AS-BUILT	INSPECTOR
CLOSED TANK AND HAUL SYSTEM CONSTRUCTION		SERVICE BOARDWALK IMPROVEMENTS	
		CHEFORNAK, ALASKA	
CE2 ENGINEERS, INC. ANCHORAGE, ALASKA			
BY	DATE	REVISION	
Project No.	Date: FEB. 1999	Designed: LAP	Drawn: ELR
			Approved: LAP
Sheet No.	C-1		
SHEET	9 OF 12		



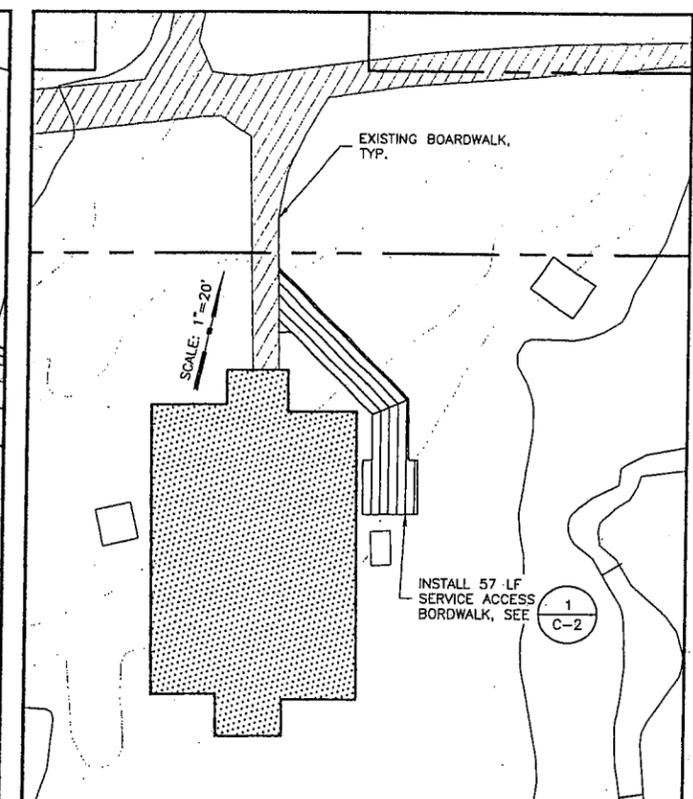
**HOME NO. 6: JOSEPHINE WISEMAN
BLOCK 19, LOT 5**



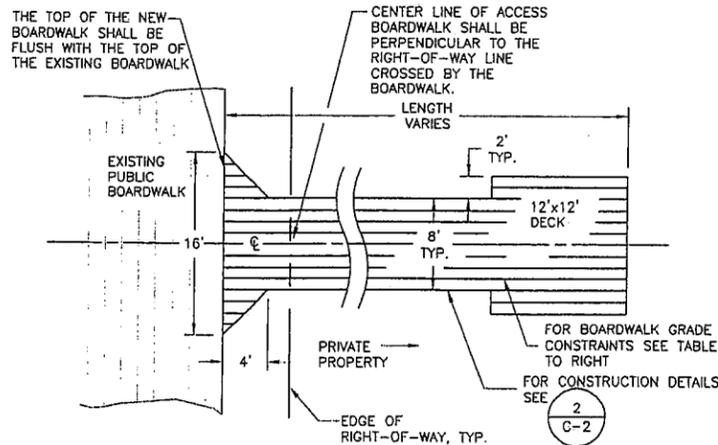
**HOME NO. 7: LIZZIE TIRCHICK
BLOCK 19, LOT 2**



