

1243056
 [0072269H]

UNCLASSIFIED
 CLASSIFICATION

DOCUMENT NO. RHO-CD-977

DATE May 1, 1980 COPY NO. -20!

ING FILE

REFERENCE COPY
 NOT FOR CIRCULATION
 MAY 10 1980
 RECEIVED-ROCKWELL
 DOCUMENT CONTROL

Rockwell Hanford Operations
 Richland, WA 99352

TITLE AND AUTHOR

TITLE I REPORT
 ISOLATION OF AUXILIARY TANK FARM FACILITIES
 PROJECT B-231
 LINE ITEM - WASTE HANDLING AND ISOLATION FACILITIES
 FY-1982

C. B. McVey

APPROVED FOR PUBLIC RELEASE
 5-14-92

DISTRIBUTION			
NAME	BUILDING	AREA	
<u>U. S. Department of Energy</u> <u>Richland Operations Office</u>			
L. J. Adams	Fed Bldg	700	
J. H. Anttonen	Fed Bldg	700	
J. C. Cummings	Fed Bldg	700	
O. J. Elgert (3)	Fed Bldg	700	
G. Harris	Fed Bldg	700	
J. Sutey (2)	Fed Bldg	700	
W. Tiernan	Fed Bldg	700	
<u>Vitro Engineering Corporation</u>			
J. E. Harmon	Fed Bldg	700	
L. M. Gonzalez (3)	Fed Bldg	700	
<u>Rockwell Hanford Operations</u>			
L. K. Aldrich	222T	200-W	
J. W. Bailey	2750-E	200-E	
D. C. Bartholomew	2750-E	200-E	
R. K. Brazeal	2750-E	200-E	
R. B. Bendixsen	2750-E	200-E	
W. L. Deimel	2750-E	200-E	
J. L. Deichman	2750-E	200-E	
G. T. Dukelow	2750-E	200-E	
P. B. Fisk	2750-E	200-E	
P. J. Fritch	2750-E	200-E	
J. H. Garbrick	2750-E	200-E	
R. D. Hammond	2750-E	200-E	
D. J. Harlow	2750-E	200-E	
G. A. Huff	2750-E	200-E	
L. L. Johnson	2704-W	200-W	
C. A. Lorenzen	2750-E	200-E	
P. D. Mix	222U	200-W	
P. M. Nugent	2750-E	200-E	
G. C. Owens	222-T	200-W	
R. C. Roal	2750-E	200-E	
J. H. Roecker	2750-E	200-E	
J. G. Rodgers	2750-E	200-E	
O. B. Schlipphacke	222-B	200-E	
J. C. Willi	2101-M	200-E	
R. A. Zinsli	2750-E	200-E	
H. A. Zweifel	2704-W	200-W	
Document Services (2)	Fed Bldg	700	
CPM Files (2)	2704-W	200-W	
C. B. McVey (10)	2704-W	200-W	

ROUTE TO	PAYROLL NO.	LOCATION	FILES ROUTE DATE
REFERENCE COPY			

RECEIVED
 FEB 23 2017
 EDNC

BEST AVAILABLE COPY

200-15-1
 D-2-7

912

LEGAL DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

This report has been reproduced from the best available copy

Printed in the United States of America

DISCLAIMER (11 91)



TITLE I REPORT

ISOLATION OF AUXILIARY TANK FARM FACILITIES

PROJECT B-231

FEBRUARY 1980

Prepared for the

UNITED STATES DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
RICHLAND, WASHINGTON

BEST AVAILABLE COPY

TITLE I REPORT

ISOLATION OF AUXILIARY TANK FARM FACILITIES

PROJECT B-231

ROCKWELL HANFORD OPERATIONS

for the

DEPARTMENT OF ENERGY

RICHLAND OPERATIONS OFFICE

RICHLAND, WASHINGTON

Prepared By: Vipro Engineering Corp. by (Signature) 3/18/80

CONTRACTOR APPROVAL:

