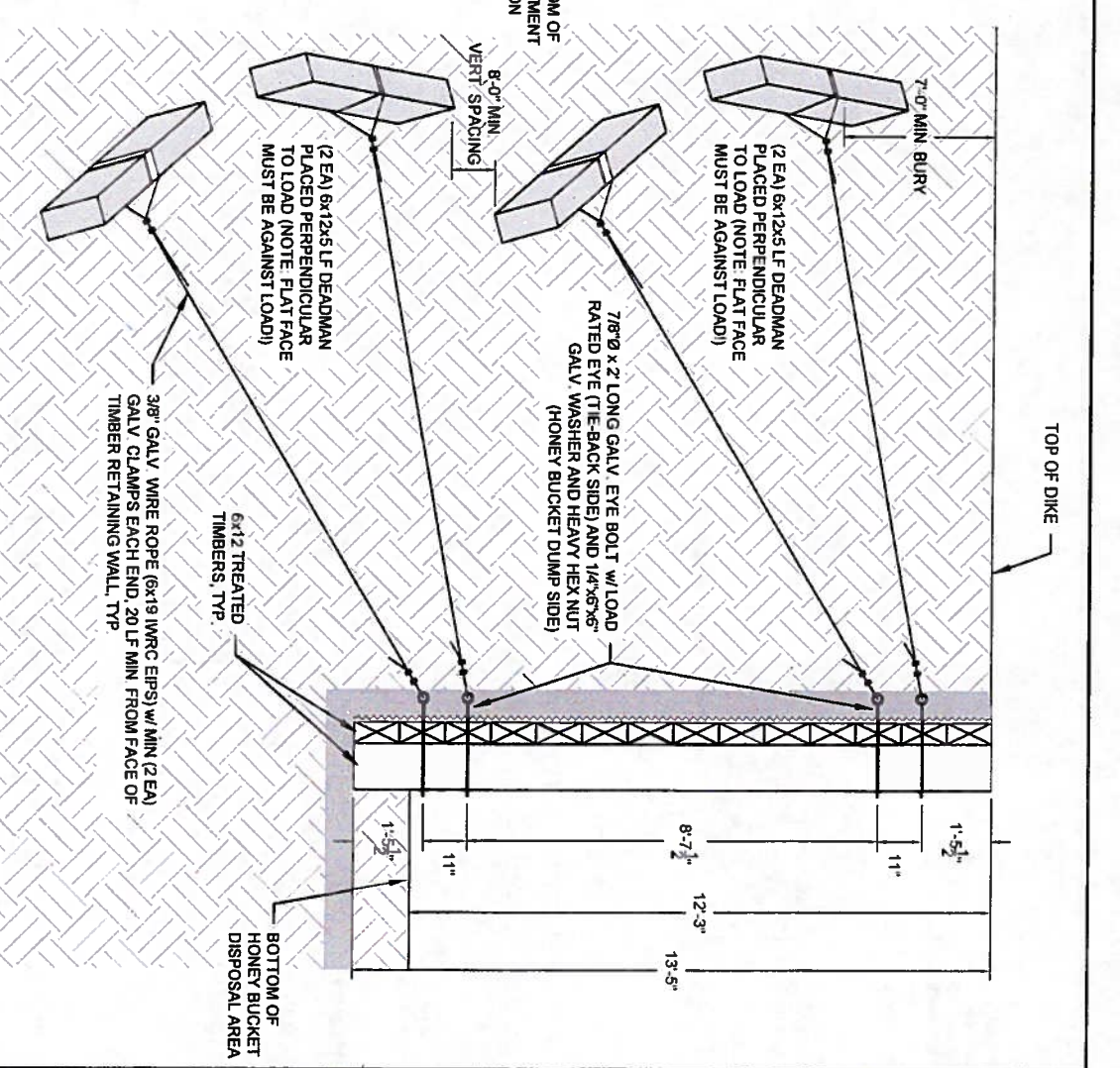
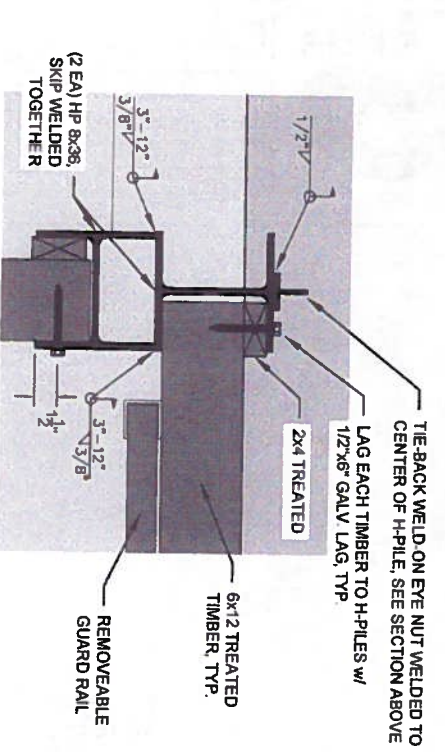


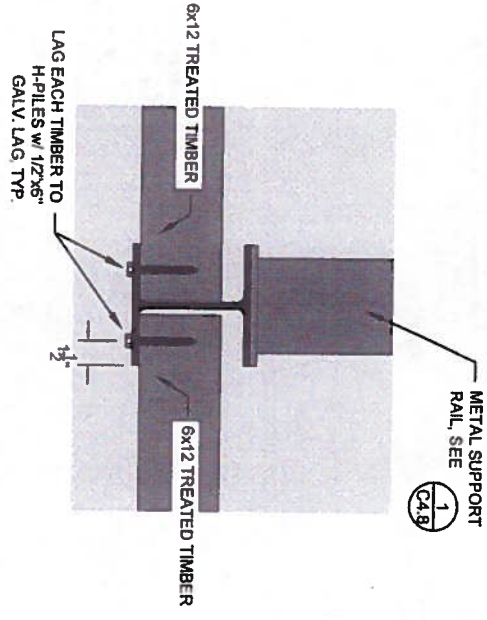
1 H-PILE SECTION VIEW
C4.8 1/2" = 1'-0"



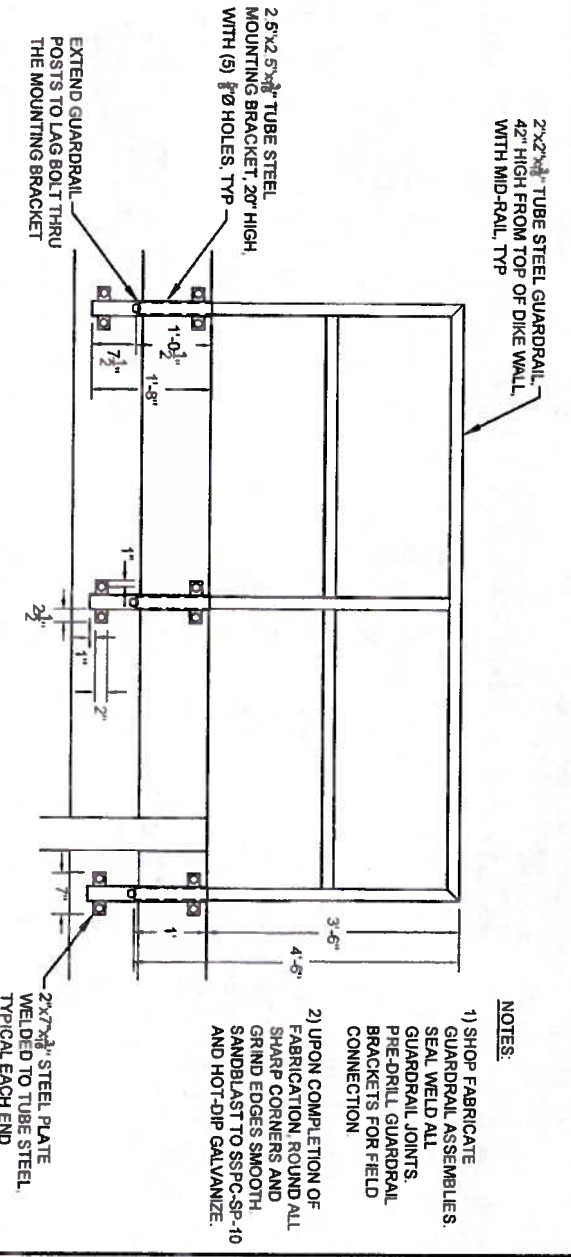
2 STRONG-BACK SECTION VIEW
C4.8 1/2" = 1'-0"



3 CORNER H-PILE PLAN VIEW
C4.8 N.T.S.



3 TYPICAL H-PILE PLAN VIEW
C4.8 N.T.S.



5 REMOVEABLE GUARDRAIL CONNECTION
C4.8 3/4" = 1'-0"

NOTES:
1) SHOP FABRICATE GUARDRAIL ASSEMBLIES SEAL WELD ALL GUARDRAIL JOINTS. PRE-DRILL GUARDRAIL BRACKETS FOR FIELD CONNECTION.
2) UPON COMPLETION OF FABRICATION ROUND ALL SHARP CORNERS AND GRIND EDGES SMOOTH. SANDBLAST TO SSPC-SP-10 AND HOT-DIP GALVANIZE.

REVISION	BY	DATE

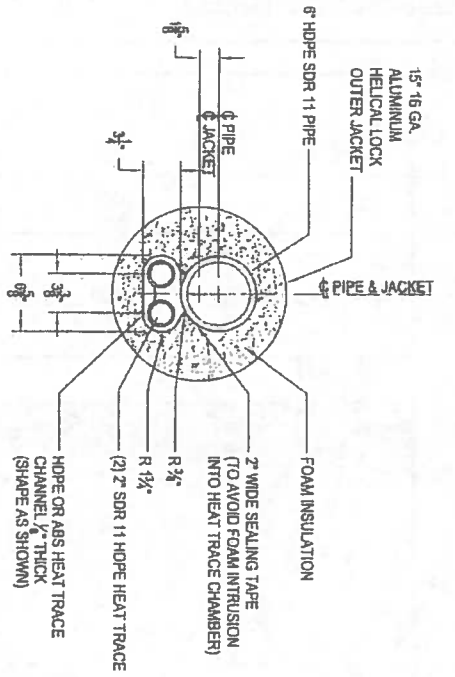


2010-11 WASTEWATER SYSTEM IMPROVEMENTS
HONEY BUCKET DISPOSAL AREA DETAILS
TULUKSAK, ALASKA

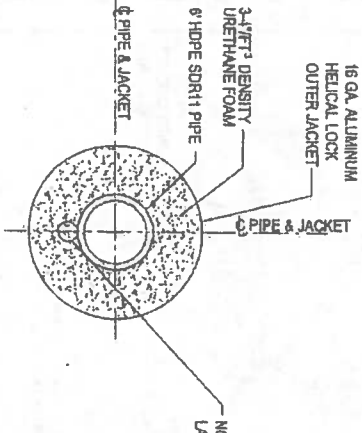


SCALE: AS SHOWN
1" = 10'-0"

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



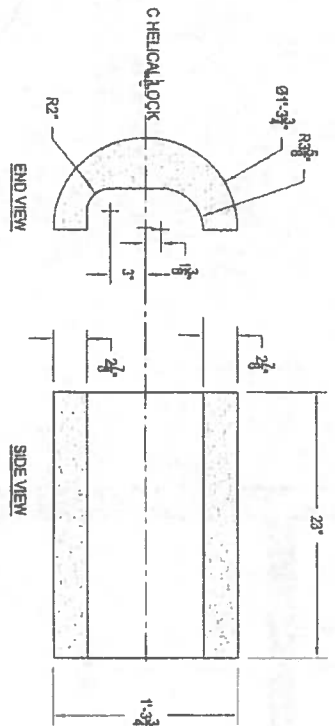
1 CROSS SECTION - GLYCOL TRACED
C5.1 1 1/2" x 1-0"



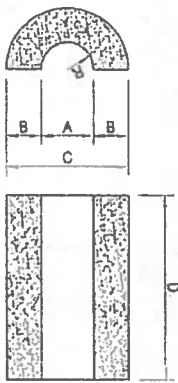
NOTE: HEAT TRACE THAT CHANNEL IN LAGOON TRANSFER LINE

NOMINAL INSULATED PIPE	INNER CORE PIPE (O.D.)	NOMINAL INSULATED PIPE (O.D.)	OUTSIDE JACKET SIZE	AVERAGE OUTER JACKET SIZE (O.D.)
6"	6.625"	15" MIN.	12" MIN.	15.75"
6"	6.625"	12" MIN.	12" MIN.	12.75"

4 HDPE ARCTIC PIPE CROSS SECTION LAGOON TRANSFER LINE
C5.1 NTS



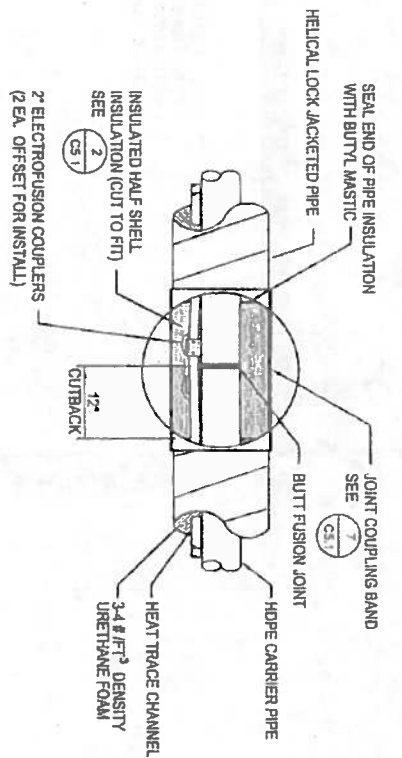
2 6" X 15" HDPE ARCTIC PIPE HALF SHELL - GLYCOL TRACED
C5.1 1 1/2" x 1-0"



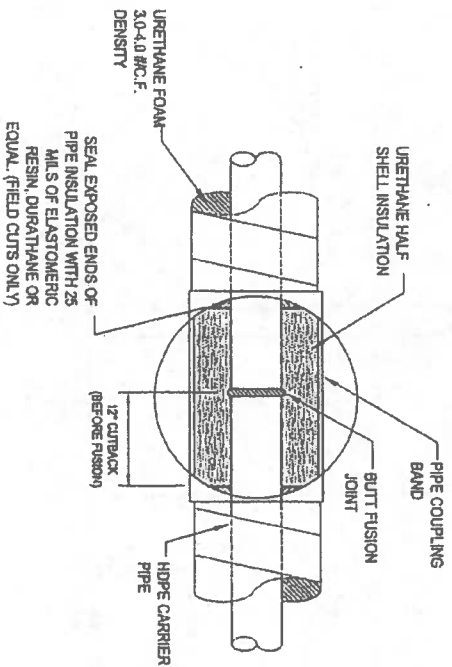
R=4/2 C-OUTSIDE DIAMETER

HALF SHELL	A	B	C	D
6"	8 1/2"	4 1/2"	15 1/2"	23"
6"	8 1/2"	5"	12 1/2"	23"

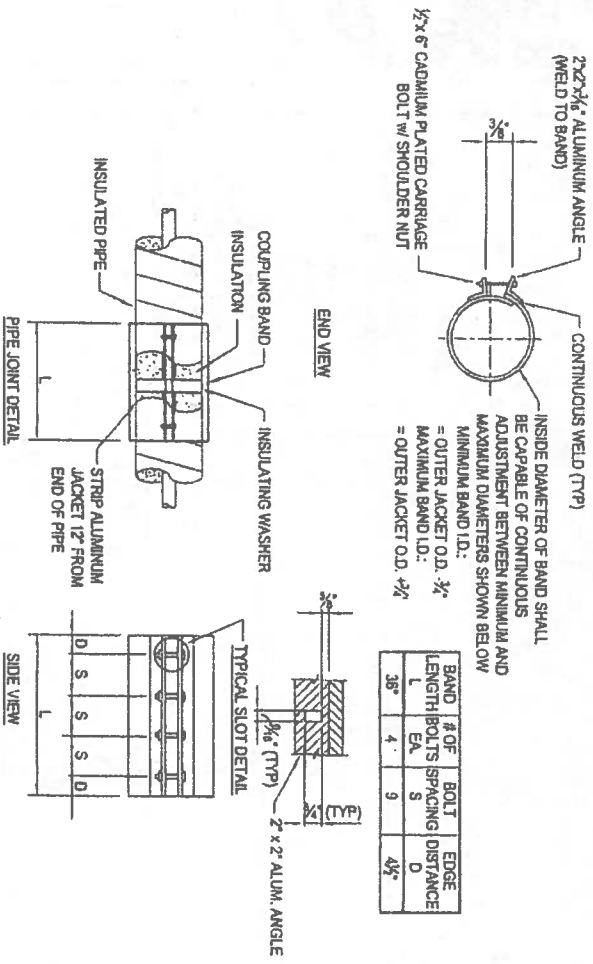
5 INSULATION HALF SHELL DETAIL
C5.1 NTS



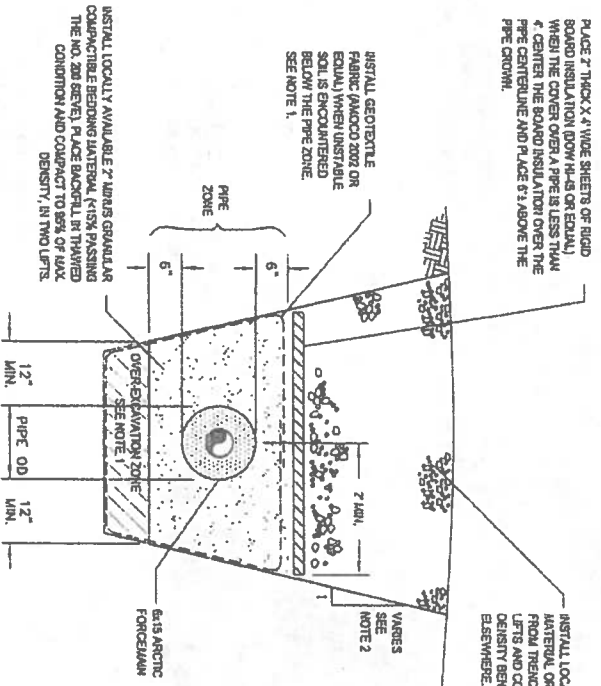
3 BUTT FUSION JOINT w/ HEAT TRACE ELECTROFUSION COUPLERS
C5.1 NTS (FORCE MAIN ONLY)



6 BUTT FUSED JOINT DETAIL
C5.1 NTS (VALVE TERRAIN AND SERVICE DUCT)



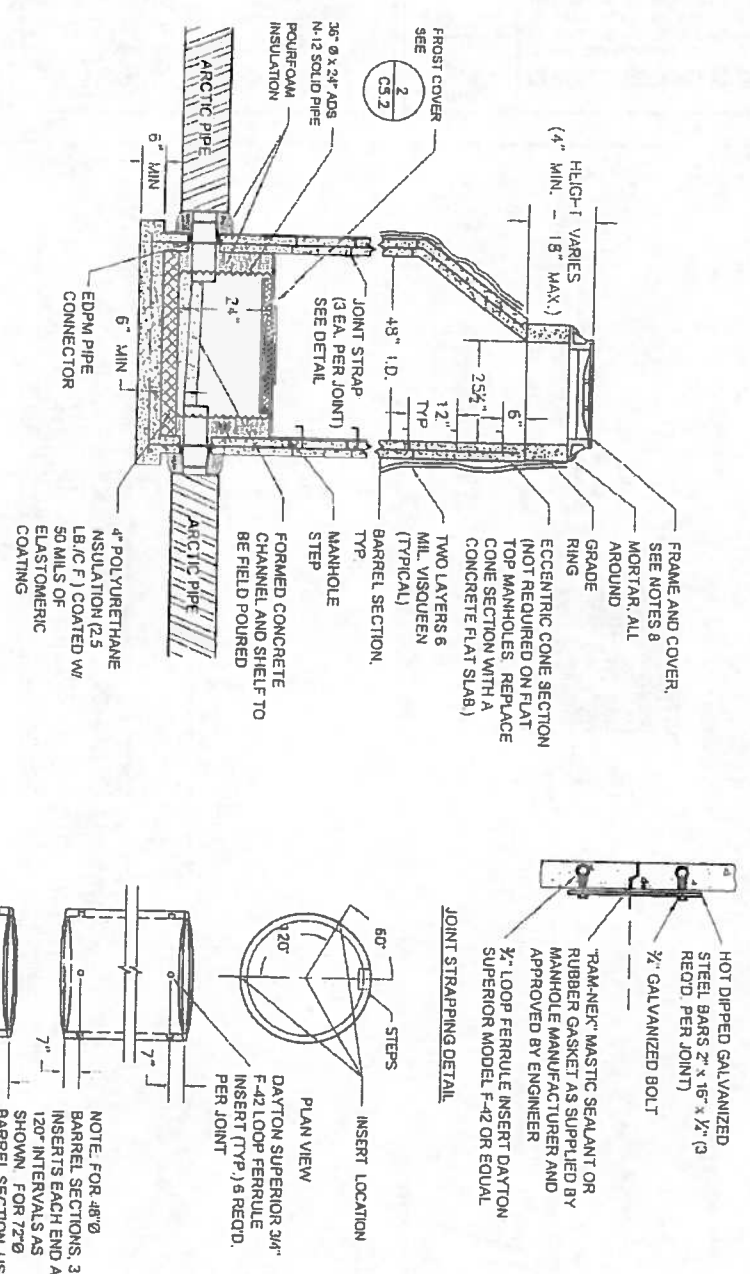
7 ARCTIC PIPE COUPLING BAND
C5.1 NTS



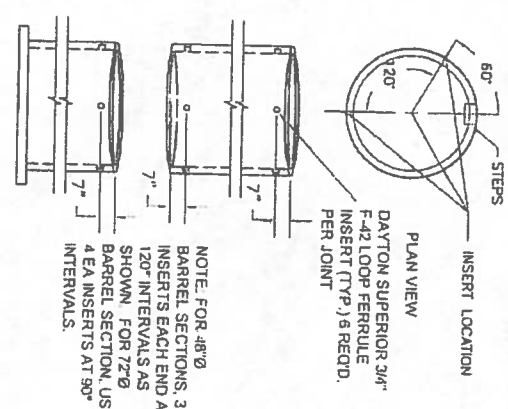
A TYPICAL TRENCH SECTION FOR PIPE INSTALLED BENEATH PROPOSED ACCESS ROAD
C5.1 NTS

- TRENCH NOTES:
- IF THE EXCAVATION ENCOUNTERS ORGANICS, SLITS AND/OR ICE RICH PERMAFROST BENEATH THE PIPE ZONE, OVER EXCAVATE A MINIMUM OF 12" AND INSTALL GEOTEXTILE FABRIC (JACOBO 2002 OR EQUAL) AS SHOWN, REPLACE THE BELIEVED MATERIAL WITH LOCALLY AVAILABLE 2" LUNAS GRANULAR COUPLING BAND WITH 15% PASSING THE NO. 20 SIEVE, PLACE FILL IN TRENCH COMPACT AND COMPACT TO 85% OF MAXIMUM MODIFIED PROCTOR DRY DENSITY.
 - ALL TRENCHES AND OTHER EXCAVATIONS SHALL BE SLOPED OR SHORED IN ACCORDANCE WITH OSHA STANDARDS.