**HOME NO. 10: ANNA AVNGIAK
BLOCK 9, LOT 3**

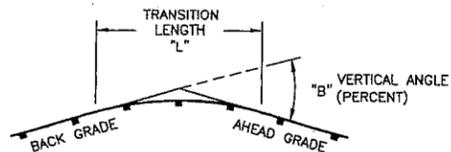


**CITY OFFICE COMPLEX
(LOCATED ON CHEFARNMUTE CORP. PROPERTY NO BLOCK OR LOT NUMBER AVAILABLE)**



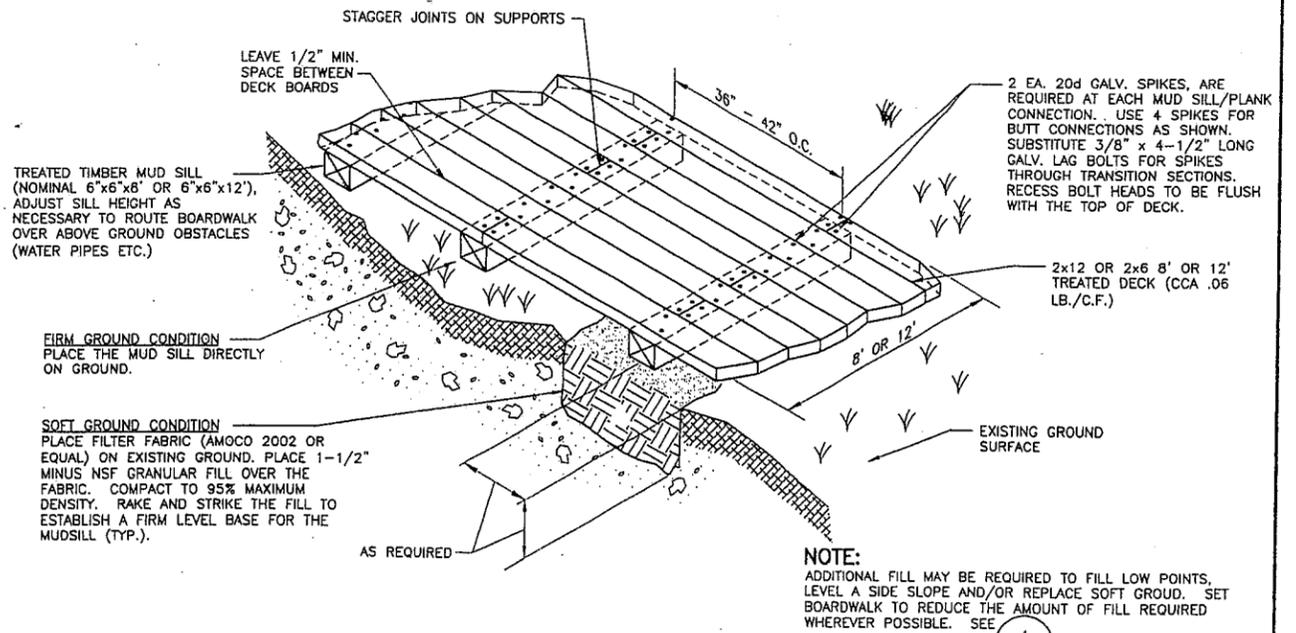
1 SERVICE ACCESS BOARDWALK DETAIL

BOARDWALK GRADE CONSTRAINTS:
PLACE GRAVEL FILL AS REQUIRED TO HOLD THE BOARDWALK GRADE BETWEEN +4% AND -4% (5 INCHES OF RISE OR FALL PER 10 FEET OF RUN). PROVIDE A SMOOTH AND GRADUAL TRANSITION AT ALL CHANGES IN GRADE, IN ACCORDANCE WITH THE FOLLOWING TABLE:



VERTICAL ANGLE AT GRADE CHANGE IN PERCENT "B"	MINIMUM TRANSITION LENGTH IN FEET "L"
1	2.5
2	5
3	7
4	10
5	12
>5	NOT PERMITTED

NOTE:
3/4" x 4-1/2" LONG GALV. LAG BOLT DECK FASTENERS ARE REQUIRED AT ALL TRANSITION SECTIONS.