(Signature) 3-18-80
G. F. Williamson, Manager
Facilities Engineering
Date

(Signature) 3/18/80
L. L. Johnson, Manager
Facilities Engineering and Construction Department
Date

(Signature) 3-18-80
R. A. Zinsli, Project Manager
Capital Projects
Date

APPROVED BY:

(Signature) 4-24-80
U. S. Department of Energy
Richland Operations Office
Date

TITLE I REPORT

ISOLATION OF AUXILIARY TANK FARM FACILITIES

PROJECT B-231

TABLE OF CONTENTS

	<u>Page</u>
1.0 OFFICIAL PROJECT TITLE AND NUMBER	5
2.0 PROJECT TOTAL ESTIMATED COST	5
3.0 PROJECT JUSTIFICATION	5
4.0 DESCRIPTION OF PROJECT SCOPE	6
4.1 IMPROVEMENTS TO LAND	6
4.2 BUILDINGS	6
4.3 OTHER STRUCTURES	6
4.4 SPECIAL FACILITIES AND INSTALLATIONS	6
4.4.1 Catch Tank Modifications	6-11
4.4.2 Diversion Box, Nozzle Seals and Riser Modifications	11-18
4.4.3 Encasements, Valve Pits, Flush Pits 6 Pump Pits	18-22
4.4.4 Auxiliary Tanks and Vaults	22-35
4.5 UTILITIES	35
4.6 WORK PLANNED FOR OPERATING CONTRACTOR	36
4.7 STANDARD EQUIPMENT	36
4.8 TRANSFERRED CAPITAL PROPERTY OR EQUIPMENT	36
4.9 RESEARCH AND DEVELOPMENT REQUIREMENTS	36
5.0 PERFORMANCE REQUIREMENTS	36
6.0 APPLICABLE CODES AND STANDARDS	37

TABLE OF CONTENTS (continued)

	<u>Page</u>
7.0 SCHEDULE AND METHODS OF PERFORMANCE	37
7.1 DESIGN AND INSPECTION	37
7.2 PROCUREMENT	37
7.3 CONSTRUCTION	38
7.4 SCHEDULE	38
8.0 REQUIREMENTS AND ASSESSMENTS	38
8.1 SECURITY	38
8.2 SAFETY	38
8.3 SAFEGUARDS	38
8.4 ENERGY CONSERVATION	38
8.5 ENVIRONMENT	39
8.6 DECONTAMINATION AND DECOMMISSIONING	39
8.7 PROVISIONS FOR THE PHYSICALLY HANDICAPPED	39
8.8 PROVISIONS FOR FALLOUT SHELTERS	39
8.9 QUALITY ASSURANCE LEVELS	39
8.10 MAINTENANCE REQUIREMENTS	40
8.11 COMMUNICATION REQUIREMENTS	40
9.0 DRAWINGS	41
10.0 OUTLINE SPECIFICATIONS	42
11.0 COST ESTIMATE	42
APPENDIX A - SCHEDULE/COST ESTIMATE	N/A
APPENDIX B - DRAWINGS	N/A

TITLE I REPORT

ISOLATION OF AUXILIARY TANK FARM FACILITIES

1.0 OFFICIAL PROJECT TITLE AND NUMBER

Project B-231, Isolation of Auxiliary Tank Farm Facilities.

2.0 PROJECT TOTAL ESTIMATED COST

Total Estimated Cost - \$8,100,000

3.0 PROJECT JUSTIFICATION

One of the objectives of the Hanford Waste Management Program is to isolate process systems which are deactivated as each phase of the Waste Tank Stabilization Program is completed. Numerous catch tanks, diversion boxes, diverter stations, valve pits, and pipeline encasements used for waste transfers fall into this category. The auxiliary tanks and sumps identified in this project were used in conjunction with now obsolete separation processes carried out at Hanford during the past thirty-five (35) years. These process systems will require isolation when their service life is terminated. The intent is to stabilize and isolate these systems to prevent inadvertent liquid additions and to protect the environment from possible releases of radioactive materials. Stabilization efforts, where required, will be completed prior to isolation. No stabilization efforts will be funded by this project.