1 MANHOLE DETAILS
SCALE: NTS



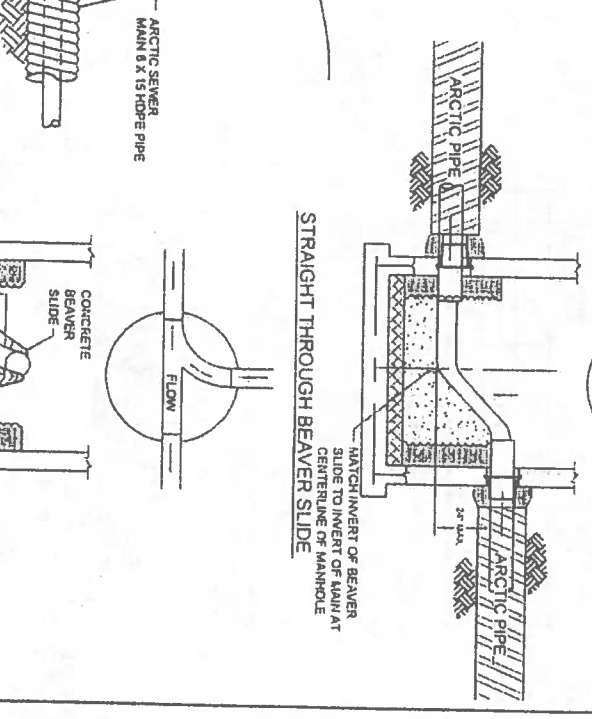
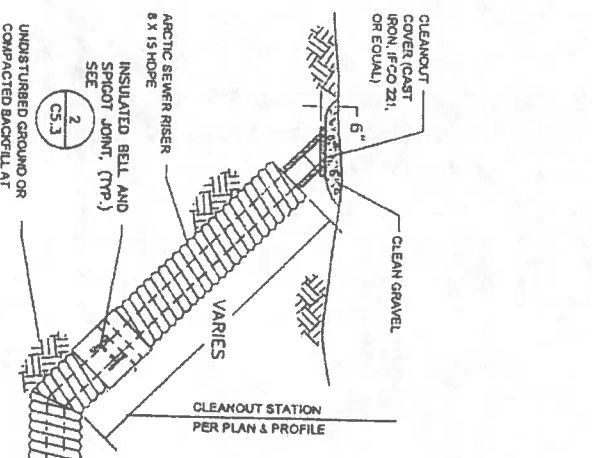
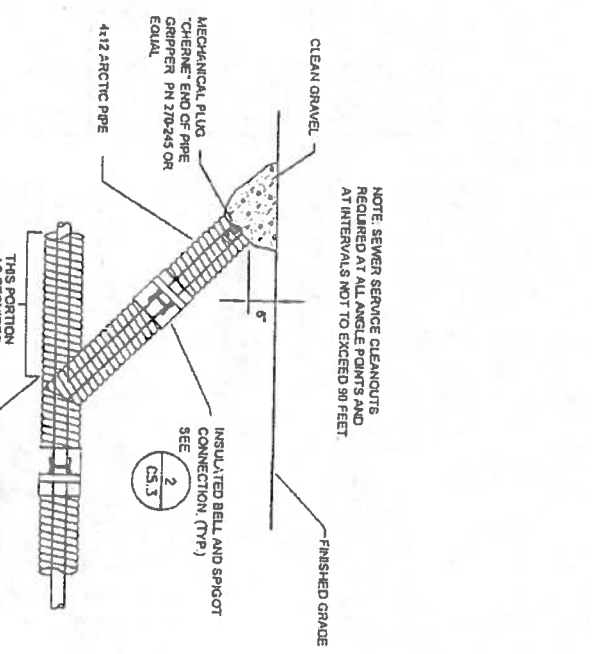
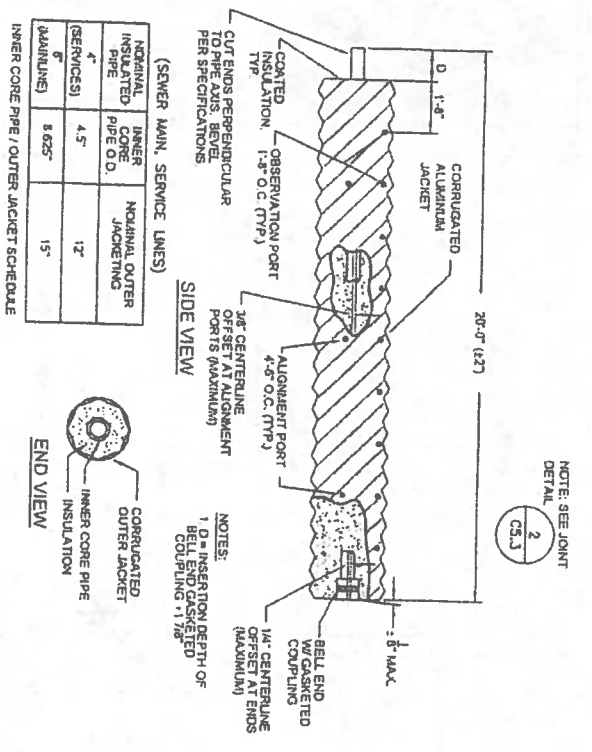
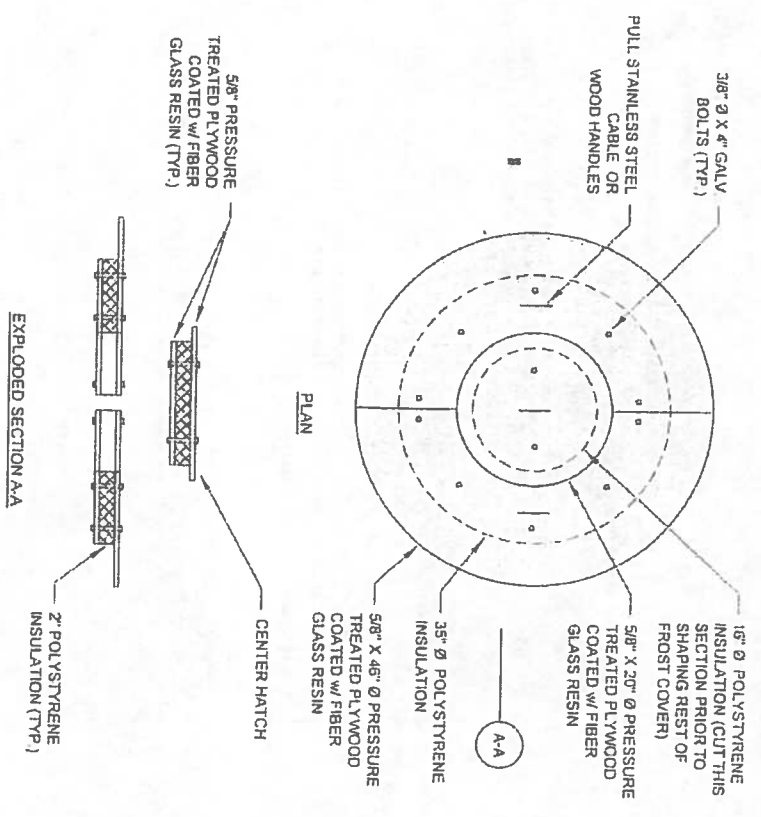
FERRULE INSERT LOCATIONS



SANITARY MANHOLE NOTES:

1. PRECAST MANHOLE SECTIONS SHALL BE REINFORCED CONCRETE CONFORMING TO ASTM C-478.
2. THE MANHOLE BASE SHALL BE INTEGRALLY CAST WITH THE BOTTOM BARREL SECTION.
3. RAM-NEK SEALANT OR ENGINEER APPROVED RUBBER GASKET AS SUPPLIED FROM MANHOLE MANUFACTURER SHALL BE INSTALLED AT ALL PRECAST JOINTS.
4. LOOP FERRULE INSERTS AND JOINT STRAPS SHALL BE PROVIDED AS SHOWN ON THE DETAIL.
5. EDPM PIPE CONNECTORS (2-LOCK OR EQUAL) SHALL BE INSTALLED AT ALL PIPE PENETRATIONS.
6. PIPES PENETRATING THE MANHOLE SHALL EXTEND 3 INCHES INTO THE MANHOLE.
7. FOR MANHOLE HEIGHTS LESS THAN 6 FEET, SUBSTITUTE A PRECAST REINFORCED CONCRETE FLAT SLAB TOP FOR THE ECCENTRIC CONE SECTION.
8. MANHOLE RING, CATCH PAN AND SOLID COVER MARKED "SEWER" SHALL MEET ALASKA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION (IFCO 740 OR EQUAL).
9. MANHOLE STEPS SHALL BE CAST IN PLACE AND SHALL BE 1/2" GRADE 60 STEEL REINFORCEMENT DIPPED IN COPOLYMER POLYPROPYLENE PLASTIC.
10. MANHOLE SHALL BE WRAPPED WITH 2 LAYERS OF 6 MIL VISQUEEN PRIOR TO BACKFILL.
11. TOP OF CASTING (T.O.C.) ELEVATION:
 - (a) GRAVEL ROAD SURFACE: -6" BELOW FINAL GRADE
 - (b) PAVED ROAD SURFACE: -INSTALL TOP OF COVER 1/2" BELOW SURFACE OF ASPHALT.
 - (c) OFF ROADS AND TRAVELED WAY: -INSTALL TOP 6" ABOVE FINAL GRADE

2 MANHOLE FROST COVER DETAILS
SCALE: NTS

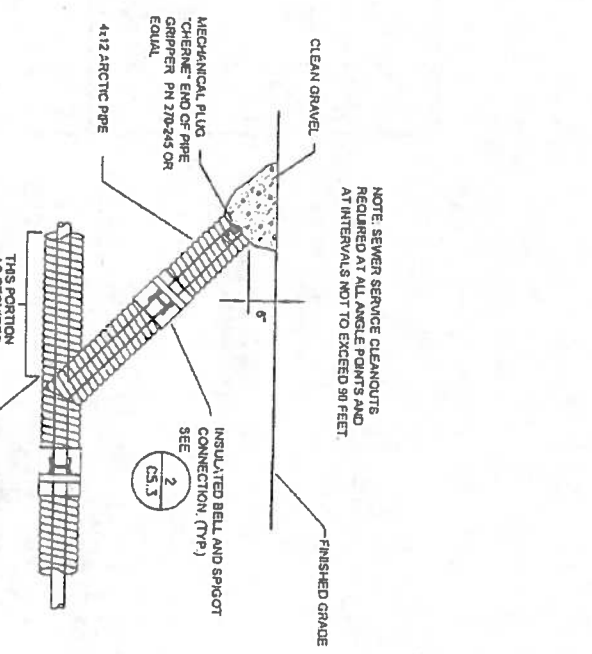


3 HDPE SEWER MAIN ALUMINUM JACKET
SCALE: NTS

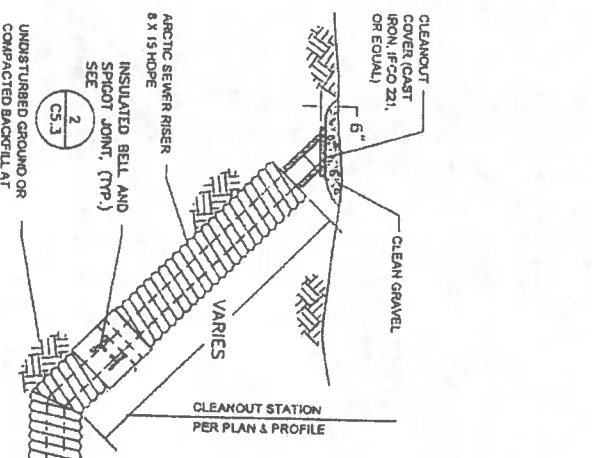
INNER PIPE	INNER PIPE SCHEDULE	INNER PIPE SCHEDULE	INNER PIPE SCHEDULE
4"	4.5"	12"	15"

INNER CORE PIPE / OUTER JACKET SCHEDULE

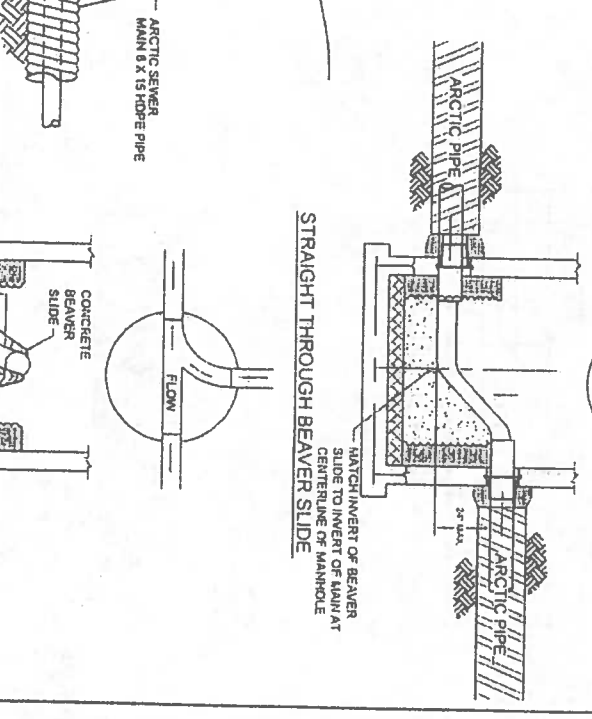
4 SEWER SERVICE CLEANOUT
SCALE: NTS



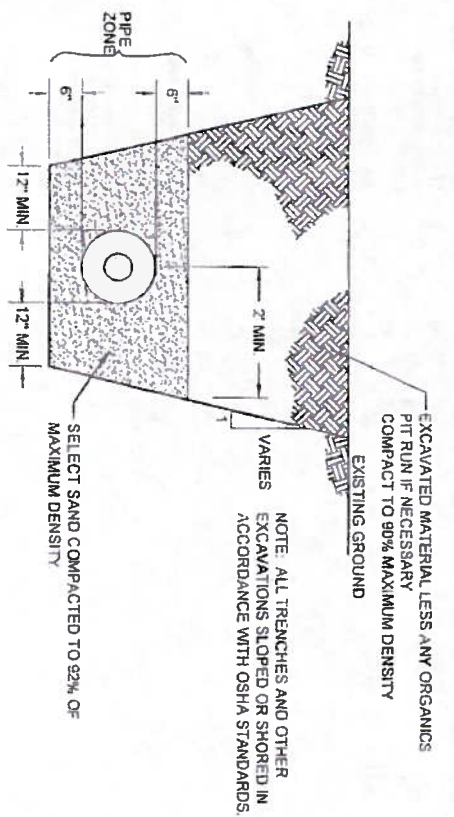
5 SEWER MAIN CLEANOUT
SCALE: NTS



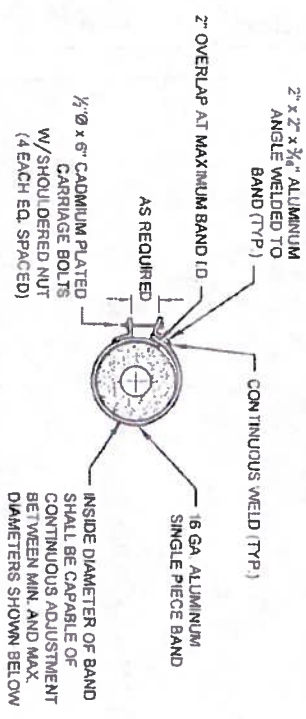
6 BEAVER SLIDE
SCALE: NTS



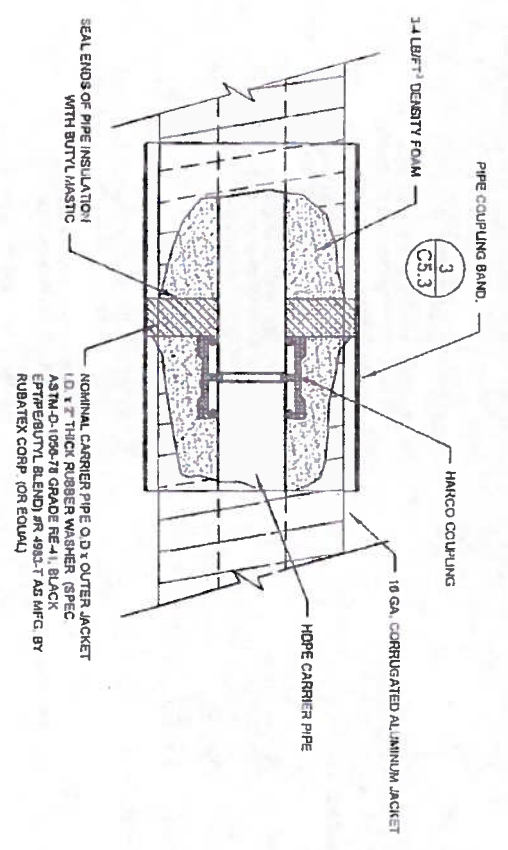
<p>Project No. _____ Date: JUNE 2000 Designed: JFK Drawn: LAM Approved: LAP</p>	<p>REVISION</p> <table border="1"> <tr> <th>NO.</th> <th>BY</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	BY	DATE				<p>CE2 ENGINEERS, INC. PO BOX 22248 ANCHORAGE, AK 99523 PH: 907-349-1810 FAX: 907-348-1015</p>	<p>2010-11 WASTEWATER SYSTEM IMPROVEMENTS SEWER MAIN AND MANHOLE DETAILS TULUKSAK, ALASKA</p>	<p>STATE OF ALASKA 40 TH LIVES A PERSON ALASKA REGISTERED PROFESSIONAL ENGINEER 11111</p>	<p>VILLAGE SAFE WATER ALASKA</p>	<p>SCALE: AS SHOWN 1" = 10'-0" (VERTICAL) 1" = 10'-0" (HORIZONTAL)</p>	<p>RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE. NAME _____ DATE _____</p>
NO.	BY	DATE											



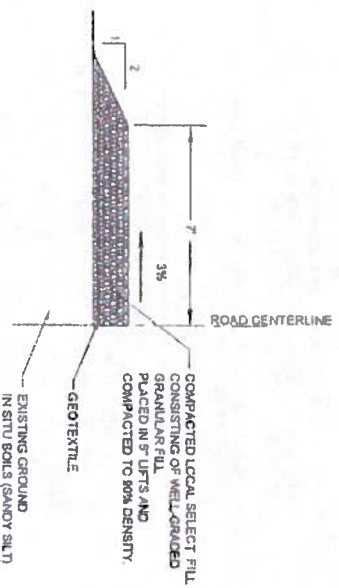
1 TYPICAL TRENCH SECTION IN THAWED AND THAW STABLE GROUND
SCALE NTS



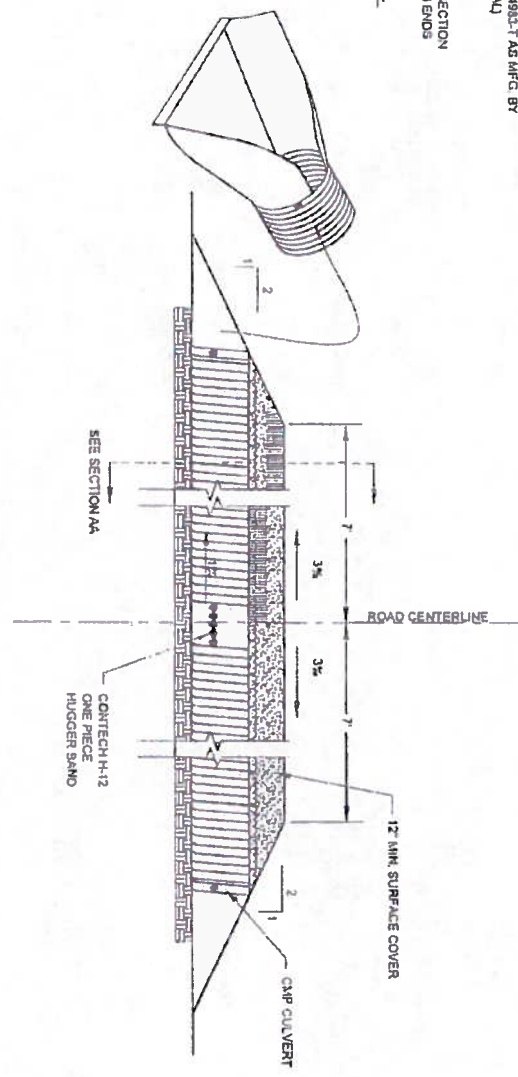
2 GRAVITY SEWER JOINT ENCASEMENT DETAIL
SCALE NTS



3 GRAVITY SEWER JOINT ENCASEMENT DETAIL
SCALE NTS



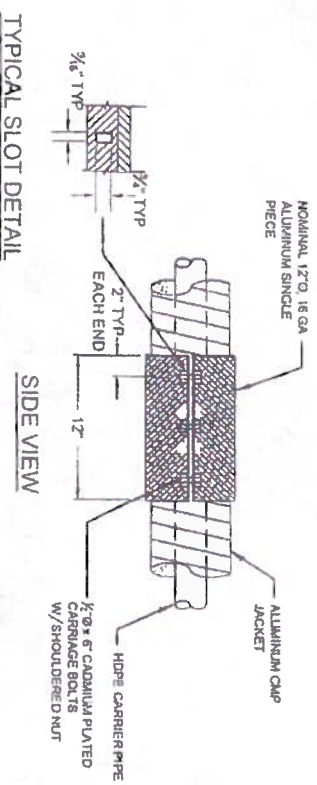
4 ROAD CROSS SECTION
SCALE NTS



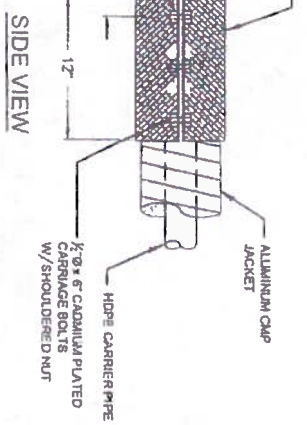
5 ROAD AND CULVERT
SCALE NTS

NOM. JACKET SIZE	ACTUAL JACKET SIZE (O.D.)	INSIDE DIAMETER MIN.	INSIDE DIAMETER MAX.
12"	12 5/8"	12 3/4"	13 3/8"
15"	15 5/8"	15 3/4"	16 3/8"
16"	16 5/8"	16 3/4"	17 3/8"
18"	18 5/8"	18 3/4"	20"
21"	20 3/4"	20 3/4"	22"