2 BOARDWALK CONSTRUCTION DETAIL

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NAME _____ DATE _____

SCALE: AS SHOWN
1" = 20'
1" = 10'

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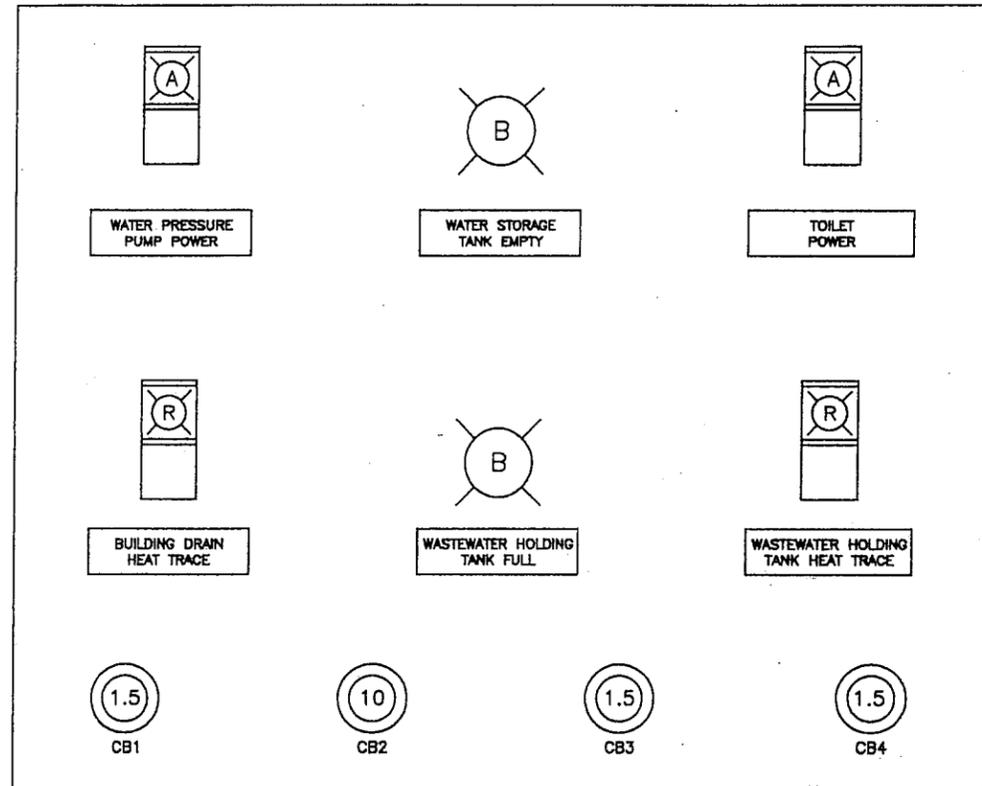
CLOSED TANK AND HAUL SYSTEM CONSTRUCTION
SERVICE BOARDWALK IMPROVEMENTS AND DETAILS
CHEFORKAK, ALASKA