4.0 DESCRIPTION OF PROJECT SCOPE

4.1 IMPROVEMENTS TO LAND

Not applicable.

4.2 BUILDINGS

Not applicable.

4.3 OTHER STRUCTURES

Fiberglass weather covers with selected existing surveillance ports will be provided by this project to seal all boxes and access cover systems on all of the underground auxiliary tank vaults to be isolated. The weather covers will prevent inadvertent liquid entry to the stabilized system from rain water or snow into the sealed vault.

Certain obsolete structures that exist above grade, such as ventilation ducts, fans, instrument sheds, valve stations, and above grade utility systems, will be removed by the project. A record of the contents of each vault shall be made by Rockwell Hanford Operations (Rockwell) before each vault is sealed at no cost to this project.

4.4 SPECIAL FACILITIES AND INSTALLATIONS

Numerous different existing facilities at various locations within the 200 East and 200 West Areas are isolated by this project. By definition, isolation is the physical modification of facilities required to prevent inadvertent addition of any liquids into an inactive stabilized system and to protect the environment from possible releases of radioactive materials from these systems.

In Section 9.0, drawings SK-2-56921 and SK-2-56922 show new and existing facilities to be retained in service after 1980.

4.4.1 Catch Tank Modifications

One Catch Tank will be equipped with a new liquid level gauge and seven catch tanks will be upgraded with new pump pits, leak detectors, permanently

installed pumps, and liquid level gauges (FIC). Both the leak detectors and FIC gauges will alarm through the Computer Automated Surveillance System (CASS) in the 2750-East building control room. The 241-A-302A pump pit will be a reinforced concrete structure equipped with an access port through the cover for a decontamination spray wand. The remaining six (6) pump pits will be constructed of corrugated steel with an access port. A five horsepower pump will be installed in the pump pit to extend down an existing 12-inch riser. The 12-inch riser will have imbedded spray piping for decontamination. The pump suction will be located near the bottom of the catch tank to maintain the liquid level at a minimum heel. A transformer, disconnect switch, starter and motor control center will be provided in seven catch tank locations. The pumps will be provided with an automatic low level pump shut-off. Estimates for the distance to the nearest power source and CASS connection are provided in Table I on SK-2-56934. Standard FIC gauges will be installed through existing 4-inch risers to monitor liquid levels. The existing drain lines from the diversion boxes to the catch tanks will be utilized. Pump out lines will tie into existing lines to the diversion box. One new jumper is required in the pump pit and one in the diversion box. The return line from the pump pit will discharge to a designated line in the diversion box or a valved jumper so that a change of jumpers is not necessary to pump out the catch tank.

4.4.1.1 240-S-302 Catch Tank Detail 2, SK-2-56939

The 240-S-302 Catch Tank will be retained in service with the addition of a new pump pit and FIC Gauge as shown on SK-2-56939. The jet-out line nozzle U-12 in 240-S-151 will be cut, capped on the tank side and reused for the new return line from the new 240-S-302 pump pit. One 4-inch riser will be regasketed.

4.4.1.2 241-SX-302 Catch Tank Detail 4, SK-2-56939

This catch tank will be abandoned and isolated. Drains to the catch tank originate from 241-SX-151, 241-SX-152, the SX-Farm encasement and line 456. All of these sources are isolated. Three risers will be regasketed and a steam jet line will be capped as shown on Detail 4 of SK-2-56939.

4.4.1.3 241-S-302-A Catch Tank Detail 3, SK-2-56939

The 302-A Catch Tank will be upgraded to include a pump pit and liquid level gauge. The jet discharge and three drains will be capped on the catch tank end and plugged on the isolated end. One 4-inch riser will be fitted with a new gasket and a 1-inch riser will be capped. The jet discharge line nozzle U-8 in 241-S-151 will be cut, capped on the tank side and reused for the new return line from the new 241-S-302A pump pit.