END VIEW

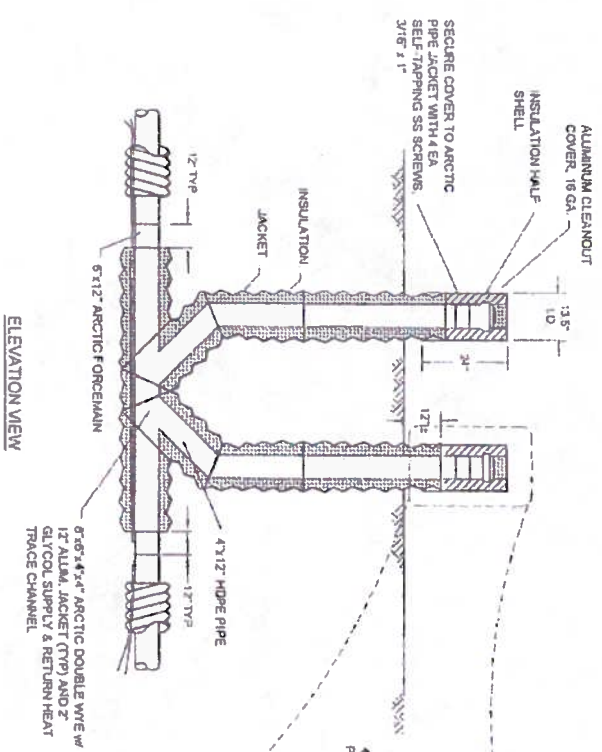


TYPICAL SLOT DETAIL

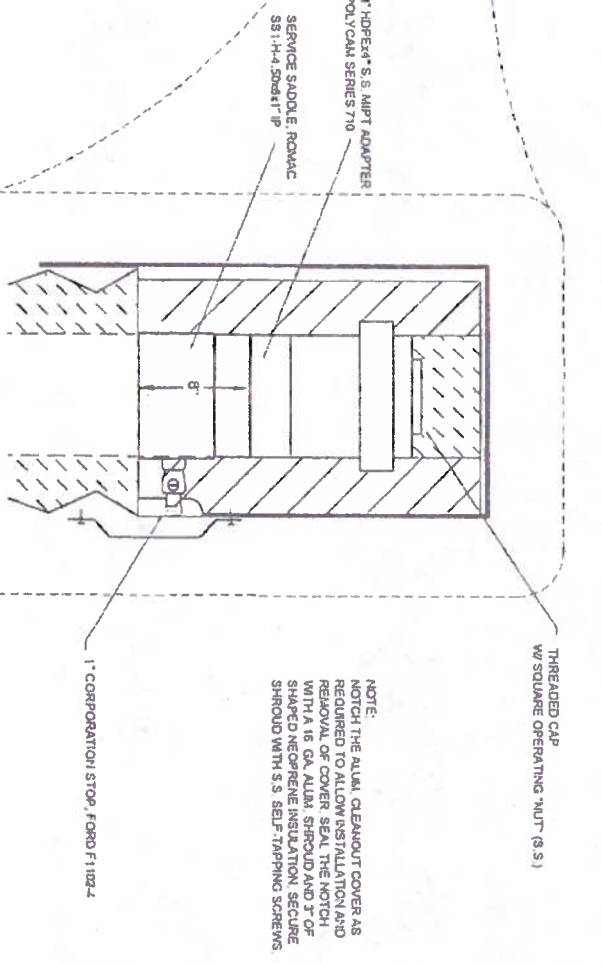


SIDE VIEW

3 GRAVITY SEWER ARCTIC PIPE COUPLING BAND DETAIL
SCALE NTS



ELEVATION VIEW



4 6X15 ARCTIC PIPE DOUBLE WYE CLEANOUT DETAIL
SCALE NTS

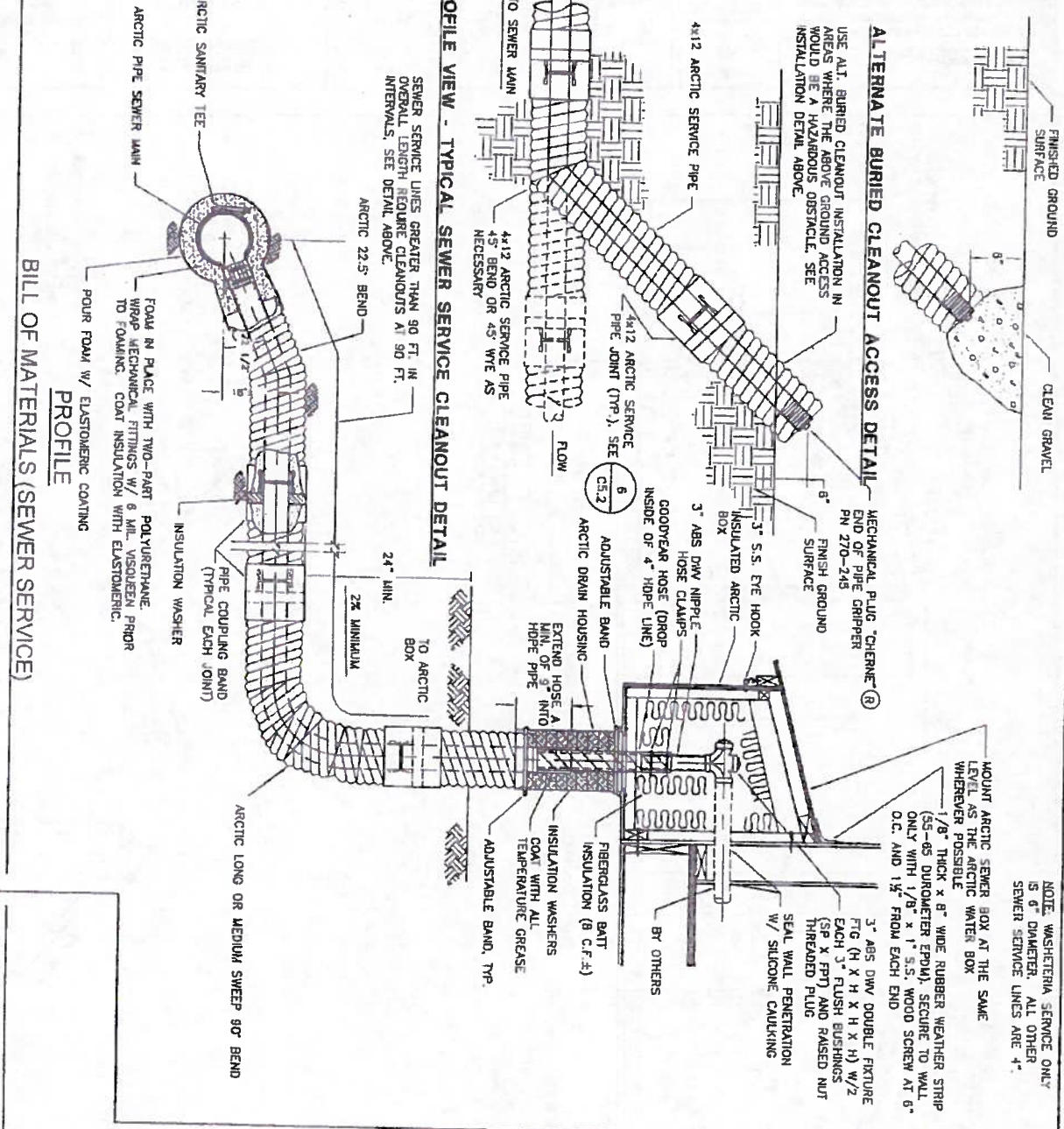
MANUAL AIR RELEASE DETAIL (UPSTREAM SIDE ONLY)

NOTE:
NOTCH THE ALUM. CLEANOUT COVER AS REQUIRED TO ALLOW INSTALLATION AND REMOVAL OF COVER SEAL THE NOTCH WITH A 16 GA. ALUM. SHROUD AND 7\"/>

Project No. _____ Date: JUNE 2009 Designed: PCW Drawn: DDR Approved: PCW	REVISION	BY	DATE	 P.O. BOX 22348 ANCHORAGE, AK 99502 PH: 807-340-8100 FAX: 807-348-1015	2010-11 WASTEWATER SYSTEM IMPROVEMENTS TRENCH AND SEWER CONNECTION DETAILS TULUKSAK, ALASKA	 STATE OF ALASKA 49th License # 14688 License Exp. 12/31/11 PROFESSIONAL ENGINEER	 VILLAGE SAFE WATER ALASKA	SCALE: AS SHOWN	RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.	NAME _____	DATE _____
	SHEET NO. C5.3										

1 TYPICAL SEWER SERVICE CONNECTION TO MAIN
C5.4 NTS

ARCTIC 11 1/4" OR NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.	ARCTIC 22 1/2" OR NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.
ARCTIC SERVICE LINE	NOMINAL 4" X 12" OR 6" X 12" RUBBER WASHER, 4.75" I.D. X 12" O.D. X 2" THICK (SPEC. ASTM-D-1056-05 GRADE 2A1 BLACK EPT/PE/BUTL BLEND).
INSULATION WASHER	NOMINAL 12" X 18 GA. ALUMINUM, SINGLE PIECE, 3 BOLT BAND X 12" LONG.
PIPE COUPLING BAND	NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.
ARCTIC LONG SWEEP 90° BEND	FERNCO ADH-13, 13" DIAMETER X 29" LONG ARCTIC DRAIN HOUSING WITH 8 BOLT UPPER RING 7/16" HOLES, FERNCO INC., DAWSON, MI (800-521-1283).
ARCTIC DRAIN HOUSING	GOODYEAR "H-BULDER" STR RADATOR HOSE, P/N 57256, FLEXITEN SAE 20 R 01, 3.50" I.D., 3.90" O.D. FITS INSIDE 4" HOPE, SDR 17, FOR 6" SERVICE TO THE WATER TREATMENT PLANT/WASHER AREA USE A THROUGH MISSION P/N 1856 66 ANG REINFORCED COUPLING.
GOODYEAR HOSE	INSULATED PLYWOOD ARCTIC BOX WITH HINGED LID AND REMOVABLE FRONT PANEL, FABRICATE TO CEZ ENGINEERS STANDARD DETAIL, APPROXIMATE SIZE = 8 C.F.
INSULATED ARCTIC BOX	PLUMBING
HOSE CLAMPS AND ADJUSTABLE BAND	3" OR 6" ABS - DMV PIPE ASTM D788 & D2861.
POUR FOAM	STAINLESS STEEL, 1/2" WIDE, ADJUSTABLE.
ELASTOMERIC COATING	2 COMPONENT URETHANE FOAM, 2.5 LB./C.F. DENSITY, APPLY 50 MILS DURATHANE ELASTOMERIC RESIN COATING AS FURNISHED BY URETHANE CONTRACTORS SUPPLY CORP., ANCHORAGE.



BILL OF MATERIALS (SEWER SERVICE)

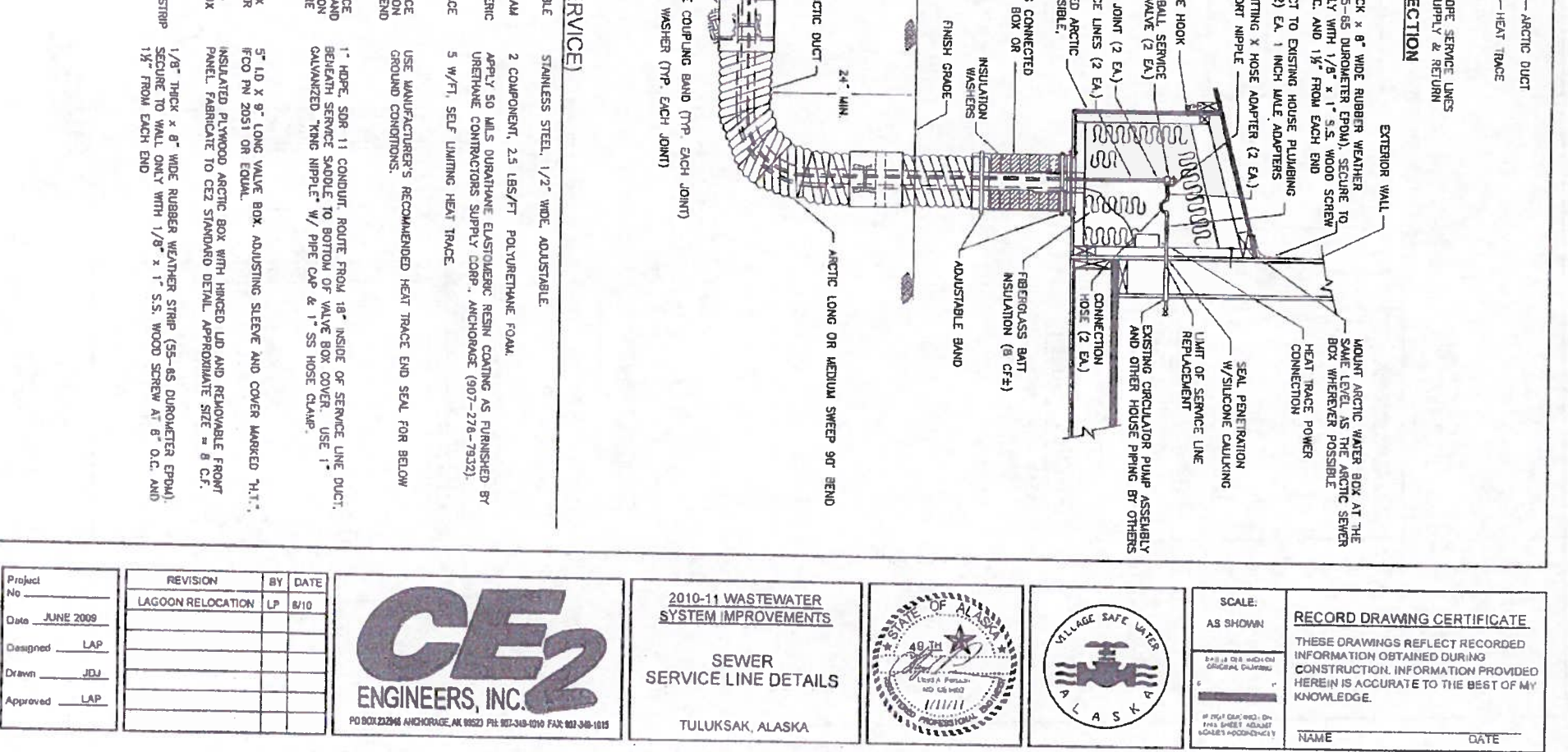
ARCTIC 11 1/4" OR NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.	ARCTIC 22 1/2" OR NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.
ARCTIC SERVICE LINE	NOMINAL 4" X 12" OR 6" X 12" RUBBER WASHER, 4.75" I.D. X 12" O.D. X 2" THICK (SPEC. ASTM-D-1056-05 GRADE 2A1 BLACK EPT/PE/BUTL BLEND).
INSULATION WASHER	NOMINAL 12" X 18 GA. ALUMINUM, SINGLE PIECE, 3 BOLT BAND X 12" LONG.
PIPE COUPLING BAND	NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.
ARCTIC LONG SWEEP 90° BEND	FERNCO ADH-13, 13" DIAMETER X 29" LONG ARCTIC DRAIN HOUSING WITH 8 BOLT UPPER RING 7/16" HOLES, FERNCO INC., DAWSON, MI (800-521-1283).
ARCTIC DRAIN HOUSING	GOODYEAR "H-BULDER" STR RADATOR HOSE, P/N 57256, FLEXITEN SAE 20 R 01, 3.50" I.D., 3.90" O.D. FITS INSIDE 4" HOPE, SDR 17, FOR 6" SERVICE TO THE WATER TREATMENT PLANT/WASHER AREA USE A THROUGH MISSION P/N 1856 66 ANG REINFORCED COUPLING.
GOODYEAR HOSE	INSULATED PLYWOOD ARCTIC BOX WITH HINGED LID AND REMOVABLE FRONT PANEL, FABRICATE TO CEZ ENGINEERS STANDARD DETAIL, APPROXIMATE SIZE = 8 C.F.
INSULATED ARCTIC BOX	PLUMBING
HOSE CLAMPS AND ADJUSTABLE BAND	3" OR 6" ABS - DMV PIPE ASTM D788 & D2861.
POUR FOAM	STAINLESS STEEL, 1/2" WIDE, ADJUSTABLE.
ELASTOMERIC COATING	2 COMPONENT URETHANE FOAM, 2.5 LB./C.F. DENSITY, APPLY 50 MILS DURATHANE ELASTOMERIC RESIN COATING AS FURNISHED BY URETHANE CONTRACTORS SUPPLY CORP., ANCHORAGE.

2 TYPICAL WATER SERVICE CONNECTION TO MAIN
C5.4 NTS

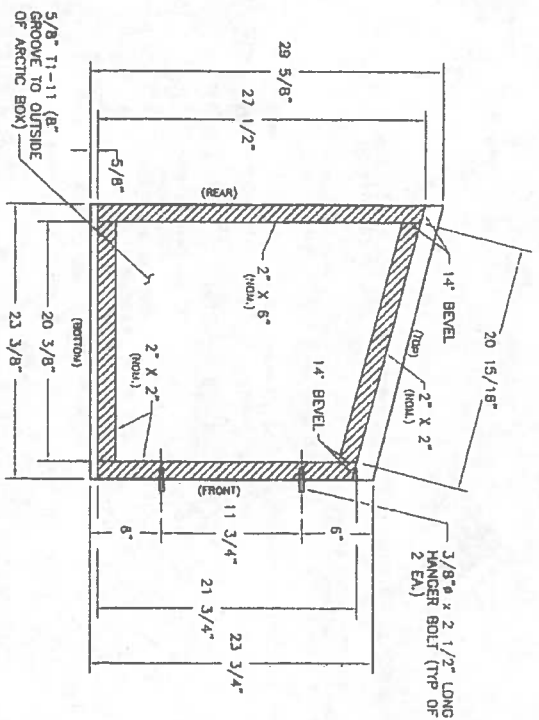
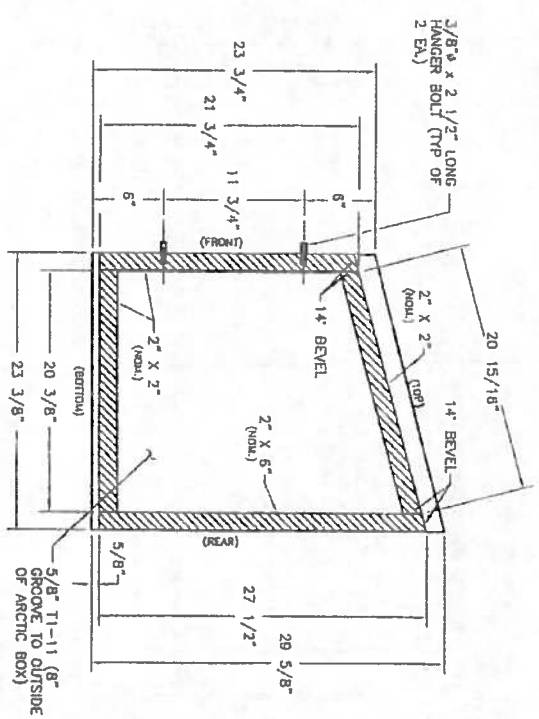
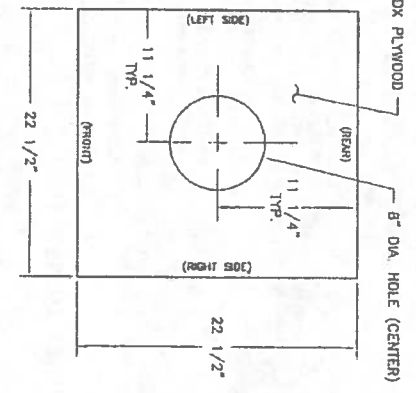
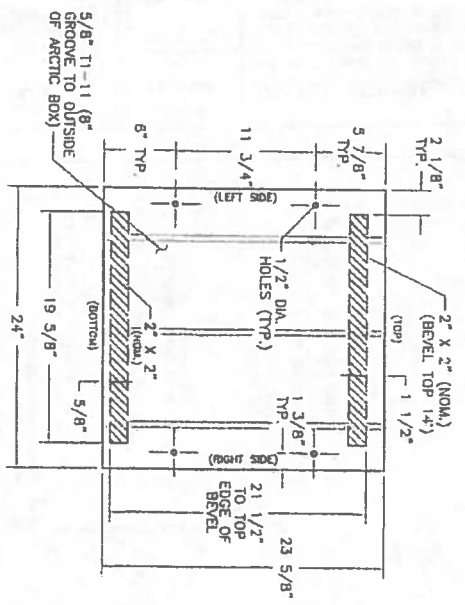
ARCTIC 11 1/4" OR NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.	ARCTIC 22 1/2" OR NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.
ARCTIC SERVICE LINE	NOMINAL 4" X 12" OR 6" X 12" RUBBER WASHER, 4.75" I.D. X 12" O.D. X 2" THICK (SPEC. ASTM-D-1056-05 GRADE 2A1 BLACK EPT/PE/BUTL BLEND).
INSULATION WASHER	NOMINAL 12" X 18 GA. ALUMINUM, SINGLE PIECE, 3 BOLT BAND X 12" LONG.
PIPE COUPLING BAND	NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.
ARCTIC LONG SWEEP 90° BEND	FERNCO ADH-13, 13" DIAMETER X 29" LONG ARCTIC DRAIN HOUSING WITH 8 BOLT UPPER RING 7/16" HOLES, FERNCO INC., DAWSON, MI (800-521-1283).
ARCTIC DRAIN HOUSING	GOODYEAR "H-BULDER" STR RADATOR HOSE, P/N 57256, FLEXITEN SAE 20 R 01, 3.50" I.D., 3.90" O.D. FITS INSIDE 4" HOPE, SDR 17, FOR 6" SERVICE TO THE WATER TREATMENT PLANT/WASHER AREA USE A THROUGH MISSION P/N 1856 66 ANG REINFORCED COUPLING.
GOODYEAR HOSE	INSULATED PLYWOOD ARCTIC BOX WITH HINGED LID AND REMOVABLE FRONT PANEL, FABRICATE TO CEZ ENGINEERS STANDARD DETAIL, APPROXIMATE SIZE = 8 C.F.
INSULATED ARCTIC BOX	PLUMBING
HOSE CLAMPS AND ADJUSTABLE BAND	3" OR 6" ABS - DMV PIPE ASTM D788 & D2861.
POUR FOAM	STAINLESS STEEL, 1/2" WIDE, ADJUSTABLE.
ELASTOMERIC COATING	2 COMPONENT URETHANE FOAM, 2.5 LB./C.F. DENSITY, APPLY 50 MILS DURATHANE ELASTOMERIC RESIN COATING AS FURNISHED BY URETHANE CONTRACTORS SUPPLY CORP., ANCHORAGE.

BILL OF MATERIALS (WATER SERVICE)

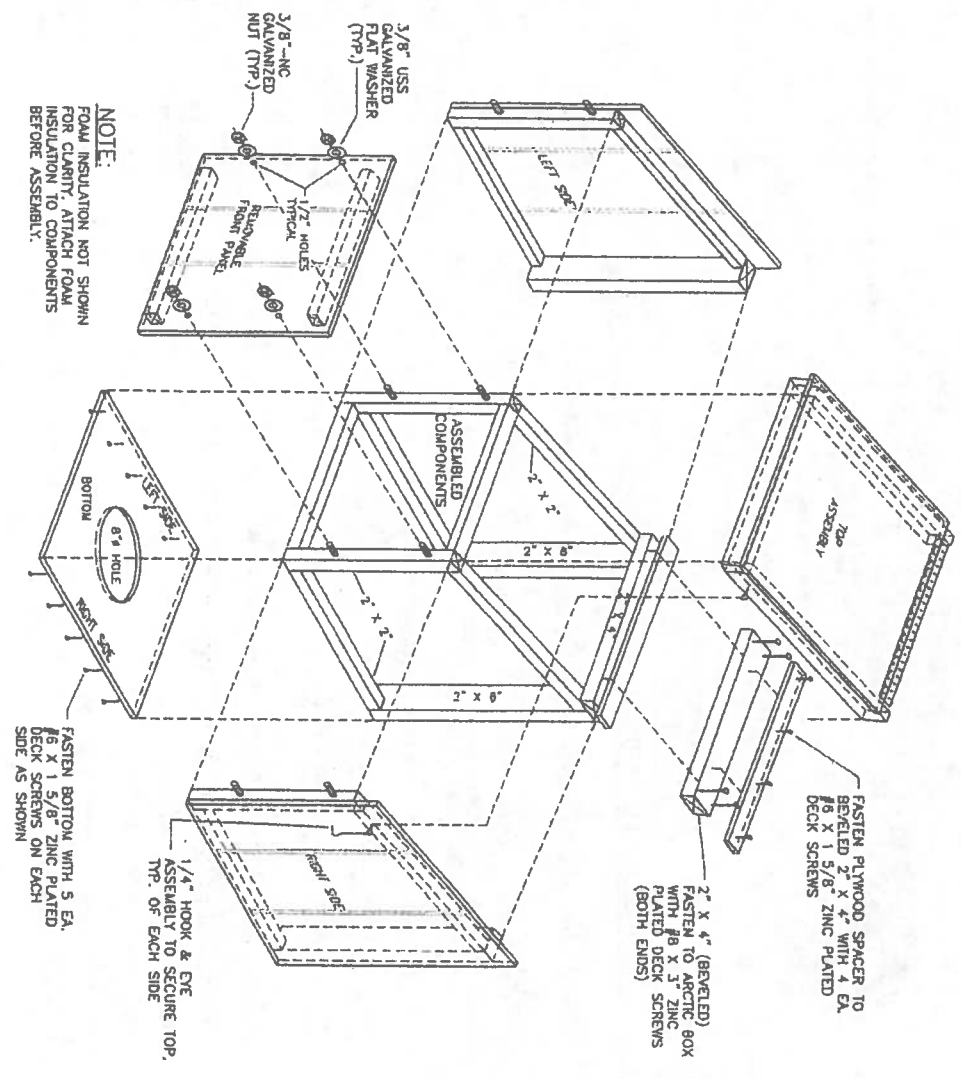
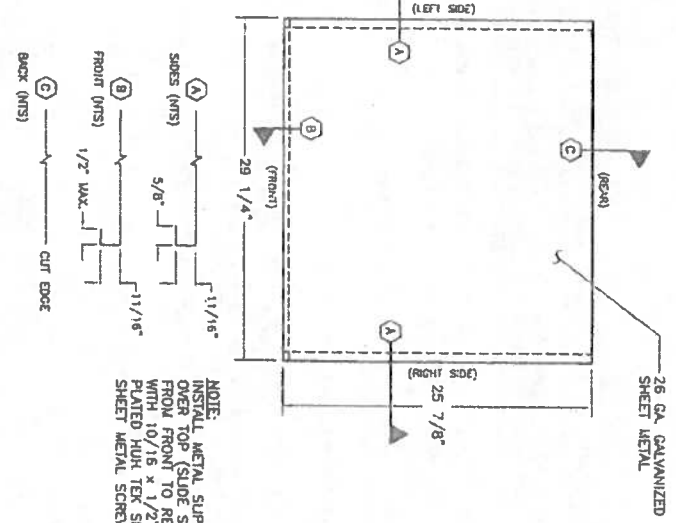
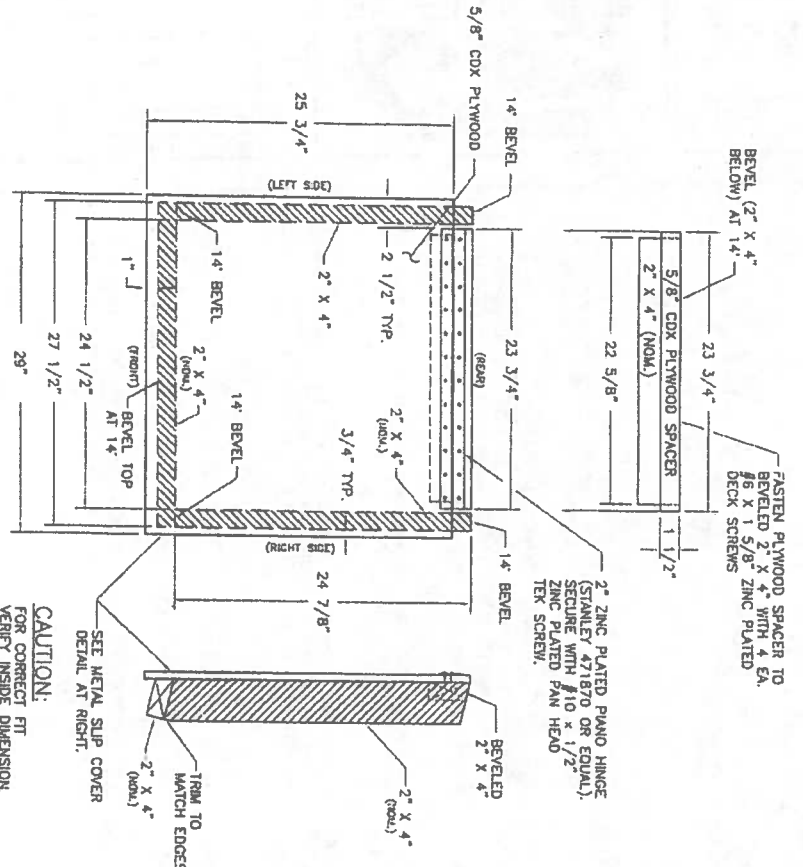
ARCTIC 11 1/4" OR NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.	ARCTIC 22 1/2" OR NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.
ARCTIC SERVICE LINE	NOMINAL 4" X 12" OR 6" X 12" RUBBER WASHER, 4.75" I.D. X 12" O.D. X 2" THICK (SPEC. ASTM-D-1056-05 GRADE 2A1 BLACK EPT/PE/BUTL BLEND).
INSULATION WASHER	NOMINAL 12" X 18 GA. ALUMINUM, SINGLE PIECE, 3 BOLT BAND X 12" LONG.
PIPE COUPLING BAND	NOMINAL 4" X 12" OR 6" X 12" PRE-INSULATED HOPE, SDR 17, 90° LONG SWEEP (30° BEND RADIUS), 18 GA. CORRUGATED ALUMINUM JACKET, PUSH ON COUPLING X BEVELED END.
ARCTIC LONG SWEEP 90° BEND	FERNCO ADH-13, 13" DIAMETER X 29" LONG ARCTIC DRAIN HOUSING WITH 8 BOLT UPPER RING 7/16" HOLES, FERNCO INC., DAWSON, MI (800-521-1283).
ARCTIC DRAIN HOUSING	GOODYEAR "H-BULDER" STR RADATOR HOSE, P/N 57256, FLEXITEN SAE 20 R 01, 3.50" I.D., 3.90" O.D. FITS INSIDE 4" HOPE, SDR 17, FOR 6" SERVICE TO THE WATER TREATMENT PLANT/WASHER AREA USE A THROUGH MISSION P/N 1856 66 ANG REINFORCED COUPLING.
GOODYEAR HOSE	INSULATED PLYWOOD ARCTIC BOX WITH HINGED LID AND REMOVABLE FRONT PANEL, FABRICATE TO CEZ ENGINEERS STANDARD DETAIL, APPROXIMATE SIZE = 8 C.F.
INSULATED ARCTIC BOX	PLUMBING
HOSE CLAMPS AND ADJUSTABLE BAND	3" OR 6" ABS - DMV PIPE ASTM D788 & D2861.
POUR FOAM	STAINLESS STEEL, 1/2" WIDE, ADJUSTABLE.
ELASTOMERIC COATING	2 COMPONENT URETHANE FOAM, 2.5 LB./C.F. DENSITY, APPLY 50 MILS DURATHANE ELASTOMERIC RESIN COATING AS FURNISHED BY URETHANE CONTRACTORS SUPPLY CORP., ANCHORAGE.