CE2 ENGINEERS, INC.
ANCHORAGE, ALASKA

REVISION	BY	DATE

Project No. _____
Date: FEB. 1999
Designed: LAP
Drawn: ELR
Approved: LAP

Sheet No. **C-2**
SHEET 10 OF 12



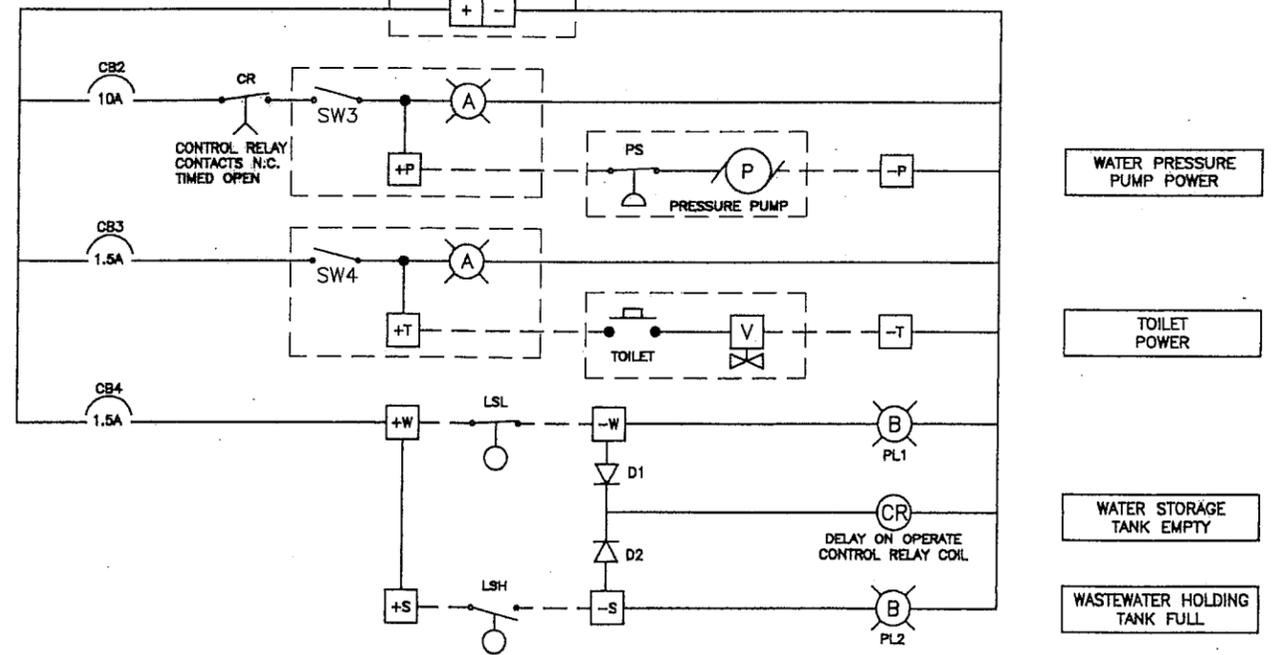
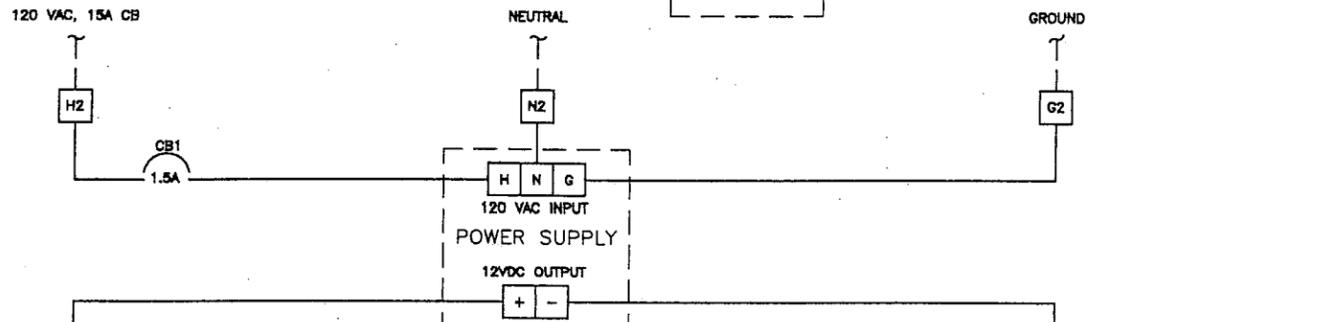
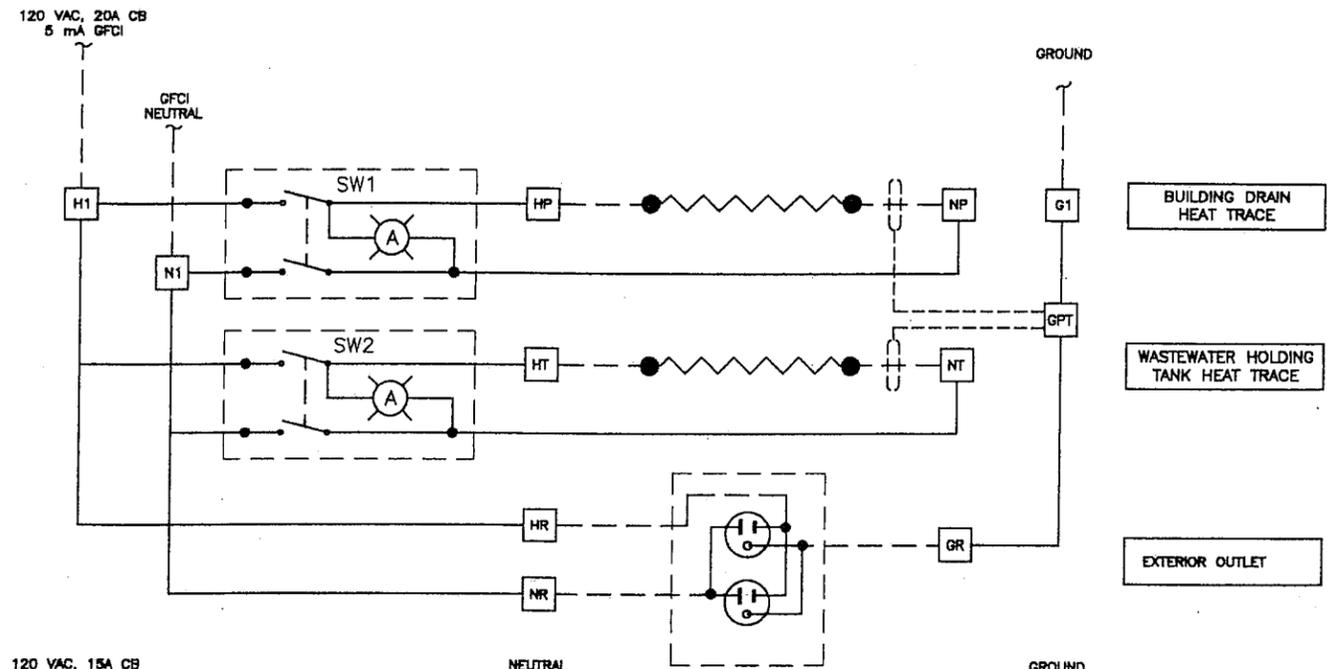
CONTROL PANEL COVER LAYOUT

PANEL COMPONENTS

- PANEL - 16"x14"x6", NEMA 12/4X BOX WITH HINGED, LOCKABLE DOOR, CARLON #NH16146.
- SWITCHES: SW1, 2 - LIGHTED HANDLE, 2PST, TOGGLE SWITCH, SPEC. GRADE, 20 AMP, 120VAC, 1/2 hp RATED, RED COLOR HANDLE, HUBBELL #HBL1222PL.
- SWITCHES: SW3, 4 - LIGHTED HANDLE, SPST, TOGGLE SWITCH, 16 AMP 12VDC RATED, AMBER COLORED HANDLE, SELECTA SWITCH #SS110-A-BG.
- PILOT LIGHTS PL1 & PL2 - MINIATURE, 12VDC, LED, WITH BLUE LENS, ALLEN-BRADLEY #800L2EB2LC.
- POWER SUPPLY, LINEAR OPEN FRAME, SOLA SLS-12-051.
- CIRCUIT BREAKERS, CB1,3,4, 1.5 AMP MINIATURE, PANEL MOUNT, POTTER-BRUMFIELD #W58-XB1A4A-1.5.
- CIRCUIT BREAKER, CB2, 10 AMP, MINIATURE, PANEL MOUNT, POTTER BRUMFIELD #W58-XB1A4A-10.
- DELAY ON OPERATE CONTROL RELAY, 12VDC, 2PDT, POTTER BRUMFIELD #CB1047D-20, WITH RELAY SOCKET #27EB91.
- TERMINAL BLOCKS, 300 VAC, 20 AMP RATED, SQUARE D #9080-KC1A.
- CONDUCTORS: MTW, #14AWG FOR 15 AMP CIRCUITS, #12AWG FOR 20AMP CIRCUITS, STRANDED COPPER.
- WATER PRESSURE PUMP WITH INTERNAL PRESSURE SWITCH PAR-MAX 3 #30800-0012.R.
- HEAT TRACE 8 WATTS/LF, 120 VAC, RAYCHEM #8XL-1.
- SEWAGE HOLDING TANK FULL, LEVEL SWITCH N.O. CONSOLIDATED ELECTRIC CO., #LSA-2.
- WATER STORAGE TANK EMPTY, LEVEL SWITCH N.C. 12VDC, SQUARE D #9034-LLV80.
- TOILET, MICRO FLUSH #LF-220, 12VDC, 1.2 AMPS.
- DIODE, 50V MAX PEAK REVERSE, 3A RATED, 10 MICROAMPS REVERSE CURRENT, 1.3V FORWARD VOLTAGE DROP (MAXIMUM)