Project No. _____ Date: JUNE 2009 Designed: LAP Drawn: JDI Approved: LAP	REVISION LAGOON RELOCATION LP 8/10	CE2 ENGINEERS, INC. PO BOX 22294 ANCHORAGE, AK 99522 PH 907-348-4199 FAX 907-348-1815	2010-11 WASTEWATER SYSTEM IMPROVEMENTS SEWER SERVICE LINE DETAILS TULUKSAK, ALASKA	STATE OF ALASKA 48 TH PROFESSIONAL ENGINEER NO. 45810	VILLAGE SAFE WATER ALASKA	SCALE: AS SHOWN RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE. NAME _____ DATE _____
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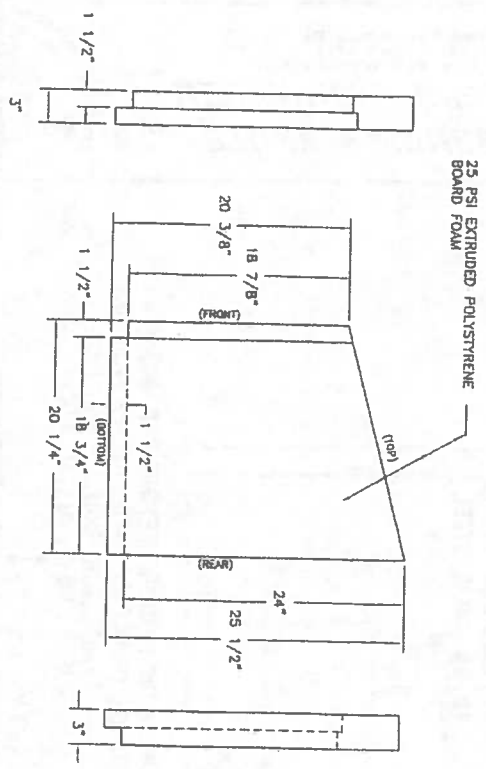


- GENERAL NOTES:**
1. ALL "2x" MATERIAL SHALL BE GRADE #2 OR BETTER.
 2. FLAWED CONSTRUCTION MATERIAL SHALL NOT BE USED IN ARCTIC BOX CONSTRUCTION. FLAWED MATERIAL INCLUDES LARGE KNOTS, CRACKS, CHECKS, DELAMINATIONS, AND SPLITS CAUSED DURING ASSEMBLY.
 3. ALL "2x" MATERIAL SHALL BE FASTENED TO PLYWOOD AND T1-11 WITH #6 X 1 5/8" DECK SCREWS OR 1 1/2" LONG 18 GA. STAPLES AT 4" O.C.

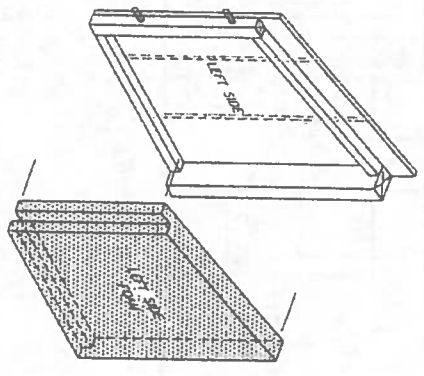


Project No. C5.5 Date: JUNE 2009 Designed: JDJ Drawn: JDJ Approved: LAP	REVISION LAGOON RELOCATION LP 8/10	BY DATE LP 8/10	 PO BOX 23246 ANCHORAGE, AK 99523 PH: 807-348-1910 FAX: 807-348-1015	2010-11 WASTEWATER SYSTEM IMPROVEMENTS ARCTIC BOX DETAILS TULUKSAK, ALASKA	 STATE OF ALASKA 49th DEPARTMENT OF ENVIRONMENTAL CONSERVATION DIVISION OF POLLUTION CONTROL 1100 W. 5TH AVENUE ANCHORAGE, ALASKA 99501	 VILLAGE SAFE WATER ALASKA	SCALE: AS SHOWN	RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
	NAME _____ DATE _____							
	UP NOT USE PATH OR 1/8" SCALE 1/2" = 1'							

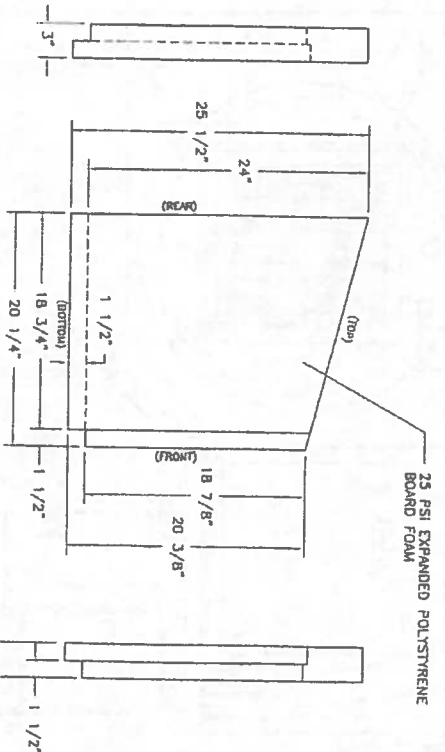
NOTE:
ALL FOAM INSULATION SHALL BE SECURELY GLUED TO THE INSIDE FACE OF THE T1-11 ARCTIC BOX WITH FOAM-PLYWOOD ADHESIVE (LIQUID NAILS LN 603) TYPICAL.



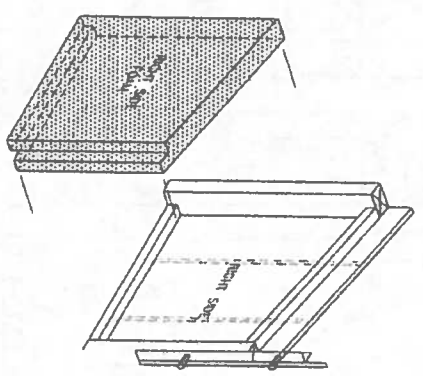
LEFT SIDE FOAM
(VIEW FROM INSIDE ARCTIC BOX)
SCALE: 1 1/2" = 1'



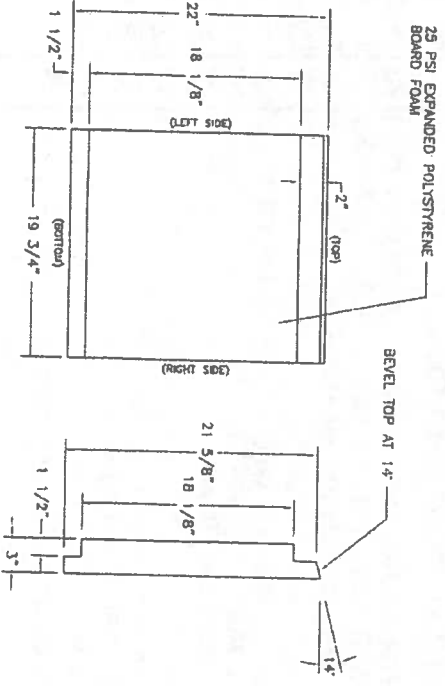
LEFT SIDE ASSEMBLY
NOT TO SCALE



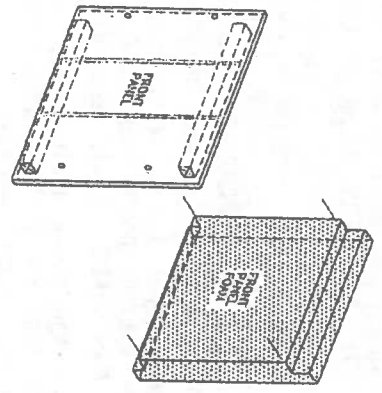
RIGHT SIDE FOAM
(VIEW FROM INSIDE ARCTIC BOX)
SCALE: 1 1/2" = 1'



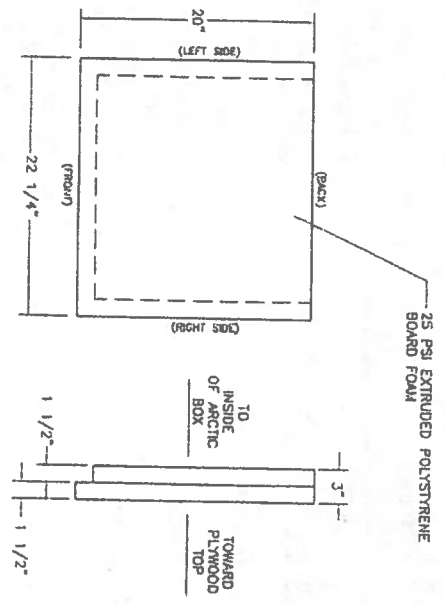
RIGHT SIDE ASSEMBLY
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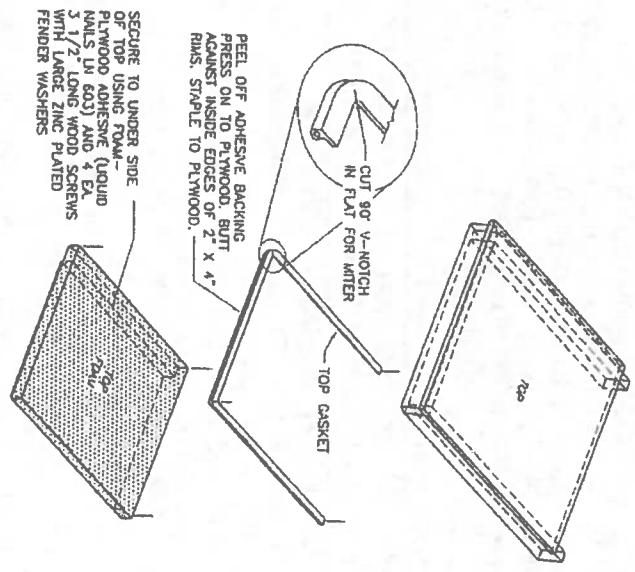
FRONT PANEL FOAM
SCALE: 1 1/2" = 1'



FRONT PANEL ASSEMBLY
NOT TO SCALE

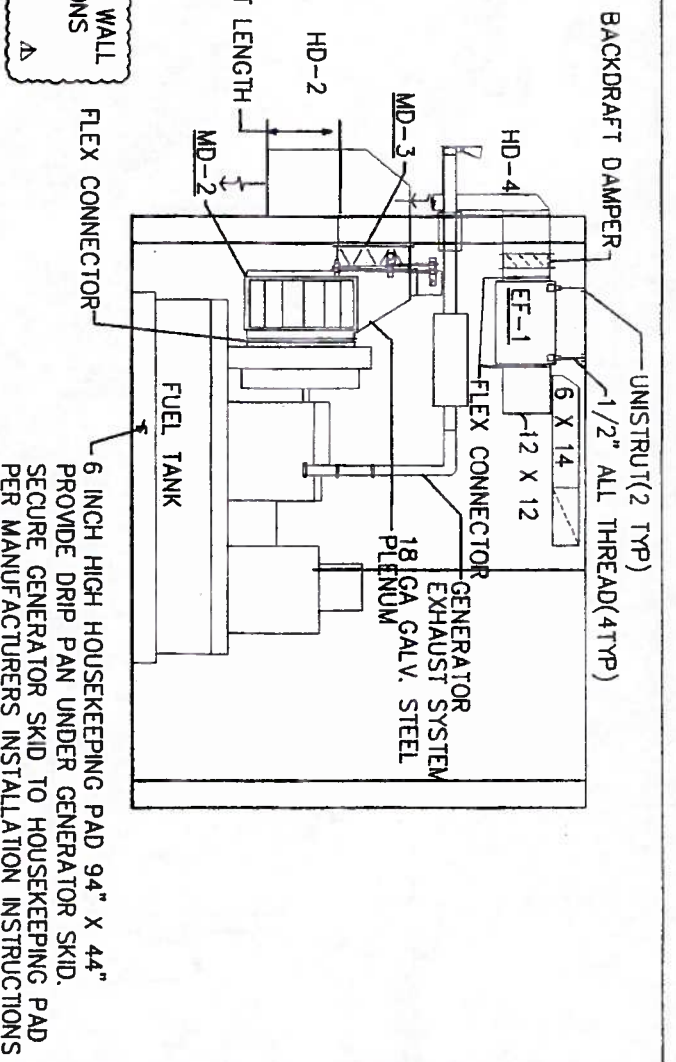
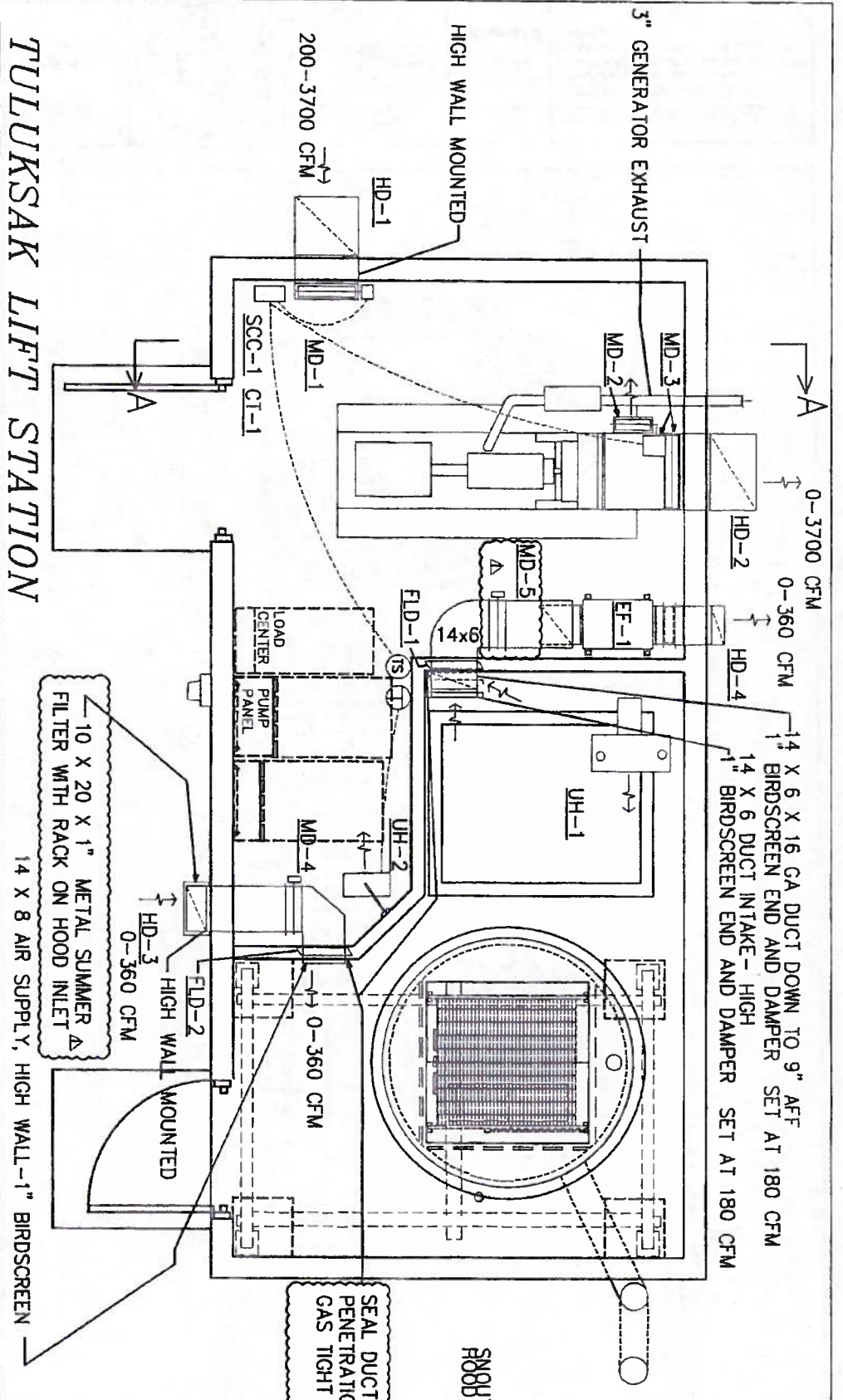


TOP FOAM
(VIEW FROM ABOVE)
SCALE: 1 1/2" = 1'



TOP ASSEMBLY
NOT TO SCALE

<p>Project No. _____ Date JUNE 2008 Designed JDJ Drawn JDJ Approved LAP</p>	<table border="1"> <thead> <tr> <th>REVISION</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>LAGOON RELOCATION</td> <td>LP</td> <td>8/10</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REVISION	BY	DATE	LAGOON RELOCATION	LP	8/10										 PO BOX 222916 ANCHORAGE, AK 99521 PH: 807-348-1010 FAX: 807-348-1015	<p>2010-11 WASTEWATER SYSTEM IMPROVEMENTS</p> <p>ARCTIC BOX DETAILS</p> <p>TULUKSAK, ALASKA</p>			<p>SCALE: AS SHOWN</p> <p>1" = 1'-0"</p> <p>1/2" = 6"</p> <p>1/4" = 3"</p> <p>IF NOT SHOWN ON THIS SHEET, ADULT SCALE IS RECORDED</p>	<p>RECORD DRAWING CERTIFICATE</p> <p>THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.</p> <p>NAME _____ DATE _____</p>
REVISION	BY	DATE																				
LAGOON RELOCATION	LP	8/10																				



MD-1 MOTORIZED DAMPER 24 WIDE X 16 HIGH. LOW LEAKAGE. 3 POSITION DAMPER MFG: RUSKIN CD-50 DAMPER WITH BELIMO AF24 W/ZDB-AF2 SPRING RETURN ACTUATOR 24 VAC 5 VA
SUMMER FILTER: 16 X 25 X 1 AAF 316-001-600 OR EQUAL

MD-2 MOTORIZED DAMPER 12" WIDE X 26" HIGH. LOW LEAKAGE. VARIABLE POSITION DAMPER MFG: RUSKIN CD-50 WITH COMMON OPERATOR WITH MD-3

MD-3 MOTORIZED DAMPER 24" WIDE X 18" HIGH. LOW LEAKAGE. VARIABLE POSITION DAMPER MFG: RUSKIN CD-50 DAMPER WITH HONEYWELL M9185E MOTOR W/4074 EDC MODULE 24 VAC 24 VA PROVIDE CRANK ARMS, RODS, AND FITTINGS TO EFFECT 2 DAMPER CONTROL

MD-4 MOTORIZED DAMPER 14" WIDE X 8" HIGH. LOW LEAKAGE. TWO POSITION DAMPER MFG: RUSKIN CD-50 DAMPER WITH BELIMO AF24 W/ZDB-AF2 SPRING RETURN ACTUATOR 24 VAC 5 VA

MD-5 MOTORIZED DAMPER 14" WIDE X 6" HIGH. LOW LEAKAGE. TWO POSITION DAMPER MFG: RUSKIN CD-50 DAMPER WITH BELIMO AF24 W/ZDB-AF2 SPRING RETURN ACTUATOR 24 VAC 5 VA

SUMMER FILTER: 10 X 20 X 1 AAF 316-001-200 OR EQUAL

HD-1 INTAKE HOOD: 24" WIDE X 18" DEEP WITH 36 INCH SNOOT. 16 GA. GALVANIZED STEEL, 1" BIRDSCREEN, SEE DETAIL SHEET M1-2

HD-2 EXHAUST HOOD: 24" WIDE X 16" DEEP WITH 9 INCH SNOOT. 16 GA. GALVANIZED STEEL, 1" BIRDSCREEN, SEE DETAIL SHEET M1-2

HD-3 INTAKE HOOD: 14" WIDE X 8" DEEP WITH 18 INCH SNOOT. 16 GA. GALVANIZED STEEL, 1" BIRDSCREEN, SEE DETAIL SHEET M1-2

FLARE INTAKE OF HD-3 FOR 10x20 METAL FILTER W/ RACK FOR SUMMER FILTER

HD-4 EXHAUST HOOD: 12" WIDE X 5" DEEP WITH 16 INCH SNOOT. 16 GA. GALVANIZED STEEL, 1" BIRDSCREEN, SEE DETAIL SHEET M1-2

FLD-1 DYNAMIC FIRE DAMPER 14 X 6 MFG: RUSKIN DIBD2 OR EQUAL

FLD-2 DYNAMIC FIRE DAMPER 14 X 8 MFG: RUSKIN DIBD2 OR EQUAL

SEQUENCE OF OPERATION: LIFT STATION AREA

EF-1, MD-4, MD-5 OPERATION: EF-1, MD-4, MD-5 ARE INTERLOCKED. WHEN WALL SWITCH OUTSIDE LIFT STATION DOOR IS SET TO "ON" EF-1 STARTS, MD-4 OPENS, MD-5 OPENS TO FULL OPEN. SWITCH ACTIVATES FLASHING RED LIGHT (LABELED "UNSAFE TO ENTER"). LIGHT IS ON FOR 5 MINUTES TO PURGE AREA AND AT THE END OF THE 5 MINUTE TIME A GREEN LIGHT (LABELED "MONITOR WET WELL ROOM WITH COMBUSTIBLE GAS DETECTOR PRIOR TO ENTRY"), WHEN OPERATOR LEAVES WORK AREA THE SWITCH IS SET TO "OFF" AND EF-1 STOPS & MD-5, MD-5 DAMPERS CLOSE.

CI-1 CONTROL TRANSFORMER: 120 V PRIMARY/ 24 VAC SECONDARY 60 VA MFG: HONEYWELL OR EQUAL

EF-1 EXHAUST FAN: INLINE TYPE, BELT DRIVE. 360 CFM @ 0.4 INCHES W.C., ALUMINUM HOUSING AND WHEEL STAINLESS STEEL FASTENERS, PERMATECTOR COATING, TOGGLE SWITCH, DUAL DRIVES, GRIP NOTCH BELTS SPRING HANGER ISOLATORS, GREASABLE BEARINGS WITH EXTENDED LUBE LINES, TEFC MOTOR, BACKDRAFT DAMPER, MOTOR COVER. MFG: GREENHECK BSQ 90-4 1/4 HP/115V/1 PH OR APPROVED EQUAL

GENERATOR: NOMINAL 40 KW 208/3 PH/60 HZ SEE ELECTRICAL FOR CONFIG. MFG: KOHLER 40RE0ZJC (VERIFY) WIDE SKID CONFIG, DIESEL ENGINE, 1530 LB, 113 GALLON INTEGRAL SKID FUEL TANK (14 HIGH X 90.5 L X 41 WIDE, GENERATOR EXHAUST: 355 CFM, GENERATOR RADIATOR AIR 3400 CFM, COMBUSTION AIR-130 CFM

GENERATOR EXHAUST SYSTEM:
PROVIDE 3 INCH STAINLESS STEEL EXHAUST SYSTEM WITH PIPE, FLEX CONNECTOR, WALL THIMBLE FOR WOOD FRAME WALL, CLAMPS, FITTINGS, FASTENERS, HANGERS, RESIDENTIAL MUFFLER, FLAPPER, WRAP EXHAUST WITH APPROVED BLANKET INSULATION, 3M 615-(1 WRAP) OR EQUAL

HOUSEKEEPING PAD: PROVIDE CONCRETE PAD AND DRIP PAN UNDER SKID.

UH-1: UNIT HEATER, 10 KW, 208 V, 3 PH. HANGING UNIT HEATER WITH PROPELLOR FAN EXPLOSION PROOF UNIT WITH BUILT IN SPACE THERMOSTAT. PROVIDE CEILING MOUNTING KIT MFG: Q MARK GUX1000832 WITH SPACE T STAT. 29.2 AMPS, 840 CFM

UH-2: UNIT HEATER, 3 KW, 208/240 V, 1 PH. HANGING UNIT HEATER WITH PROPELLOR FAN PROVIDE WALL MOUNTING KIT, AND LOW VOLTAGE WALL THERMOSTAT. MFG: Q MARK MUH 0321 11/12.5 AMPS, 350 CFM

SEQUENCE OF OPERATION: GENERATOR OPERATION

MD-1, MD-2, MD-3 OPERATION: OFF POSITION: MD-1 IS CLOSED, MD-2 IS FULL OPEN, MD-3 IS FULL CLOSED GENERATOR IS STARTED: MD-1 OPENS, MD-2 BYPASSES AIR TO ROOM AND BEGINS TO MODULATE CLOSED WHILE MD-3 BEGINS TO OPEN, DAMPER MOTOR MODULATES TO ALLOW GENERATOR RADIATOR AIR TO HEAT ROOM ROOM SET POINT: 75 F. ON GENERATOR SHUT DOWN SYSTEM RETURNS TO OFF POSITION

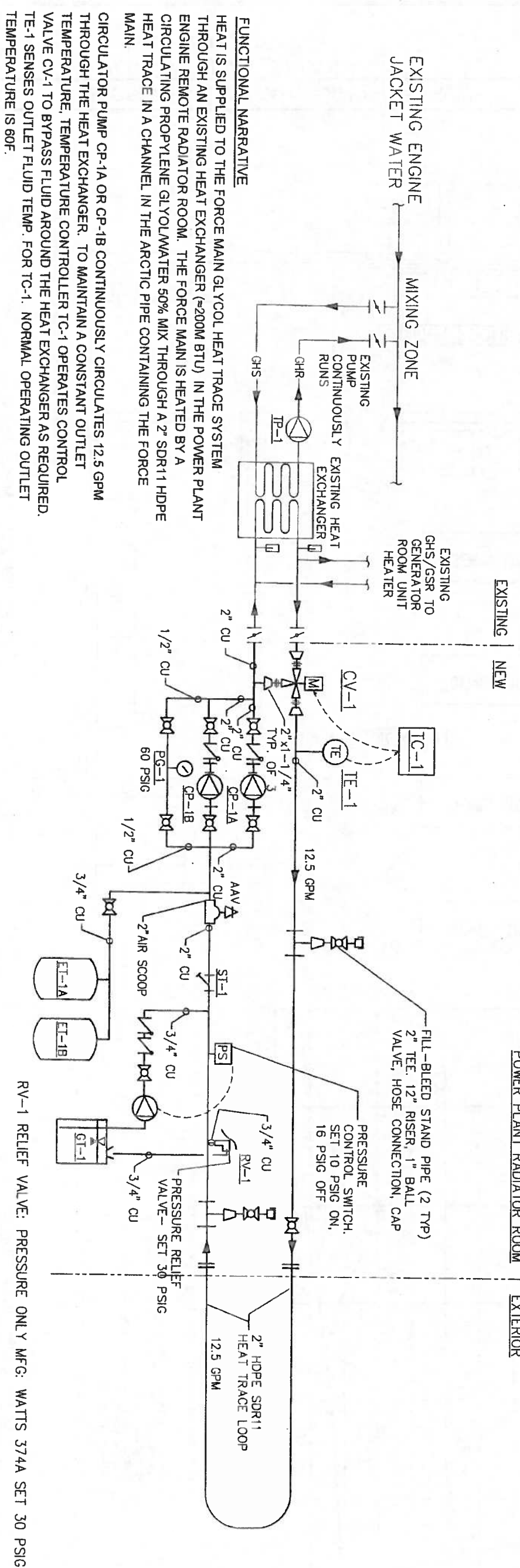
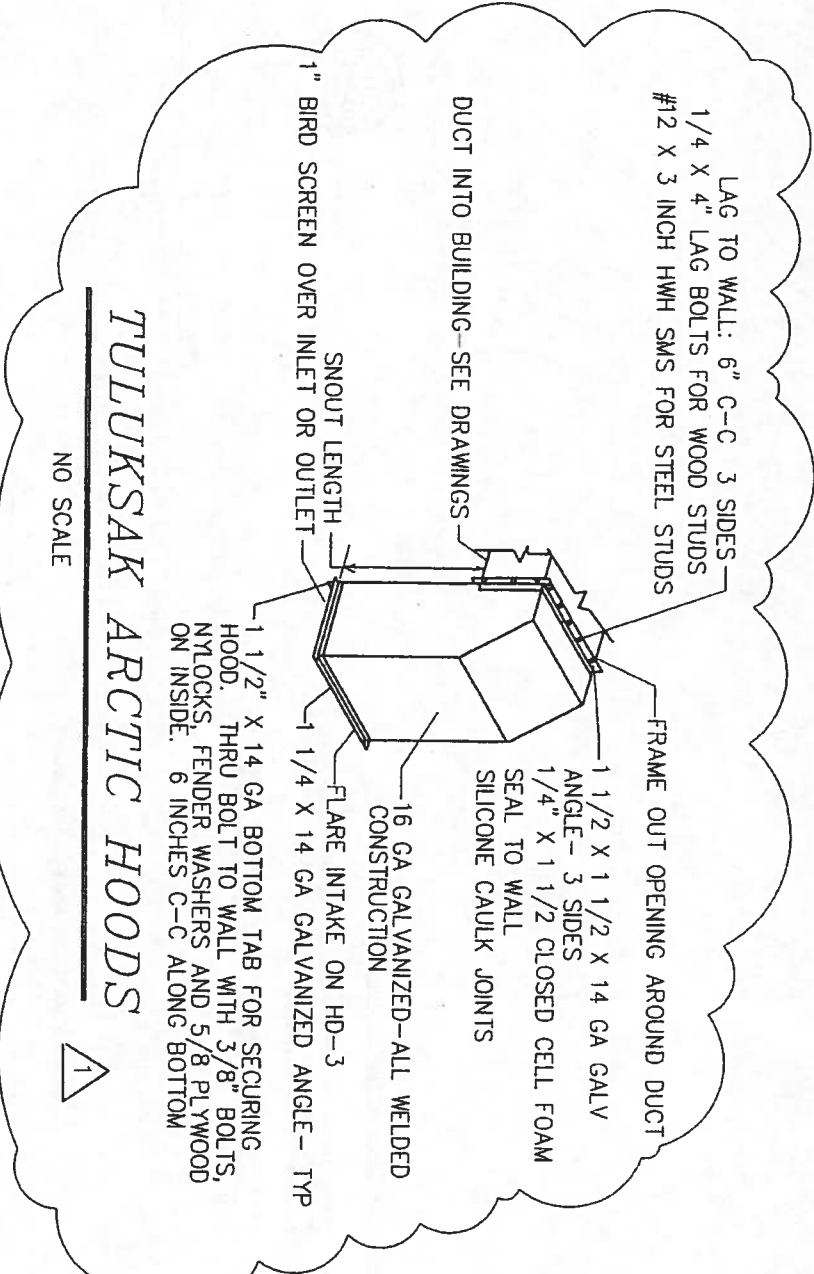
SEQUENCE OF OPERATION: UNIT HEATERS UH-1, UH-2

UH-1 CYCLES ON BUILT IN THERMOSTAT: SET 50 F

UH-2 CYCLES ON ROOM THERMOSTAT: SET 55 F

<p>MECHANICAL DETAILS AND INSERTS TULUKSAK LIFT STATION TULAKSAK, ALASKA</p>		<p>JAN 10, 2011 DRAWN: F.M. BELTZ SCALE: AS NOTED REVISIONS: MARCH 23, 2011 C376</p>	<p>JAN 10, 2011</p>	<p>CAPSTONE ENGINEERING LLC MECHANICAL ENGINEERS 18110 BUSINESS BLVD STE 6, PHB 169 EAGLE RIVER, ALASKA 99577 TELEPHONE & FAX 541-884-8065</p>
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EQUIPMENT LIST HYDRONIC HEAT TRACE PIPING FOR SEWAGE FORCE MAIN	
AAV	AUTOMATIC AIR VENT, 2" FIPT CONNECTIONS, SPIROVENT JUNIOR MODEL 2007TM
CP-1A, CP-1B	2-STAGE CENTRIFUGAL CIRCULATING PUMP, TYPE 304 STAINLESS STEEL CONSTRUCTION, 0.5 HP TEFC 3450 RPM MOTOR, 208-230/460 VOLT 3-PHASE, GRUNDFOS 15VB1C9B0
CV-1	THREE WAY CONTROL VALVE, 1-1/4" FIPT, CV 18.7, 8 TO AB PORT OPEN ON STEM RISE, HONEYWELL V5013N1071 WITH ML7424B3012 SPRING DIRECT COUPLED GLOBE VALVE ACTUATOR (PULLS STEM UP TO FULL BYPASS ON POWER FAILURE).
ET-1A, ET-1B	THERMAL EXPANSION TANKS, VERTICAL WITH STAND, BLADDER TYPE, ASME SECTION VIII, DIV 1 CONSTRUCTION, MAX ACCEPTANCE VOLUME 34.0 GALLONS, 1" FIPT BOTTOM CONNECTION, AMTROL AX-200(V).
GT-1	GLYCOL SOLUTION MIXING TANK, 100 GAL CAPACITY, WITH INTEGRAL PUMP AND PRESSURE REGULATOR, AXIOM SF100-L
PG-1	PROCESS PRESSURE GAUGE, SILICONE FILLED CASE, POCAN CASE, 1/2" MIPT BOTTOM PORT, 0-60 PSIG, WIKA TYPE 213.34, PART # 9834354
RV-1	PRESSURE RELIEF VALVE, 3/4" x 3/4" FIPT, SET 30 PSIG, RATED 650,000 BTU/HR RELIEF, BRONZE BODY CONSTRUCTION, NONMETALLIC DISC TO METAL SEATING.
ST-1	WYE-TYPE STRAINER, 2" BRONZE SWEAT TYPE, 20 MESH SS SCREEN, METRAFLEX STYLE B5C 2" OR EQUAL
TC-1	ELECTRONIC STAND-ALONE TEMPERATURE CONTROLLER, WITH REMOTE RESISTANCE SENSOR, NEMA 4X ENCLOSURE, 120 VAC OR 24 VAC POWER INPUT, 2-10 VDC, 0-10 VDC, 4-20 MA DC OUTPUT, HONEYWELL T775M2022 WITH INCLUDED SENSOR, C7031D2003 5 IN IMMERSION SENSOR WITH WELL.
TE-1	PART OF TC-1 ASSEMBLY (C7031D2003 5 IN IMMERSION SENSOR WITH WELL).

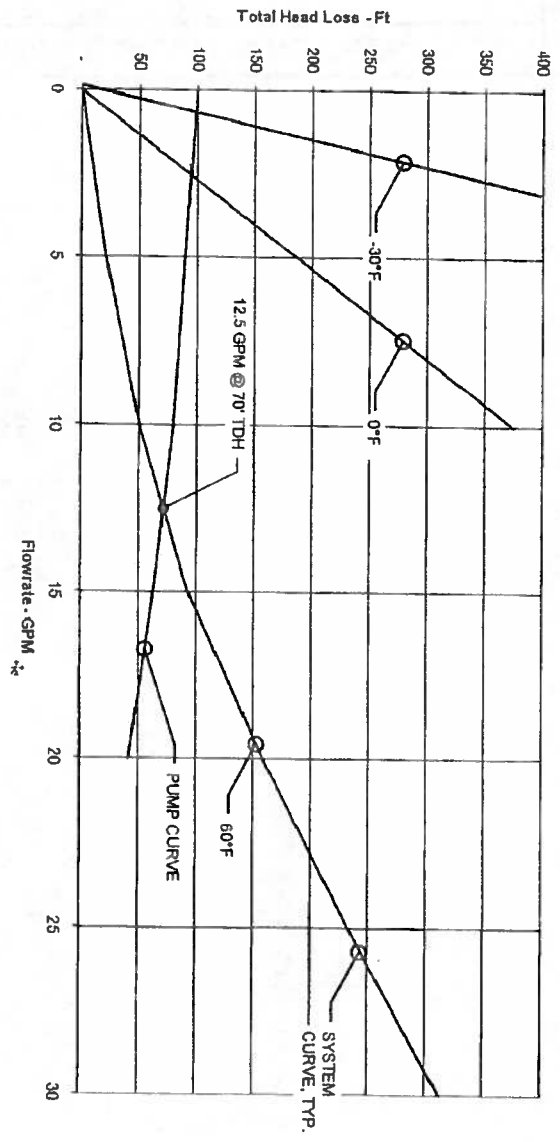


PRESSURE RELIEF VALVE RV-1 PROTECTS THE SYSTEM FROM OVER PRESSURE. AND IS SET AT 30 PSIG. GLYCOL TANK GT-1 SERVES AS A MAKE-UP UNIT FOR GLYCOL MIX REPLACEMENT IN THE HEAT TRACE LOOP. EXPANSION TANKS ET-1A AND ET-1B SERVE TO ALLOW ROOM FOR EXPANSION OF HEAT TRANSFER FLUID OVER THE EXPECTED RANGE OF TEMPERATURE OF THE SYSTEM.

TULUKSAK HYDRONIC PIPING HEAT TRACE SCHEMATIC

DATE: JUN 10, 2011	DRN: FJK BELZ
SCALE: AS NOTED	REVISED: C278
SHEET NO. M1-2	2 OF 3

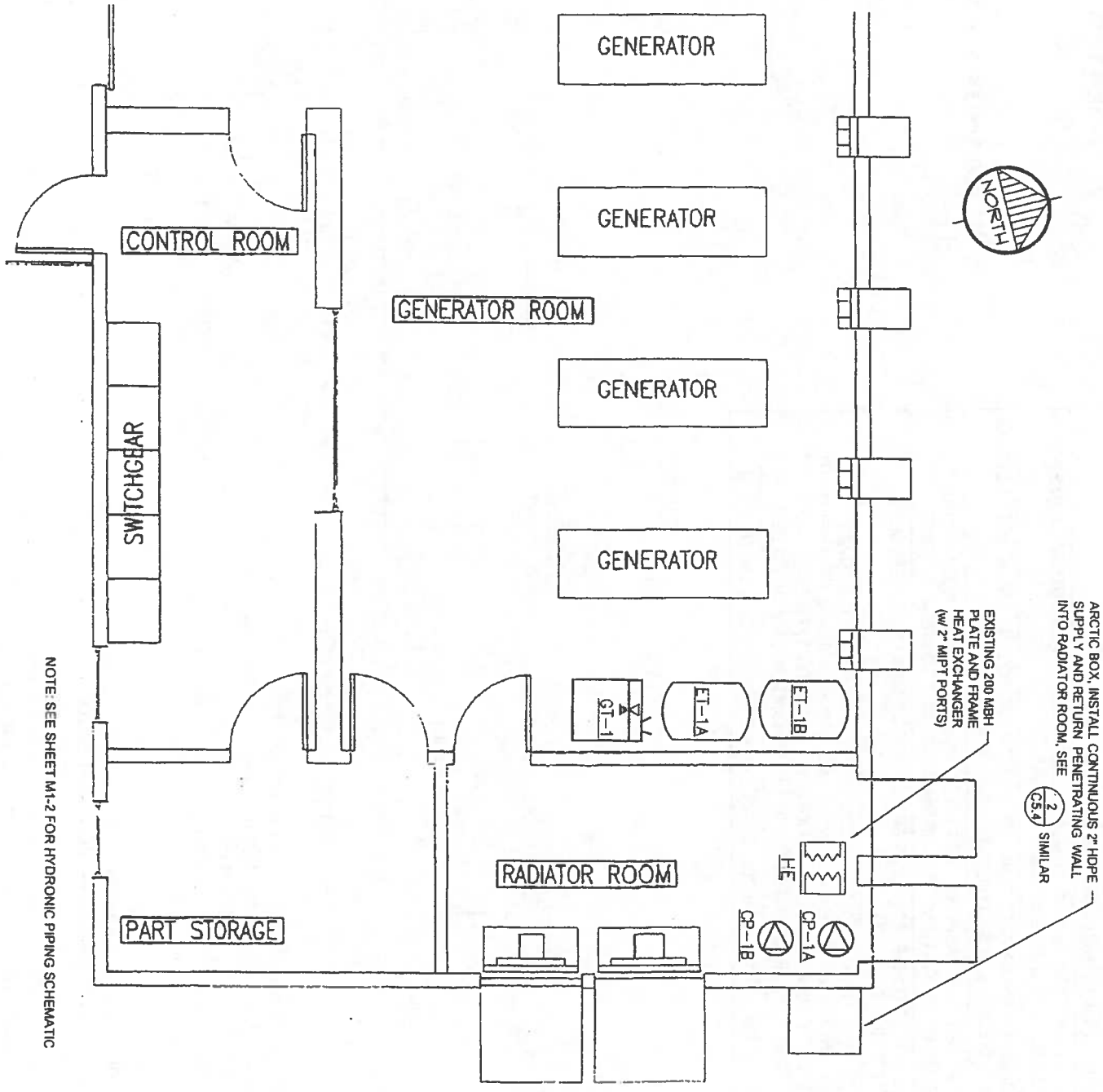
- BACKUP GLYCOL HEAT TRACE NOTES:**
1. THE BACKUP HEAT TRACE SYSTEM IS DESIGNED TO MAINTAIN FORCEMAIN TEMPERATURE IN THE EVENT THAT THE TEMPERATURE OF THE WASTEWATER IS INADEQUATE TO PREVENT FREEZING
 2. HEAT TRANSFER FLUID WILL BE A 50/50 INHIBITED PROPYLENE GLYCOL / WATER MIX, WHICH WILL ALLOW FLUID FLOW TO -30°F AND FREEZE PROTECTION OF THE GLYCOL TO -60°F.



FORCEMAIN BACKUP HEAT TRACE SYSTEM CURVE

BACKUP GLYCOL HEAT TRACE FOR FORCEMAIN SYSTEM
 EQUIVALENT LOOP LENGTH WITH FITTINGS: 7,800 LF
 PIPE: 2" SDR 11 HDPE
 PUMP: GAL #15VC-2 STAGE VERTICAL SS CENTRIFUGAL
 MODEL# 15VB1C9B0
 TAG# CP-1A AND 1B
 TOTAL FORCEMAIN HEAT DEMAND = 21,900 Btu/Hr

1 GLYCOL CIRC. PUMP CURVE
 M1-3 NTS

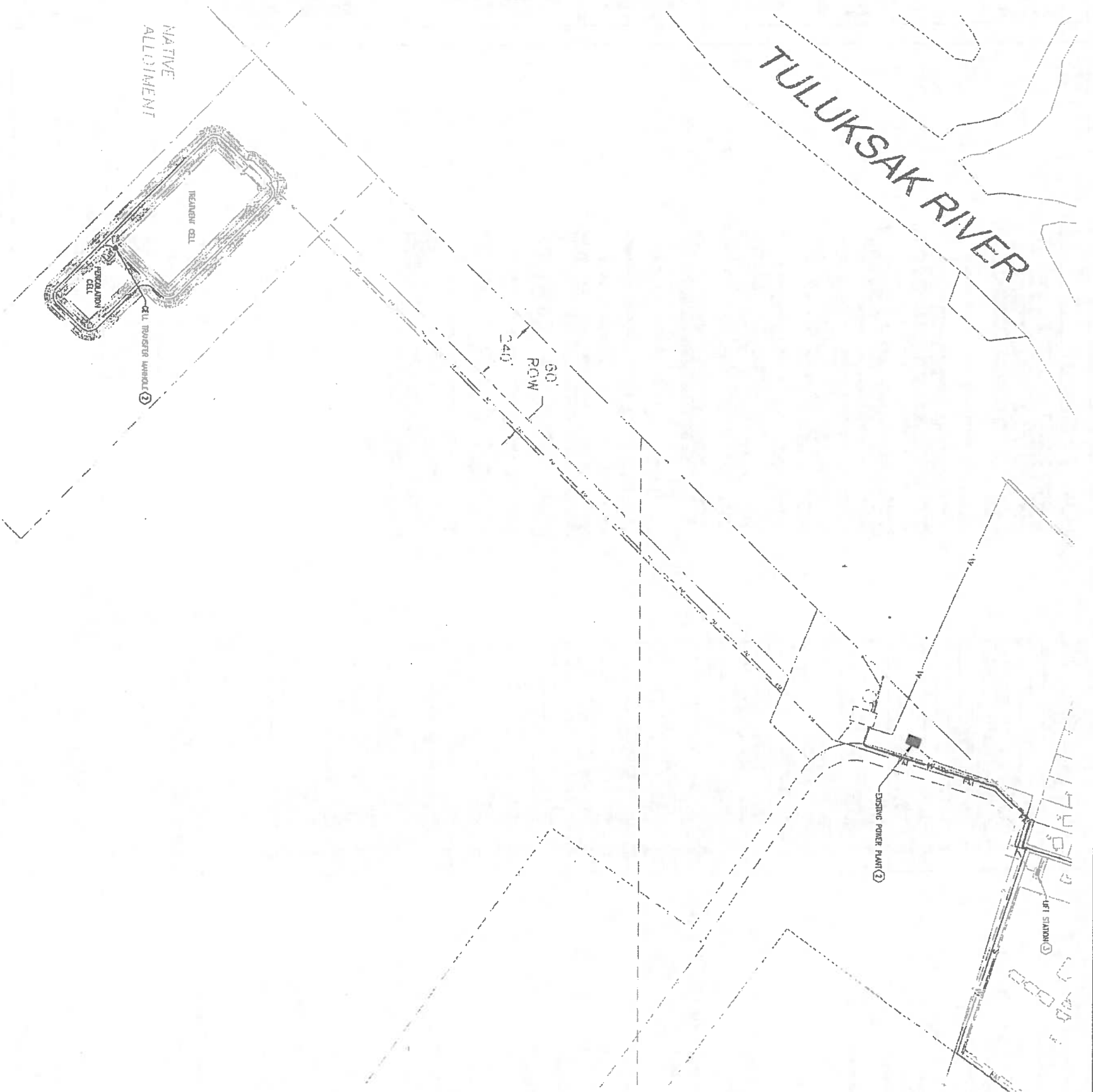


MECHANICAL DETAILS AND INSERTS
 TULUKSAK LIFT STATION
 TULAKSAK, ALASKA



CAPSTONE ENGINEERING LLC
 MECHANICAL ENGINEERS
 12110 BUSINESS BLVD STE 6 PMB 169
 EAGLE RIVER, ALASKA 99577
 TELEPHONE & FAX 541-884-8065

DATE:	JAN 19, 2011
DRAWN:	FR. BELTZ
CHKD:	AS NOTED
SCALE:	
REVISED:	
DWG NO.:	C378
SHEET NO.:	3 OF 3
M1-3	3



1 ELECTRICAL SITE PLAN
 2.1 SCALE: 1" = 200'-0"

- SHEET NOTES**
- ① CONTRACTOR TO PROVIDE PORTLAND CEMENT/CONCRETE AND SLOPE PIPE HEAT TRACE IN NEW CELL TRANSFER UNIT/LOCATION. SEE E.A.1 FOR DETAIL.
 - ② CONTRACTOR TO PROVIDE NEW BRANCH CONDUITS IN EXISTING POWER PLANT FOR HEAT LOOP PUMP CONTROL PANEL AND CIRCULATION PUMPS. SEE 1/E.A.2 FOR DETAIL.
 - ③ CONTRACTOR TO PROVIDE ELECTRICAL REMEDIATIONS IN NEW LIFT STATION. SEE E.A.1, E.A.2, AND E.A.1 FOR DETAIL.