OTHER COMPONENTS

- RECEPTACLE, NEMA 5-20R, MOUNT ON EXTERIOR WALL IN WEATHER-PROOF BOX W/ METAL "IN-USE" COVER.



SYSTEM LADDER DIAGRAM

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STATE OF ALASKA
 REGISTERED PROFESSIONAL ENGINEER
 CHEFORNAK, ALASKA

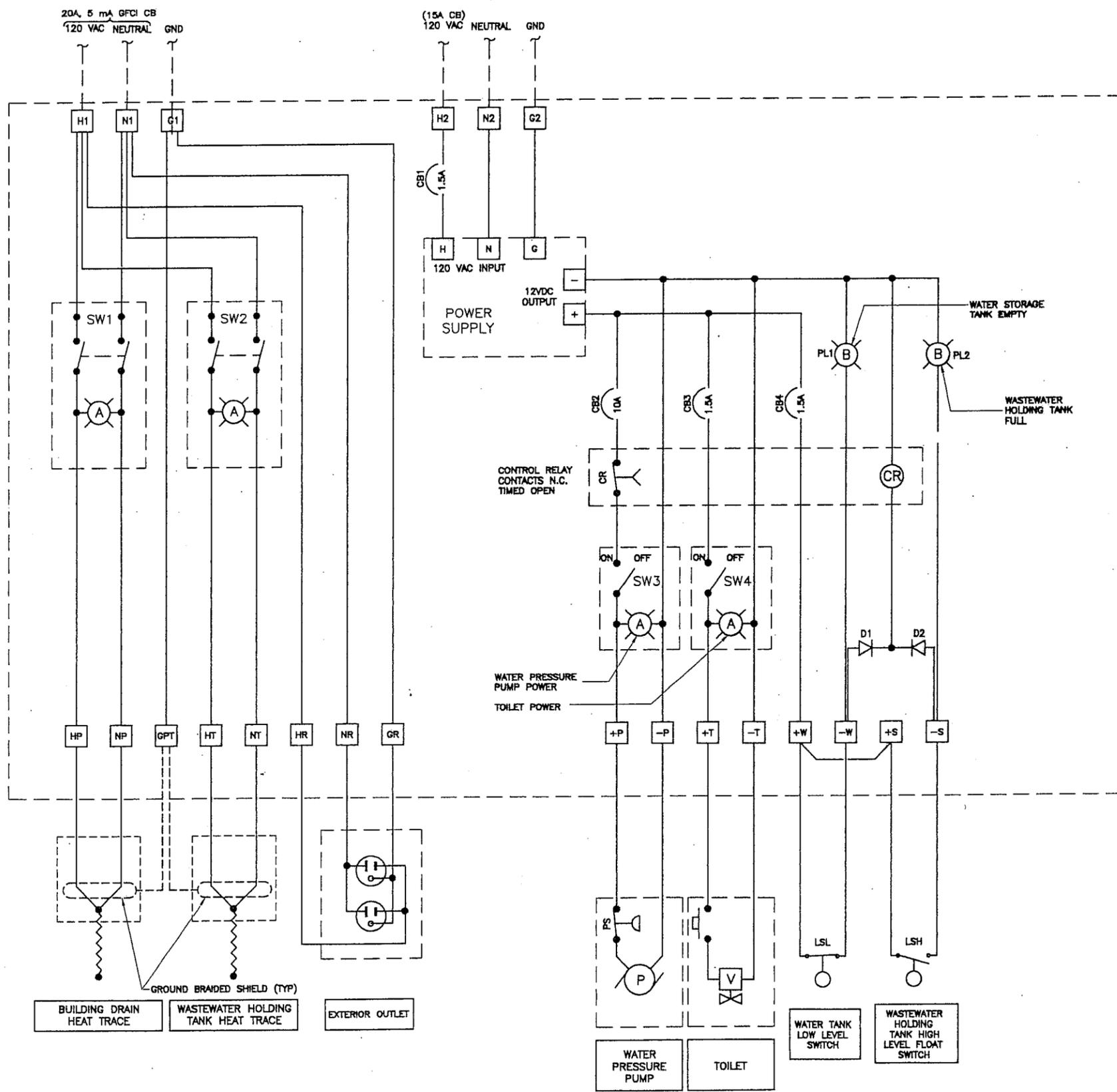
CLOSED TANK AND HAUL SYSTEM CONSTRUCTION
 CONTROL PANEL AND SYSTEM LAYOUT AND SYSTEM LADDER DIAGRAM
 CHEFORNAK, ALASKA