EIC ENGINEERS, INC.
 ELECTRICAL ENGINEERS

8977 OLD BENA RD NW, SUITE 200
 ANDERSON, ALASKA 99518
 T 907.240.9713
 F 907.240.9713
 www.eic-engineers.com

9C 03 2113-133

Project No.	
Date	JAN 2011
Designed	BLS
Drawn	BLS
Approved	EDC

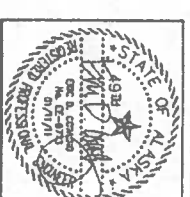
Sheet No. **E2.1**

REVISION	BY	DATE

CE₂
 ENGINEERS, INC.

PO BOX 722942 ANCHORAGE AK 99512 PH: 907-545-1010 FAX: 907-545-1015

2009 WASTEWATER SYSTEM IMPROVEMENTS
 ELECTRICAL SITE PLAN
 TULUKSAK, ALASKA

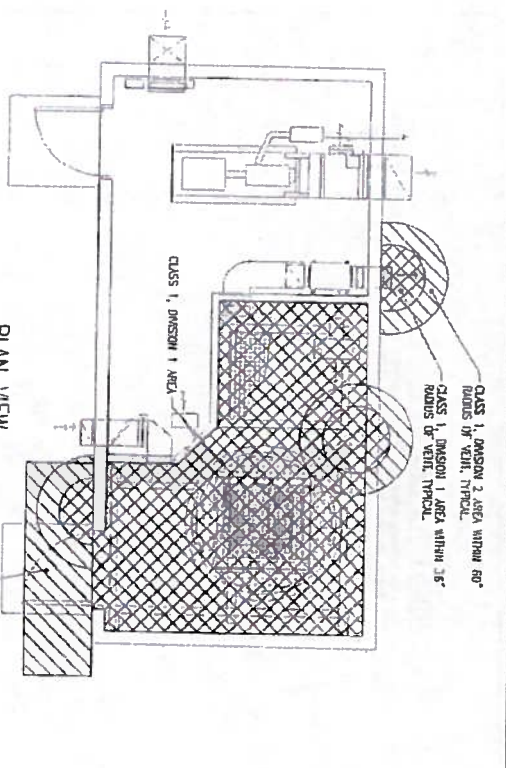


SCALE:
 1" = 200'-0"

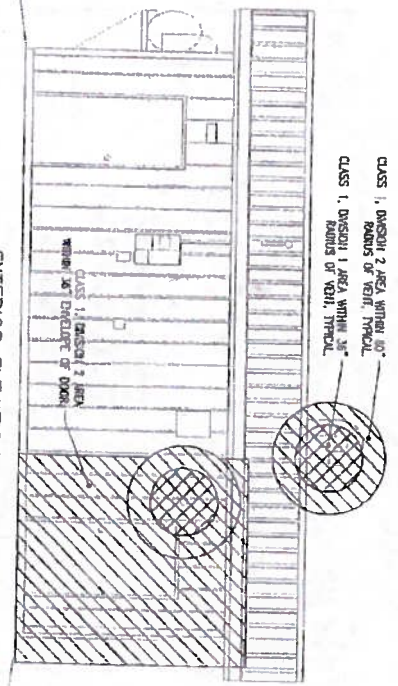
RECORD DRAWING CERTIFICATE

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

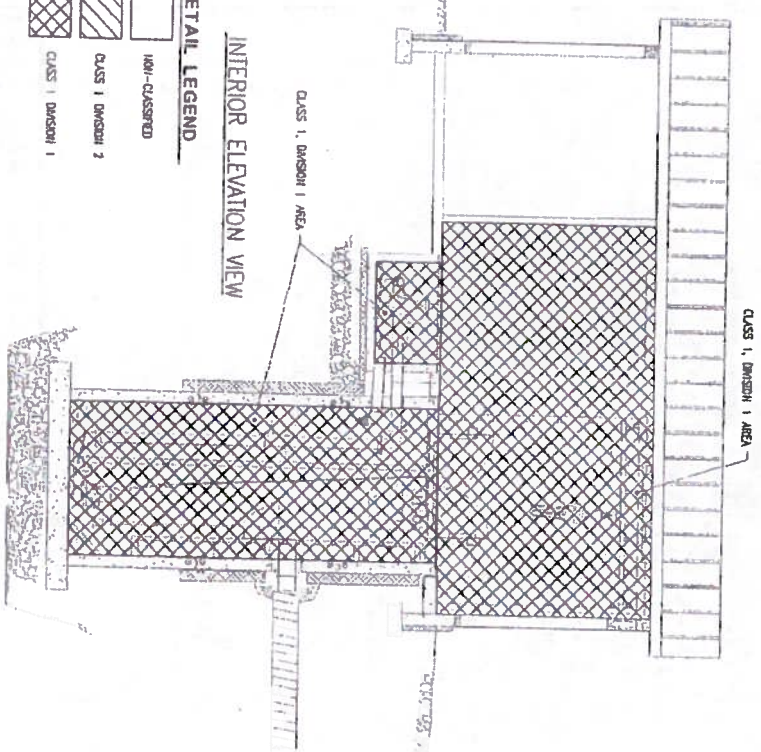
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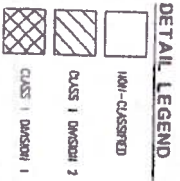
PLAN VIEW



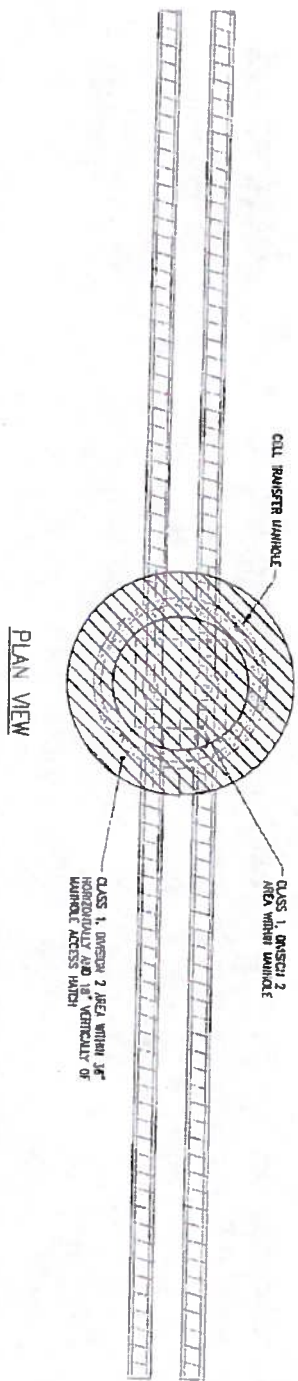
EXTERIOR ELEVATION VIEW



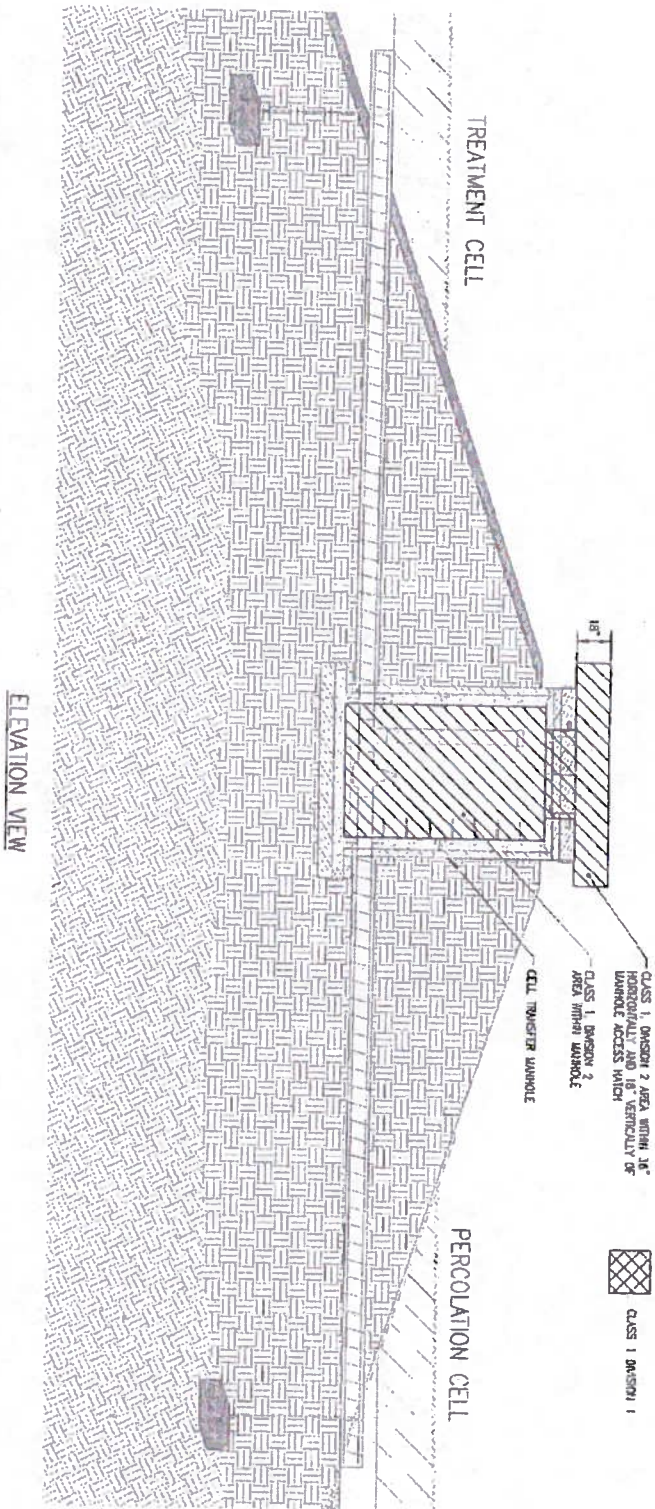
INTERIOR ELEVATION VIEW



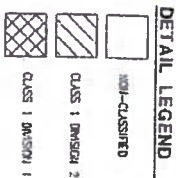
1 LIFT STATION
NEC CLASSIFIED BOUNDARY DETAIL
SCALE: 1/4" = 1'-0"



PLAN VIEW



ELEVATION VIEW



2 CELL TRANSFER MANHOLE
NEC CLASSIFIED BOUNDARY DETAIL
SCALE: 1/4" = 1'-0"



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EC-008-018-1203

Project No.	0110
Date	JAN 2011
Designed	BLS
Drawn	BLS
Approved	EDC
Sheet No.	E3.1

REVISION	BY	DATE

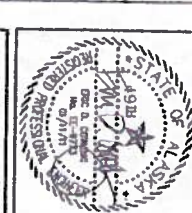
CE₂
ENGINEERS, INC.

PO BOX 222945 ANCHORAGE AK 99523 POC: 907-348-1818 FAX: 907-345-1015

2009 WASTEWATER SYSTEM IMPROVEMENTS

ELECTRICAL NEC CLASSIFIED BOUNDARY PLANS

TULUKSAK, ALASKA



SCALE: _____

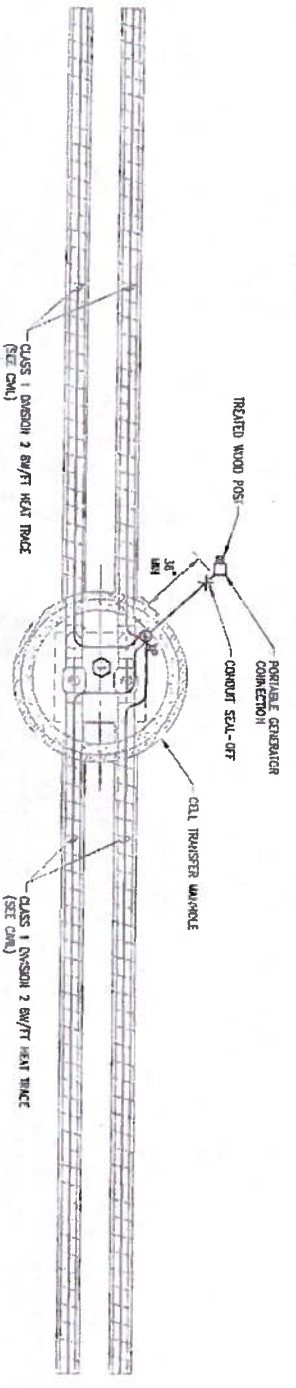
RECORD DRAWING CERTIFICATE

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

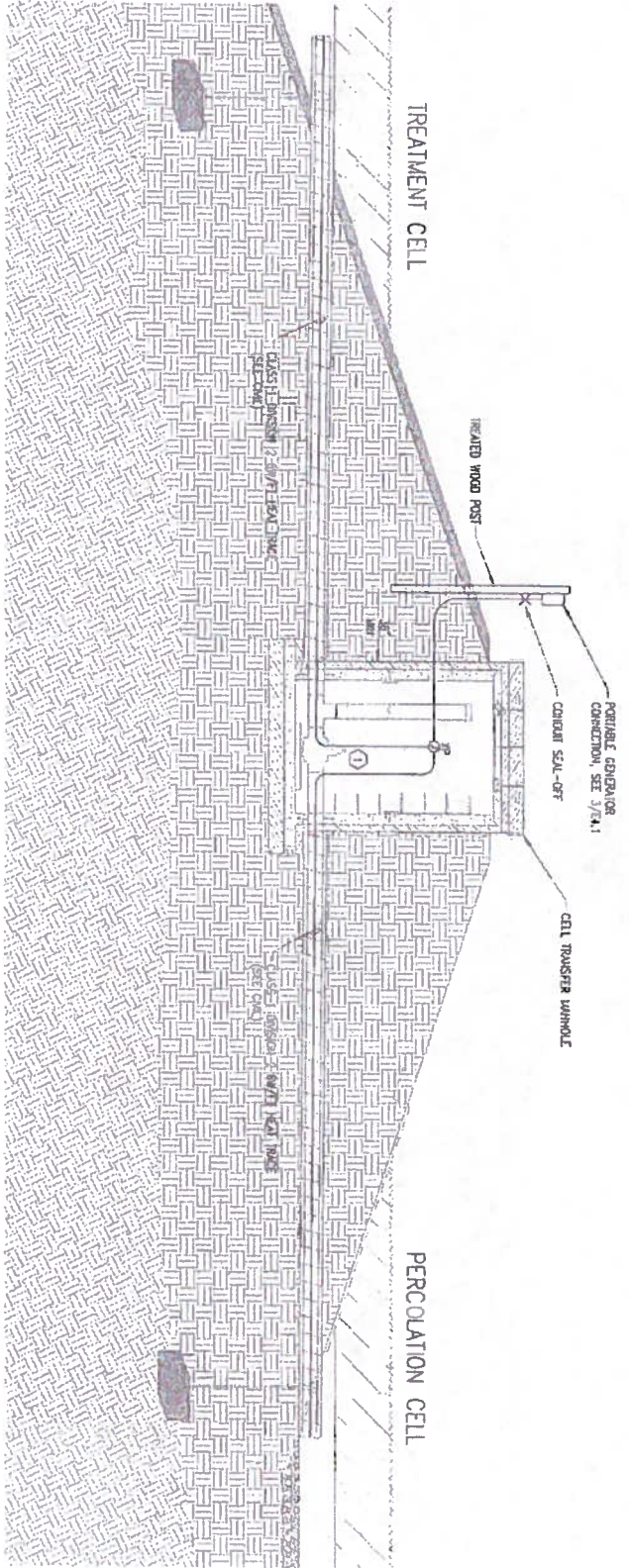
NAME _____ DATE _____

SHEET NOTES

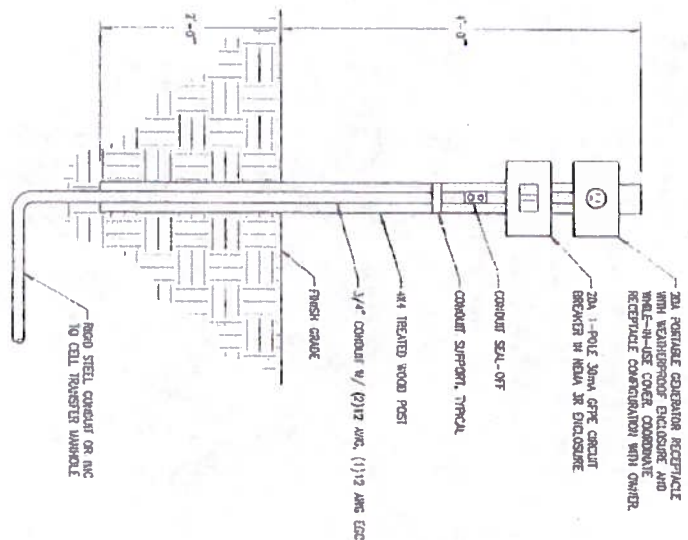
1 WARP DIMENSIONS PRINTING AND WAKES IN MANHOLE WITH HEAT TRACE FOR FREEZE PROTECTION. PROVIDE AT LEAST 1 REVOLUTION PER FOOT ON EACH OF THE PIPES.



1 CELL TRANSFER MANHOLE ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"



2 CELL TRANSFER MANHOLE ELEVATION
SCALE: 1/4" = 1'-0"



3 PORTABLE GENERATOR CONNECTION DETAIL
SCALE: NONE

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REG. NO. #184-1223

Project No. Date: JAN 2011 Designed: BLS Drawn: BL6 Approved: EDC	REVISION BY DATE	 PO BOX 112246 ANCHORAGE AK 99512 FAX 907-545-1010	2009 WASTEWATER SYSTEM IMPROVEMENTS ELECTRICAL CELL TRANSFER MANHOLE PLANS TULUKSAK, ALASKA			SCALE: 1/4" = 1'-0"	RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
	SHEET NO. E4.1					NAME _____ DATE _____	

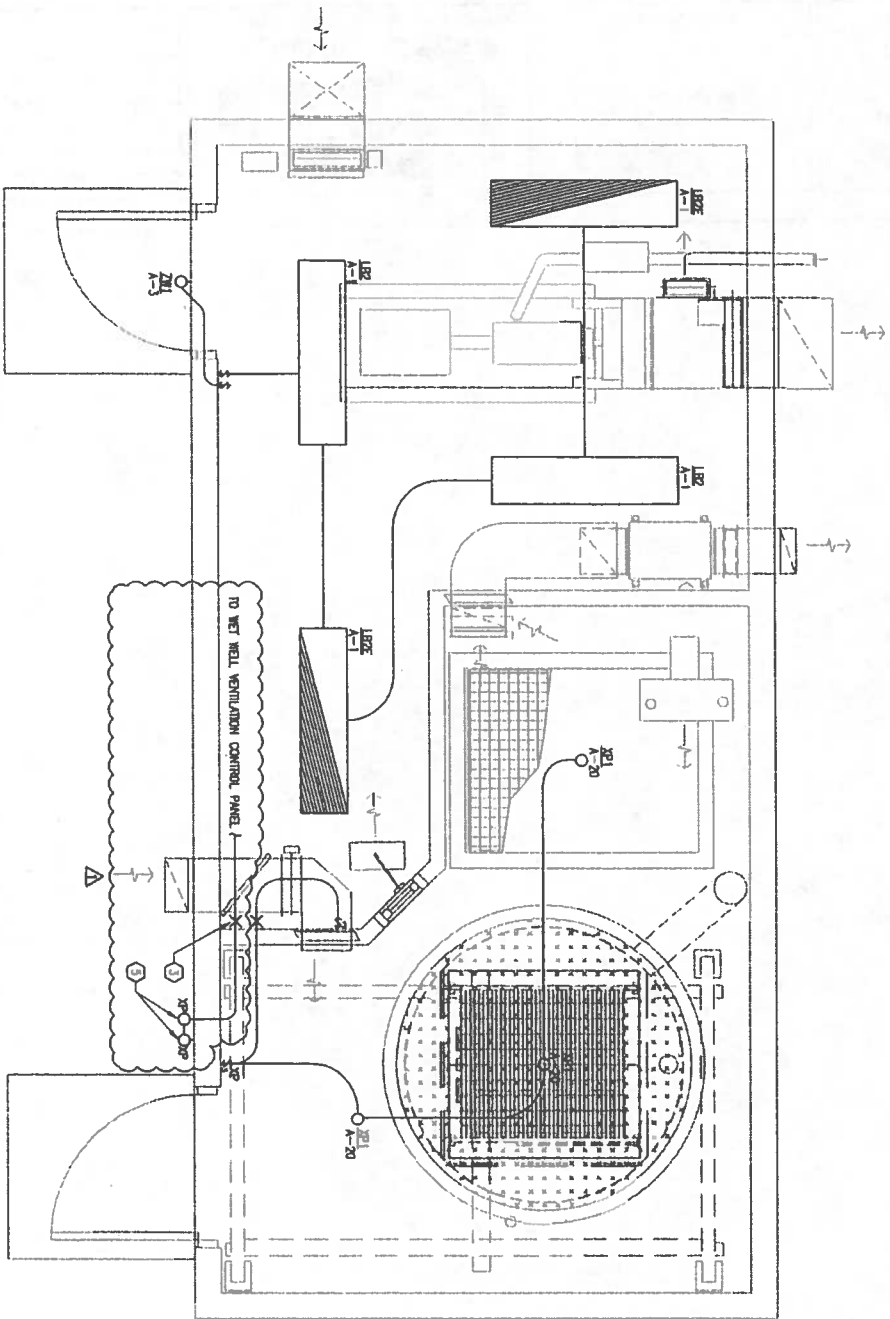
LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	LAMPS	MOUNTING	MANUFACTURER/MODEL	NOTES
L2E	LOW PROFILE ARCHITECTURAL, 8W/4" P/RESAUNE LEDS	(2) 20W T8	CEILING SURFACE	LITHONIA L2E-2-32-400J-CE100S	
L2E	RECTANGULAR TO TYPE L2E EXCEPT W/ 1400 LUMENS BATTERY UNIT	(2) 20W T8	CEILING SURFACE	LITHONIA L2E-2-32-400J-CE100S-EL14	
SP1	CLASS 1 DIVISION 1 INCANDESCENT GLOBE & CANOP	(1) 150W R95	CEILING SURFACE	HAGERELL RFL-4-1-15-120-2-2-4-AL20C1	
ZM1	WALL MOUNTED AREA LIGHT W/ CENTER OPTICS & INTEGRAL PHOTOCELL	(1) 20W R95	EXTERIOR WALL	LITHONIA ZM1-2-20-120-PE	

NOTES:
 A) CATALOG NUMBERS ARE FOR GENERAL REFERENCE AND ARE NOT INCLUSIVE OF ALL OPTIONS OR REQUIREMENTS DETICATED ON PLANS AND SPECIFICATIONS.
 B) LUMINAIRES NOTED ON THE FLOOR PLANS AS "N.C." (NON-CODED) SHALL BE CONNECTED TO UNSHOWN POWER CIRCUIT NOTED ON DRAWINGS.
 C) ALL FLUORESCENT BALLASTS TO BE ELECTRONIC WITH LESS THAN OR EQUAL 10% TOTAL HARMONIC DISTORTION.
 D) ALL FLUORESCENT LAMPS TO BE T80K.
 E) PROVIDE NONION SERVICE LAMPS FOR ALL INCANDESCENT LUMINAIRES.

1) NONE.

REVISIONED NOTES



1 LIFT STATION
ELECTRICAL LIGHTING PLAN
SCALE: 1/2" = 1'-0"

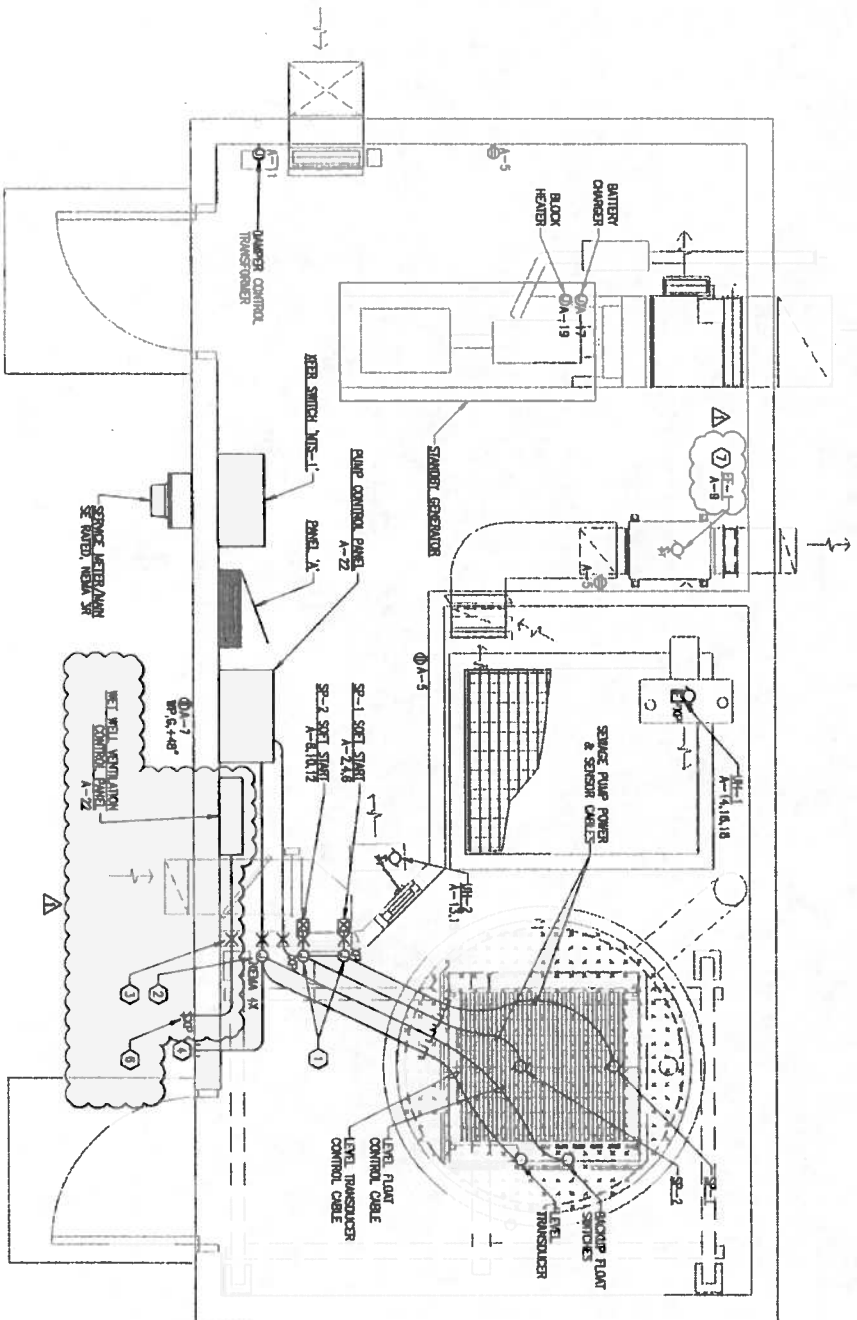
MECHANICAL EQUIPMENT CONNECTION SCHEDULE

UNIT ID	LOCATION OR FUNCTION	LOAD RATINGS	CONDUCTORS & CONDUIT	NOTES					
		N/A	SP	FLA	MCA	MPS	V	PH	
B-1	CLASS 1 DIVISION 1 EXHAUST FAN	1/4		120	1	(2)12 AWG, (1)12 AWG EDC, 1/2" C.		2	
SP-1	SERVICE PUMP	10		200	3	SEE ONE-LINE DIAGRAM		1	
SP-2	SERVICE PUMP	10		200	3	SEE ONE-LINE DIAGRAM		1	
UH-1	CLASS 1 DIVISION 1 ELECTRIC UNIT HEATER	10		(2)8 AWG, (1)10 AWG EDC, 3/4" C.					
UH-2	ELECTRIC UNIT HEATER	3		(2)12 AWG, (1)12 AWG EDC, 1/2" C.					

STANDARD NOTES:
 A) REFER TO FLOOR PLAN DRAWINGS FOR EQUIPMENT THE REQUIREMENTS, LOCATIONS AND QUANTITIES.
 B) COORDINATE ALL CONNECTION REQUIREMENTS WITH MECHANICAL AND ACTUAL EQUIPMENT SUPPLIED PRIOR TO ROUGH-IN.

1) PUMP PROVIDED WITH SEFT START. COORDINATE WITH MECHANICAL.
 2) B-1 CONTROLLED THRU WET WELL VENTILATION CONTROL PANEL.

REVISIONED NOTES



2 LIFT STATION
ELECTRICAL POWER PLAN
SCALE: 1/2" = 1'-0"

- SHEET NOTES**
- 1) PROVIDE EXPLOSION PROOF JUNCTION BOXES FOR WET WELL PUMP CABLE TERMINATIONS. SEE 2/7/24 FOR DETAIL.
 - 2) PROVIDE MEAN AT JUNCTION FOR FAN SWITCH, AND LEVEL TRANSDUCER CABLE TERMINATIONS. SEE 2/7/24 FOR DETAIL.
 - 3) PROVIDE CONDUIT SEAL-OFF AT HAZARDOUS BOUNDARY TYPICAL.
 - 4) PROVIDE CONDUIT FROM CONTROL J-BOX TO BUILDING EXTERIOR FOR LEVEL TRANSDUCER BELLOWS VENTILATION.
 - 5) PROVIDE EXPLOSION PROOF STATUS LIGHTS TO BUILDING EXTERIOR CONTROL FROM WET WELL VENTILATION CONTROL PANEL. SEE MECHANICAL AND 1/24 FOR DETAIL.
 - 6) PROVIDE EXPLOSION PROOF SELECTION SWITCH TO BUILDING EXTERIOR CONTROL FROM WET WELL VENTILATION CONTROL PANEL. SEE MECHANICAL AND 1/24 FOR DETAIL.
 - 7) B-1 CONTROLLED THRU WET WELL VENTILATION CONTROL PANEL. SEE MECHANICAL AND 1/24 FOR DETAIL.

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DC 128 #181-1323

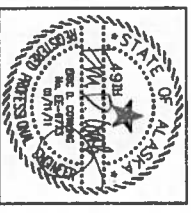
Project No.	
Date	JAN 2011
Designed	BLS
Drawn	BLS
Approved	EDC
Sheet No.	ES.1

REVISION	BY	DATE
1	BLS	11/08/11
2		
3		
4		
5		

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PO BOX 232948 ANCHORAGE, AK 99523 P# 907-348-1010 F# 907-348-1015

2009 WASTEWATER SYSTEM IMPROVEMENTS
ELECTRICAL LIFT STATION PLANS
TULUKSAK, ALASKA



SCALE:
AS SHOWN

GRAPHIC SCALE: 1" = 10'-0"

IF NOT ONE FISH ON THE LINE, THERE IS NO FISH ON THE LINE.

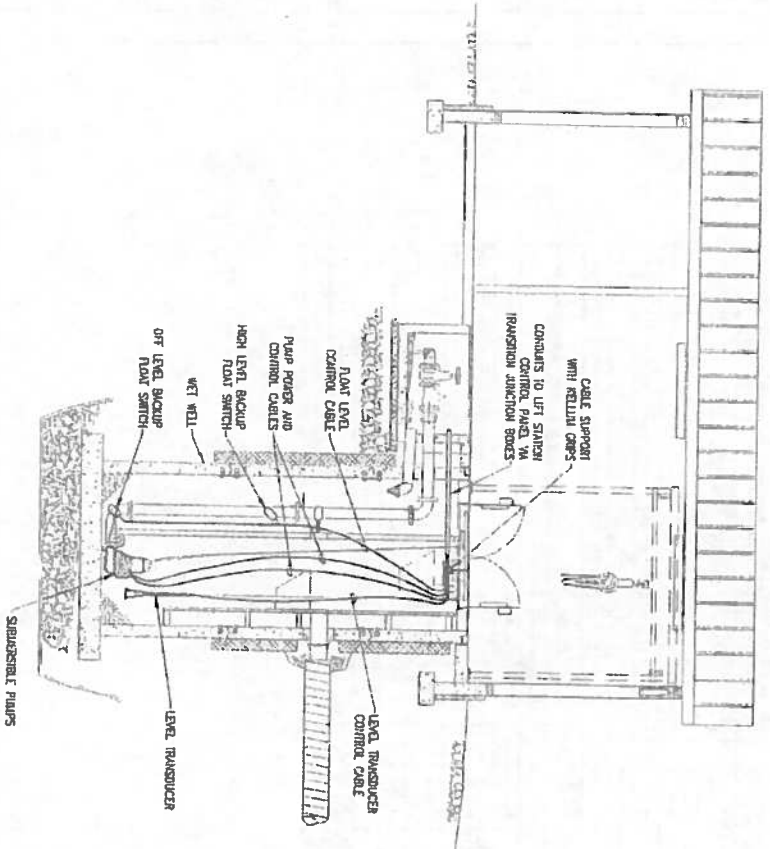
RECORD DRAWING CERTIFICATE

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NAME _____ DATE _____

1
LIFT STATION
WET WELL ELEVATION

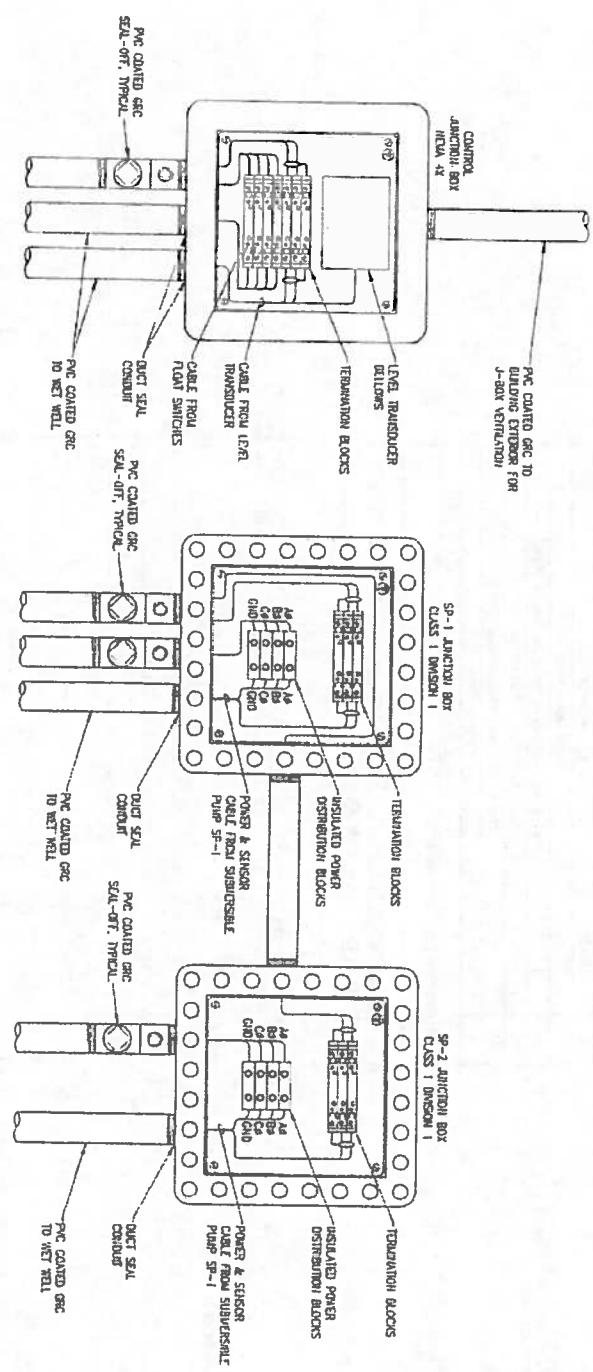
SCALE: 1/4" = 1'-0"



2
LIFT STATION TRANSITION JUNCTION BOX DETAIL

SCALE: NONE

- DETAIL NOTES**
1. JUNCTION BOXES SHALL BE SIZED AS REQUIRED TO HOUSE TERMINATION COMPONENTS AND WIRING PER NEC.
 2. ALL WIRING ROUNDED THROUGH THE HOLE & CONTROL JUNCTION BOX SHALL BE IMMEDIATELY SAFE.



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EC REG # 110-1523

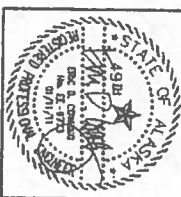
Project No.	
Date	JAN 2011
Designed	BLS
Drawn	BLS
Approved	EDC
Sheet No.	E5.2

REVISION	BY	DATE

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PO BOX 272365 ANCHORAGE, AK 99523 POC 507-545-1918 FAX 507-330-1015

2009 WASTEWATER SYSTEM IMPROVEMENTS
ELECTRICAL LIFT STATION PLANS
TULUKSAK, ALASKA



SCALE:

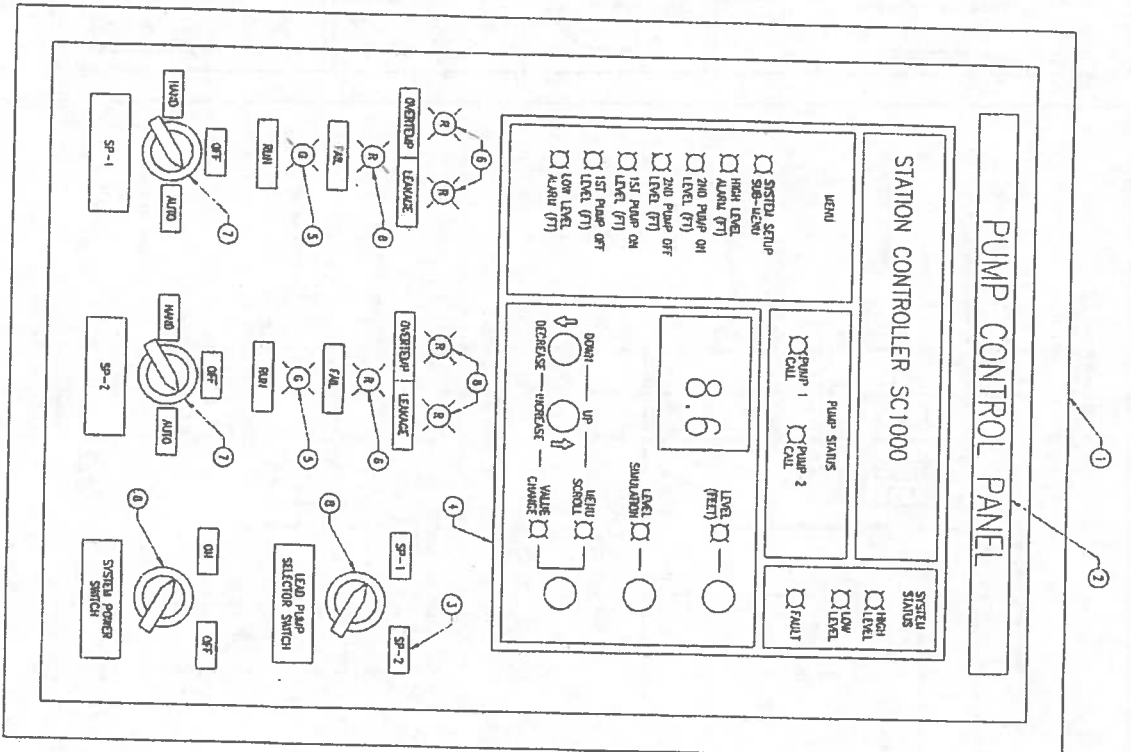
BAR IS ONE INCH OR ORIGINAL DIMENSION

IF NOT SHOWN PERFORM THIS SCALE AS SHOWN ON SHEET SCALES ACCORDINGLY

RECORD DRAWING CERTIFICATE

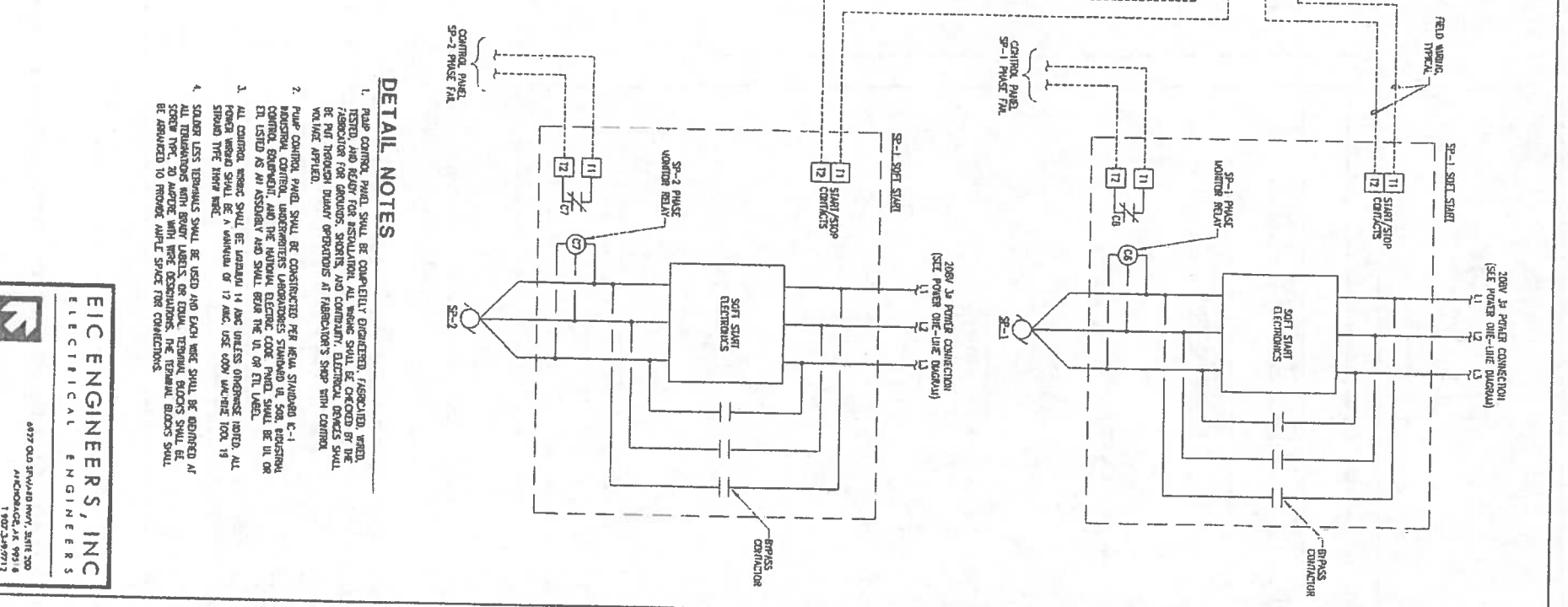
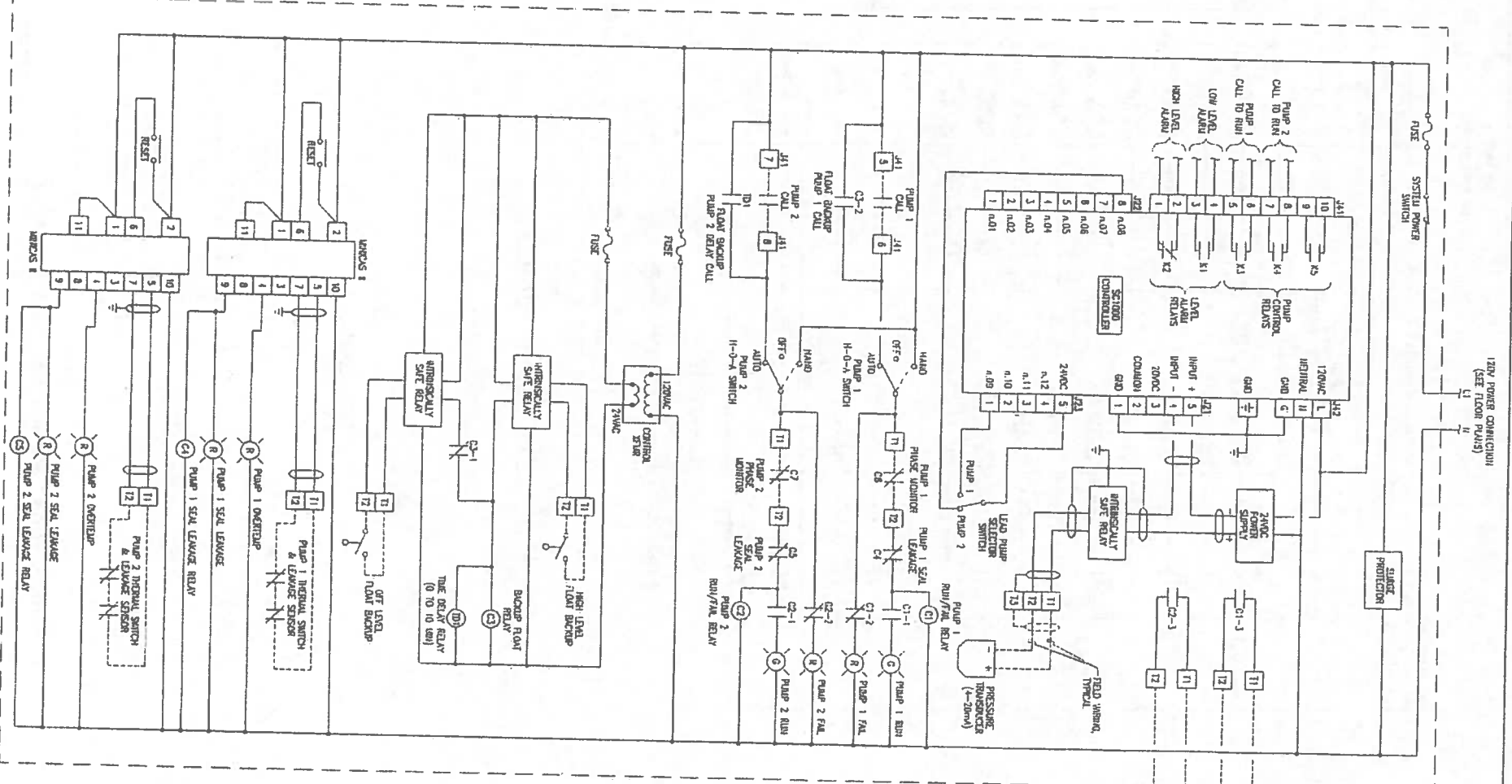
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NAME _____ DATE _____



ID#	DESCRIPTION	NOTES
1	CONTROL PANEL ENCLOSURE- IEMA 4, SIZE 400X400 TO HOUSE COMPONENTS	
2	PLATE 1/4" BLACK UNFINISHED PLASTIC W/ WHITE COAT SCREW IDENTIFIED 1/7" DIMENSION LETTERS	
3	PLATE 1/4" BLACK UNFINISHED PLASTIC W/ WHITE COAT SCREW IDENTIFIED 1/4" DIMENSION LETTERS	
4	POWER PUMP CONTROLLER- IEMA, INC STATION CONTROLLER SCI1000	
5	PLATE LIGHT- JONAS, RED, LED, 120VAC, PUSH TO TEST TYPE, ALUMI BRACKET BOSS-PT116C	
6	PLATE LIGHT- JONAS, RED, LED, 120VAC, PUSH TO TEST TYPE, ALUMI BRACKET BOSS-PT116C	
7	SELECTOR SWITCH- JONAS, 3-POSITION UNLATCHED W/ RED, BLACK & C/W SIGNAL, ALUMI BRACKET BOSS SERIES	
8	SELECTOR SWITCH- JONAS, 2-POSITION UNLATCHED W/ RED, BLACK & C/W SIGNAL, ALUMI BRACKET BOSS SERIES	
STANDARD NOTES		
A) CONSTRUCTION TO PROVIDE PART NUMBERS SPECIFIC TO EQUIPMENT.		
REFERENCED NOTES		
1) NONE		