CE2 ENGINEERS, INC.
 ANCHORAGE, ALASKA

REVISION	DATE

Project No. _____ Date FEB. 1999
 Designed by TWL
 Drawn by ELR
 Approved by CLE

Sheet No. E-1
 SHEET 11 OF 12



SYSTEM SCHEMATIC WIRING DIAGRAM

OPERATION INFORMATION

1. NORMAL OPERATION CONDITIONS WITH WATER IN TANK & HOLDING TANK NOT FULL:
 - A. "WATER PRESSURE PUMP POWER" SWITCH IS ON & AMBER LIGHT IN HANDLE IS LIT.
 - B. "TOILET POWER" SWITCH IS ON & AMBER LIGHT IN HANDLE IS LIT.
 - C. "WATER STORAGE TANK EMPTY" BLUE LIGHT IS NOT LIT.
 - D. "WASTEWATER HOLDING TANK FULL" BLUE LIGHT IS NOT LIT.
 - E. "BUILDING DRAIN HEAT TRACE" SWITCH & RED LIGHT IN HANDLE ARE REQUIRED.
 - F. "HOLDING TANK HEAT TRACE" SWITCH & RED LIGHT IN HANDLE ARE REQUIRED.
2. OPERATION OF THE WATER PRESSURE PUMP IS DISABLED IF THE WATER STORAGE TANK IS EMPTY (OR THE WASTEWATER HOLDING TANK IS FULL). THE ABNORMAL LEVEL CONDITION CAUSES THE CLOSING OF THE CONTACTS IN THE WATER STORAGE TANK LOW LEVEL SWITCH (OR THE CONTACTS IN THE WASTEWATER HOLDING TANK HIGH LEVEL SWITCH), WHICH APPLIES VOLTAGE TO THE COIL OF TIME DELAY RELAY "CR". AFTER 5 SECONDS, THE RELAY "CR" CONTACTS OPERATE AND DISCONNECT THE VOLTAGE TO THE WATER PRESSURE PUMP CIRCUIT. THE "WATER PRESSURE PUMP POWER" SWITCH HANDLE LIGHT EXTINGUISHES AND THE PRESSURE PUMP IS DISABLED. THE CLOSING LEVEL SWITCH CONTACT ALSO CONNECTS VOLTAGE TO THE BLUE "WATER STORAGE TANK EMPTY" (OR THE "WASTEWATER TANK FULL") PILOT LIGHT, WHICH THEN LITES. THE SYSTEM WILL REMAIN IN THIS DISABLED CONDITION UNTIL THE WATER TANK IS REFILLED (OR IF THE WASTEWATER TANK IS PUMPED OUT) AND THE LEVEL SWITCH CONTACTS REOPEN. THIS REMOVES VOLTAGE FROM THE BLUE PILOT LIGHT AND THE RELAY COIL. THE LIGHT IS EXTINGUISHED AND THE RELAY CONTACTS RETURN TO THEIR NORMALLY CLOSED STATE, WHICH PROVIDES VOLTAGE TO THE PRESSURE PUMP CONTROLS.
3. TURNING OFF A SWITCH DISABLES OPERATION OF THE DEVICE CONNECTED.