1 PUMP CONTROL PANEL LAYOUT & CONTROL DIAGRAM
 E62 SCALE: NONE

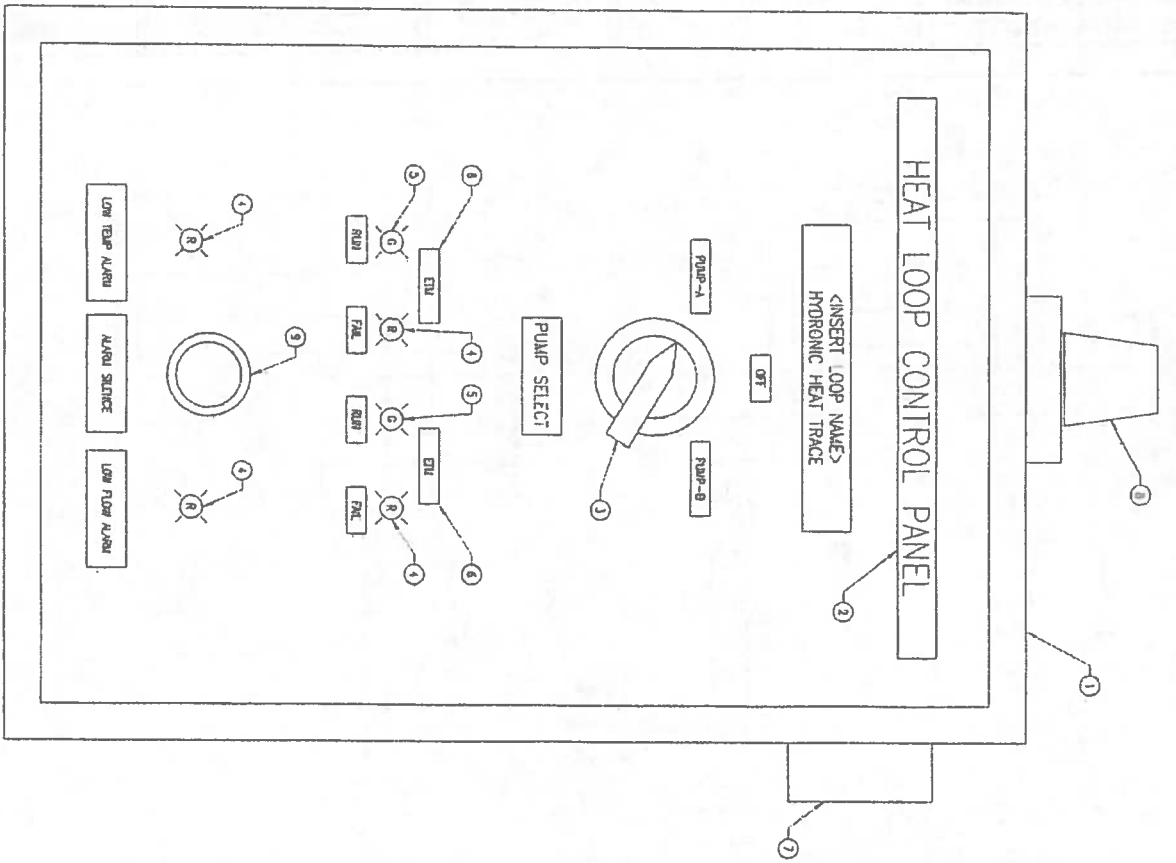


- DETAIL NOTES**
1. PUMP CONTROL PANEL SHALL BE COMPLETELY ENGINEERED, FABRICATED, WELDED, TESTED, AND READY FOR INSTALLATION. ALL COMPONENTS SHALL BE CHECKED BY THE FABRICATOR FOR DEFECTS, SHORTS, AND CORROSION. ALL ELECTRICAL CONNECTIONS SHALL BE PUT THROUGH DUALITY OPERATIONS AT FABRICATOR'S SHOP WITH CONTROL WIRE LINE APPLIED.
 2. PUMP CONTROL PANEL SHALL BE CONSTRUCTED PER IEMA STANDARD E-1-1. NATIONAL CONTROL UNDERSTANDING SHALL BE USED FOR ALL ELECTRICAL CONNECTIONS. ALL ELECTRICAL CONNECTIONS SHALL BE IDENTIFIED BY THE FABRICATOR. ALL ELECTRICAL CONNECTIONS SHALL BE IDENTIFIED BY THE FABRICATOR. ALL ELECTRICAL CONNECTIONS SHALL BE IDENTIFIED BY THE FABRICATOR.
 3. ALL CONTROL WIRING SHALL BE IDENTIFIED BY THE FABRICATOR. ALL ELECTRICAL CONNECTIONS SHALL BE IDENTIFIED BY THE FABRICATOR. ALL ELECTRICAL CONNECTIONS SHALL BE IDENTIFIED BY THE FABRICATOR.
 4. STANDARD LESS TERMINALS SHALL BE USED AND EACH WIRE SHALL BE IDENTIFIED AT ALL TERMINALS WITH BRASS LABELS. ALL ELECTRICAL CONNECTIONS SHALL BE IDENTIFIED BY THE FABRICATOR. ALL ELECTRICAL CONNECTIONS SHALL BE IDENTIFIED BY THE FABRICATOR.

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 www.eiceng.com
 DC E62 (11-01-2011)

<p>Project No. _____</p> <p>Date JAN 2011</p> <p>Designed BLS</p> <p>Drawn BLS</p> <p>Approved EOC</p>	<p>REVISION</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	BY				<p>CE2 ENGINEERS, INC.</p> <p>PO BOX 22294 ANCHORAGE AK 99523 Ph: 907.248.9712 FAX: 907.248.9713</p>	<p>2009 WASTEWATER SYSTEM IMPROVEMENTS</p> <p>ELECTRICAL LIFT STATION CONTROLS</p> <p>TULUKSAK, ALASKA</p>			<p>SCALE: _____</p> <p>RECORD DRAWING CERTIFICATE</p> <p>THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.</p> <p>NAME _____ DATE _____</p>
NO.	DATE	BY										



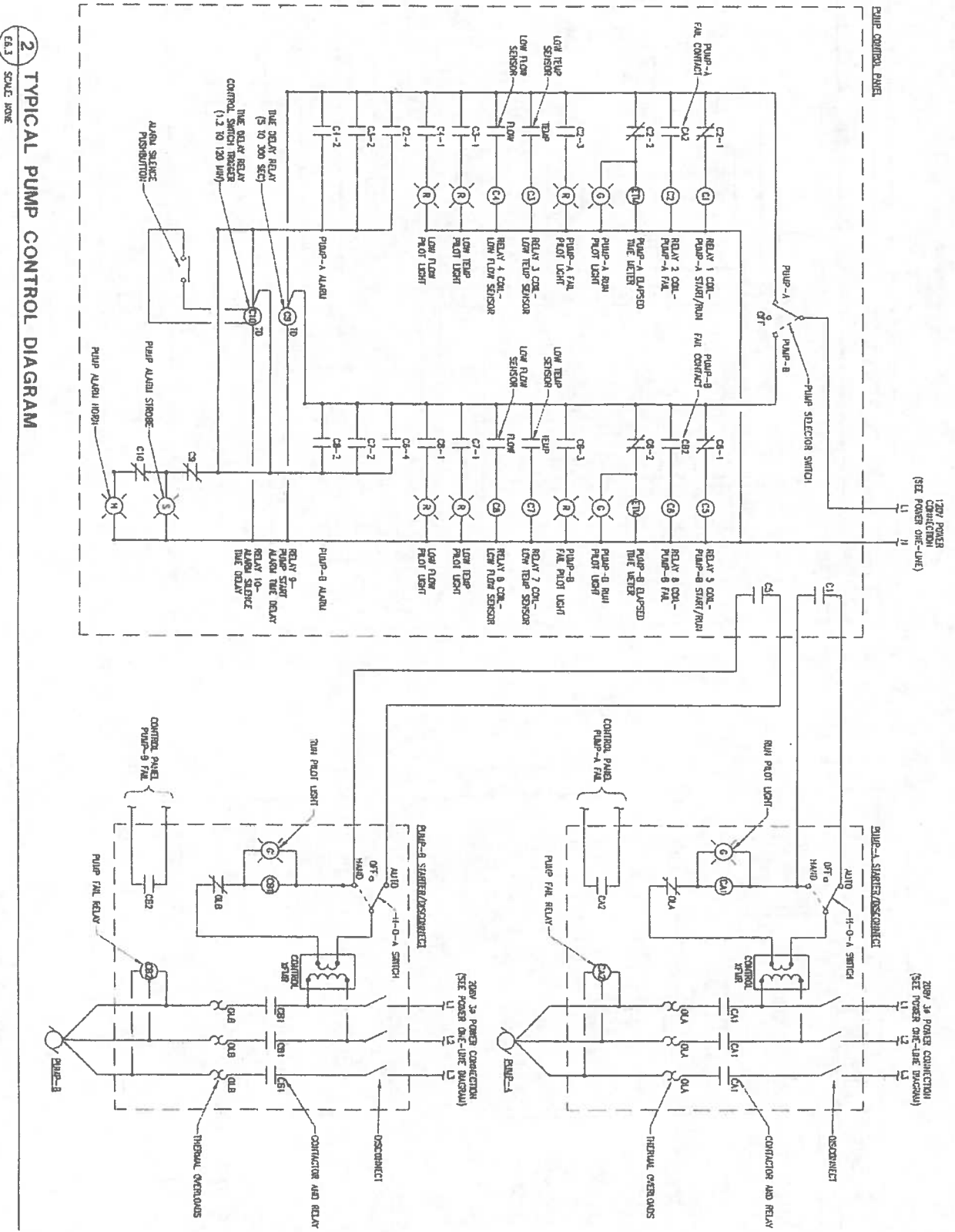
ITEM	DESCRIPTION	NOTES
1	CONTROL PANEL ENCLOSURE - HEAVY 3% STEEL AS APPLICABLE TO HOUSE COMPONENTS	
2	WIRE TAG - BLACK UNPAINTED PLASTIC W/ WHITE CORE, SERRATED, 1/4" (1/2" FOR FRONT DOOR ONLY) DAMAGED LETTERS	
3	SELECTOR SWITCH - 30mm, 3-POSITION UNPAINTED W/ TERMINAL BLOCKS & CUI SWITCH	
4	PILOT LIGHT - 16mm, RED, LED, 120VAC, PUSH TO TEST TYPE, ALLEN BRADLEY 800T-FS1161	
5	PILOT LIGHT - 16mm, GREEN, LED, 120VAC, PUSH TO TEST TYPE, ALLEN BRADLEY 800T-FS1166	
6	2-WIRE TIME RELAY - HOUR METER, NON-RESETTING, 99999.9 HOUR RESOLV, MOORE P20017	
7	ALARM HORN - 120VAC, WEATHERPROOF, CAST BRASS BOX, AMBER LIGHTS	
8	ALARM SILENCE - 120VAC, WEATHERPROOF, CAST BRASS BOX, AMBER LIGHTS	
9	ALARM SILENCE PERSISTENT - LOCKING SWITCH, 120VAC, RED	

STANDARD NOTES
 A) CONTRACTOR TO PROVIDE PART NUMBERS SHOWN OR EQUIVALENT.

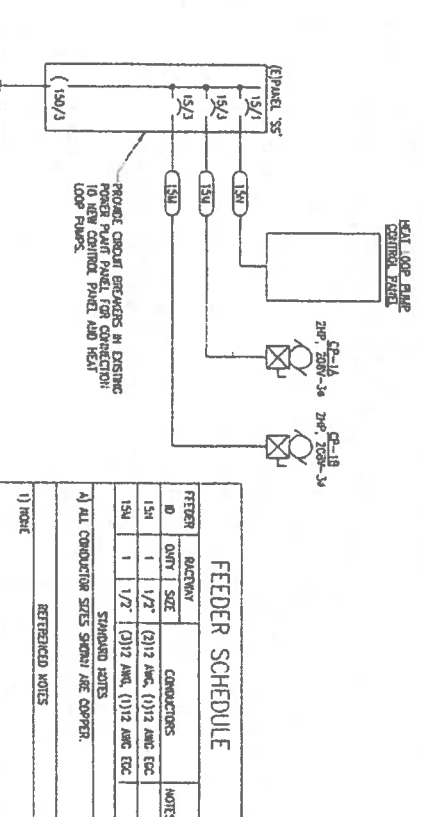
1) NONE

REFERENCED NOTES

1 POWER PLANT GLYCOL HEAT LOOP PUMP CONTROL PANEL
 E6.3 SCALE: NONE



2 TYPICAL PUMP CONTROL DIAGRAM
 E6.3 SCALE: NONE



3 POWER PLANT POWER ONE-LINE DIAGRAM
 E6.3 SCALE: NONE

FEEDER	RATING	CONNECTIONS	NOTES
154/1	1	(2) 1/2" (2) 1/2" AMC ETC	
154/2	1	(1) 1/2" (1) 1/2" AMC ETC	
154/3	1	(1) 1/2" (1) 1/2" AMC ETC	

FEEDER SCHEDULE

ALL CONDUCTOR SIZES SHOWN ARE COPPER.

STANDARD NOTES

1) NONE

REFERENCED NOTES

ESSENTIAL LOAD	NON-ESSENTIAL LOAD
HEAT LOOP PUMP CONTROL PANEL = 37.0 KW	HEAT LOOP PUMP CONTROL PANEL = 37.0 KW
HEAT LOOP PUMP CONTROL PANEL = 0.75 KW	HEAT LOOP PUMP CONTROL PANEL = 0.75 KW
HEAT LOOP PUMP CONTROL PANEL = 0.68 KW	HEAT LOOP PUMP CONTROL PANEL = 0.68 KW
HEAT LOOP PUMP CONTROL PANEL = 41.10 KW	HEAT LOOP PUMP CONTROL PANEL = 41.10 KW

PANEL 'SS' LOAD SUMMARY

ESSENTIAL LOAD

NON-ESSENTIAL LOAD

HEAT LOOP PUMP CONTROL PANEL = 37.0 KW

HEAT LOOP PUMP CONTROL PANEL = 0.75 KW

HEAT LOOP PUMP CONTROL PANEL = 0.68 KW

HEAT LOOP PUMP CONTROL PANEL = 41.10 KW

CALCULATED CURRENT = 114.2 AMPS @ 208 V, 3 PHASE

EXISTING 150 A, 208 V, 3 PHASE, 4 WIRE PANEL IS ADEQUATE

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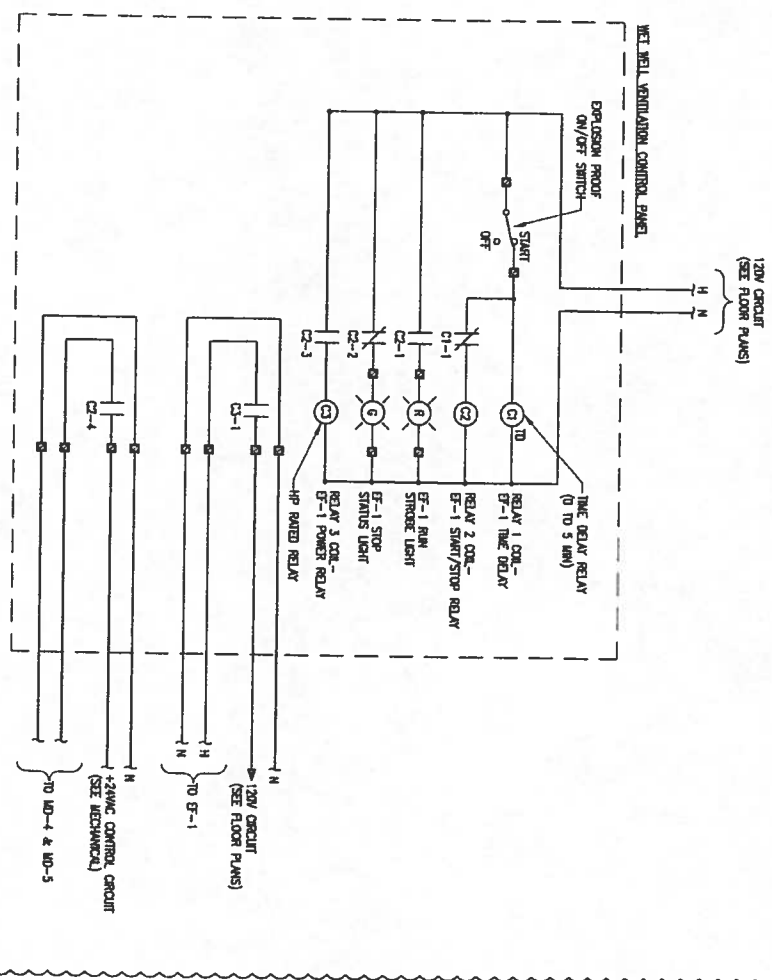
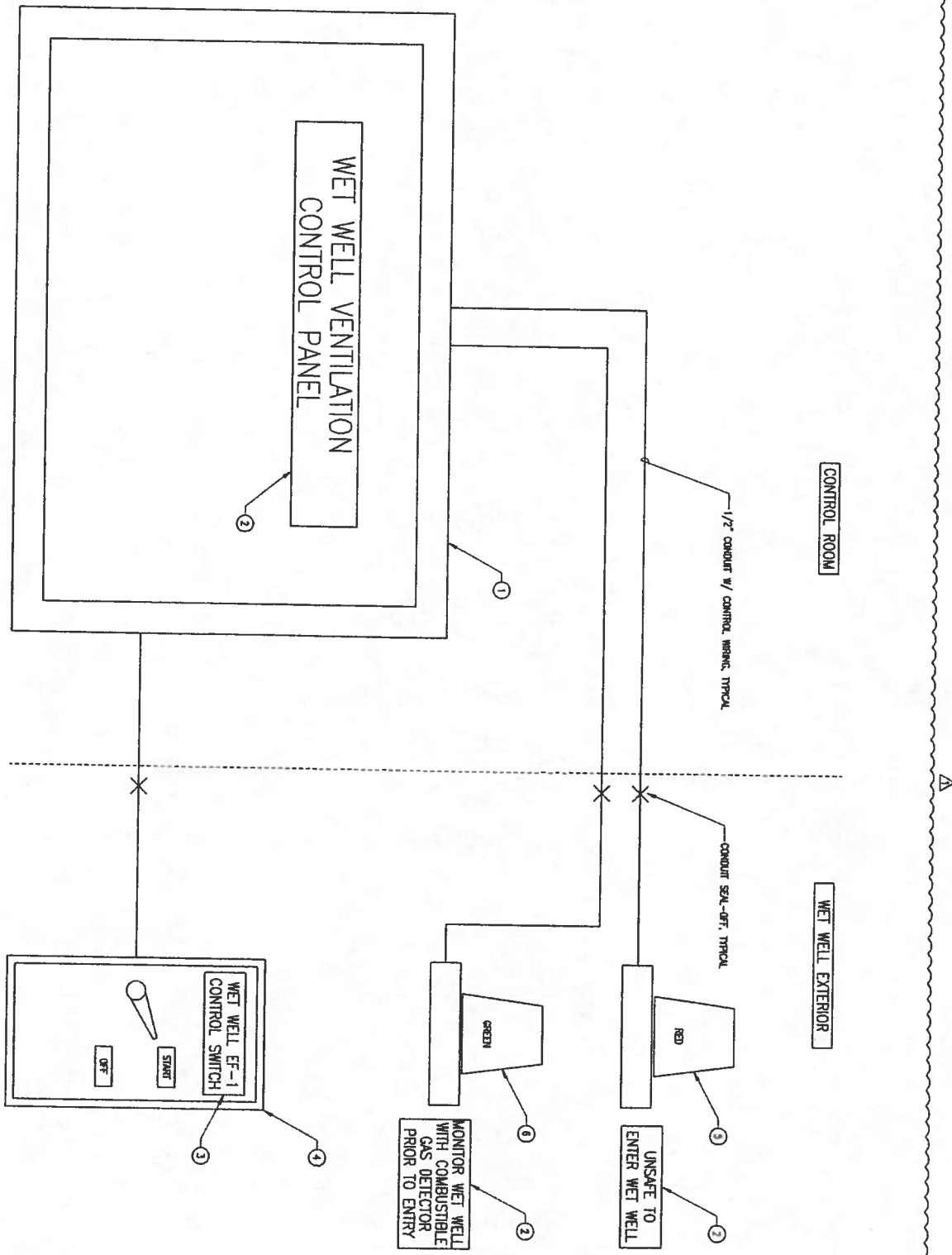
EC 09-0110-1223

Project No. _____ Date: JAN 2011 Designed: BLS Drawn: BLS Approved: EDC	REVISION BY DATE	<p>2009 WASTEWATER SYSTEM IMPROVEMENTS ELECTRICAL POWER PLANT CONTROLS & DIAGRAMS TULUKSAK, ALASKA</p>			SCALE: AS SHOWN ON SHEET IF NOT ONE EACH ON 105 SHEET, AS SHOWN SCALES ACCORDINGLY	RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE. NAME _____ DATE _____
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1 WET WELL VENTILATION CONTROL PANEL LAYOUT & CONTROL DIAGRAM

SCALE: NONE

ITEM	DESCRIPTION	NOTES
1	CONTROL PANEL ENCLOSURE - NEMA 4, SEED ADEQUATE TO HOUSE COMPONENTS.	
2	NAME TAG - BLACK LAMINATED PLASTIC W/ WHITE CORE, SCREEN MOUNTED, 1/2" ENGRAVED LETTERS	
3	NAME TAG - BLACK LAMINATED PLASTIC W/ WHITE CORE, SCREEN MOUNTED, 1/4" ENGRAVED LETTERS	
4	2-POSITION CLASS 1 DIVISION 2 EXPLOSION PROOF selector SWITCH	
5	RED CLASS 1 DIVISION 2 EXPLOSION PROOF STATUS LIGHT, RATED -40" F	
6	GREEN CLASS 1 DIVISION 2 EXPLOSION PROOF STATUS LIGHT, RATED -40" F	
A) CONTRACTOR TO SELECT EXACT EQUIPMENT UTILIZED.		
STANDARD NOTES		
1) NONE		
REFERENCED NOTES		



- ### DETAIL NOTES
- CONTROL PANEL SHALL BE COMPLETELY ENGINEERED, FABRICATED, WIRED, TESTED AND READY FOR INSTALLATION. ALL WIRING SHALL BE CHECKED BY THE FABRICATOR FOR GROUND, SHORT, AND CONTINUITY. ELECTRICAL DEVICES SHALL BE PUT THROUGH DUMP OPERATIONS AT FABRICATOR'S SHOP WITH CONTROL VOLTAGE APPLIED.
 - PANEL CONTROL PANEL SHALL BE CONSTRUCTED PER NEMA STANDARD IEC-1 INDUSTRIAL CONTROL EQUIPMENT, AND THE NATIONAL ELECTRIC CODE PANEL SHALL BE LISTED AS AN ASSEMBLY AND SHALL BEAR THE UL OR ETL LABEL.
 - ALL CONTROL WIRING SHALL BE MINIMUM 14 AWG UNLESS OTHERWISE NOTED. ALL POWER WIRING SHALL BE A MINIMUM OF 12 AWG. USE GOOD WORKING TOOL TO STRIP THE BARE WIRE.
 - SPURR LESS TERMINALS SHALL BE USED, AND EACH WIRE SHALL BE IDENTIFIED AT EACH TERMINAL WITH BARE WIRE LABELS. OF EQUAL LENGTH. ALL WIRE SHALL BE IDENTIFIED WITH BARE WIRE LABELS. OF EQUAL LENGTH. THE TERMINAL BLOCKS SHALL BE APPROVED TO PROVIDE AMPLE SPACE FOR CONNECTIONS.

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DC JOB #E10-1323

CE₂ ENGINEERS, INC. PO BOX 72298 ANCHORAGE, AK 99521 PH: 907-349-1010 FAX: 907-349-1015	2009 WASTEWATER SYSTEM IMPROVEMENTS ELECTRICAL POWER PLANT CONTROLS & DIAGRAMS TULUKSAK, ALASKA			SCALE: AS SHOWN <small>BAR IS ONE INCH ON ORIGINAL DRAWING</small> <small>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</small>	RECORD DRAWING CERTIFICATE THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE. NAME _____ DATE _____					
	Project No. _____ Date JAN 2011 Designed BLS Drawn BLS Approved EDC	<table border="1"> <thead> <tr> <th>REVISION</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BLS</td> <td>11/09/11</td> </tr> </tbody> </table>	REVISION	BY	DATE	1	BLS	11/09/11	Sheet No. EG 4	
REVISION	BY	DATE								
1	BLS	11/09/11								