NOTES:

1. ELECTRICAL WIRING INSIDE OF HOMES SHALL BE AWG 12/2 (WITH GROUND) ROMEX, CONCEALED IN WALLS OR CEILING SPACES.
2. IN THOSE CASES WHERE CONCEALMENT IS IMPOSSIBLE, PROVIDE 3/4" EMT AND/OR 3/4" LT METALLIC CONDUIT ENCLOSING AWG 12, XHHW WIRE.
3. ELECTRICAL WIRING BETWEEN THE CONTROL PANEL AND THE EXTERIOR HOLDING TANK SHALL BE 3/4" LT METALLIC CONDUIT ENCLOSING AWG 12, XHHW, WIRE.
4. ALL CONDUCTORS SHALL BE COPPER.
5. RACEWAYS PENETRATING VAPOR BARRIERS OR TRAVERSING FROM WARM TO COLD AREAS SHALL BE SEALED (AT THE PENETRATION POINT) WITH A NON-HARDENING DUCT SEALING COMPOUND.
6. ALL CONDUIT RUNS SHALL BE GROUNDED IN AN EFFECTIVE AND APPROVED MANNER AT POINTS OF ORIGIN, AND SHALL MAINTAIN A CONTINUOUS GROUND THROUGHOUT ALL RUNS, PULL BOXES AND FITTINGS FROM POINT OF SERVICE TO ALL OUTLETS.
7. MOUNT EXPOSED CONDUIT PARALLEL TO WALLS AND/OR CEILING SURFACES, IN A HORIZONTAL OR VERTICAL ORIENTATION ONLY.
8. SECURELY ANCHOR CONDUIT AS FOLLOWS:
 - A. EMT: ONE HOLE PIPE STRAPS SPACED NOT MORE THAN 10' ON CENTER & WITHIN 3' OF EACH BOX.
 - B. LT FLEX: ONE HOLE PIPE STRAPS SPACED NOT MORE THAN 4.5' ON CENTER & WITHIN 1' OF EACH BOX.

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 NAME _____ DATE _____

SCALE: AS NOTED
 DIMS. ONE INCH OR MORE: 1" = 1'-0"
 DIMS. LESS THAN ONE INCH: 1" = 1'-0" (UNLESS OTHERWISE NOTED)
 DIMS. ONE FOOT OR MORE: 1" = 1'-0" (UNLESS OTHERWISE NOTED)

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 FOREMAN _____
 P.A.S.-BUILT _____
 INSPECTOR _____

SEAL OF THE STATE OF ALASKA
 REGISTERED PROFESSIONAL ENGINEER
 No. 4911
 William J. C. Williams
 Anchorage, Alaska
 EX-1203

CLOSED TANK AND HAUL SYSTEM CONSTRUCTION
 SCHEMATIC WIRING DIAGRAM AND OPERATION INFORMATION
 CHEFORKNAK, ALASKA

CE2 ENGINEERS, INC.
 ANCHORAGE, ALASKA

REVISION	BY	DATE

Project No. _____ Date: FEB. 1999
 Designed: TWL
 Drawn: ELR
 Approved: TWL

Sheet No. **F-2**
 SHEET 12 OF 12