4.4.1.4 241-S-302-B Catch Tank, SK-2-56930

This catch tank is isolated by plugging the S Farm encasement near 151-S and plugging the jet discharge line near the 302-A Catch Tank as described in 4.4.1.3. Three risers will be fitted with new gaskets and one riser will be capped.

4.4.1.5 241-U-301 Catch Tank, SK-2-56933

This catch tank will be upgraded to include a pump pit and liquid level gauge. The pump out line will be routed to nozzle "E" in 244-U receiver vault. A new jumper will connect nozzle "E" with nozzle L-5. Five risers will receive new gaskets.

4.4.1.6 241-UX-302A Catch Tank Detail 2, SK-2-56942

This catch tank will be retained in service. As shown in Detail 2, SK-2-56942, a new pump pit and liquid level gauge will be installed. The existing jet out line nozzle U-16 in 241-UX-154 will be cut, capped on the jet side and extended to the new pump pit. The 1-inch steam addition line will also be capped and one riser will receive a new gasket.

4.4.1.7 241-TX-302A and TX-302X Catch Tanks Details 3 and 7, SK-2-56941

The TX-302A Catch Tank will be isolated by providing new gaskets on three risers. The TX-302X Catch Tank will be isolated by capping one 1-inch riser and providing new gaskets for three risers. All other pipes draining to the catch tanks originate in isolated facilities.

4.4.1.8 241-TX-302B Catch Tank Detail 2, SK-2-56941

This catch tank will be isolated by providing new gaskets on three risers. A second catch tank with the same number has been previously abandoned.

4.4.1.9 241-TX-302C Catch Tank, SK-2-56941

This catch tank will be upgraded with the installation of a new pump pit and liquid level gauge. Cut and cap the existing jet discharge line, nozzle U-10 in 241-TX-154, on the jet side and reuse for the new pumpout line from the new pump pit. Regasket one existing riser.

4.1.1.10 241-TY-302A Catch Tank Detail 5, SK-2-56941

This catch tank will be isolated by installing new gaskets on three risers and capping the steam addition line. The drains and return line terminate in TY-153 which is also isolated.

4.4.1.11 241-TY-302B Catch Tank Detail 6, SK-2-56941

This catch tank receives drainage from a concrete encasement originating at TY-153. Since the diversion box, catch tank and encasement will all be isolated, the drains between these facilities do not require sealing. Isolation of TY-302B will include installation of new gaskets on three risers and capping the 1-inch steam addition riser.

4.4.1.12 241-T-301 Catch Tank Detail 4, SK-2-56941

This catch tank receives drainage from the T-151, T-152, T-153 and T-252 Diversion Boxes which will all be isolated by this project. The catch tank will be isolated by installing new gaskets for eight risers.

4.4.1.13 241-BX-302A Catch Tank Plan 2, SK-2-56936

This catch tank receives drainage from the BX-153 BR-152, BYR-152 and BXR-152 Diversion Boxes. Isolation will include capping the steam addition line, installing new gaskets on three risers.

4.4.1.14 241-B-301B Catch Tank Plan 1, SK-2-56936

This catch tank receives drainage from four diversion boxes; B-252, B-151, B-152 and B-153 which will be isolated by this project. The catch tank will be isolated by installing new gaskets on eight risers.

4.4.1.15 241-BX-302C Catch Tank Elevation 2, SK-2-56937

This catch tank receives drainage from BX-155 which will be isolated by this project. New gaskets will be installed on three risers. A 1-inch steam addition line will be capped.

4.4.1.16 241-B-302 Catch Tank Elevation 1, SK-2-56937

This catch tank drains the B-154 Diversion Box and several nearby encasements isolated by this project. The catch tank will be isolated by regasketing three risers and capping a 1" steam line.

4.4.1.17 241-BX-302B Catch Tank Elevation 2, SK-2-56937

This catch tank drains the BX-154 Diversion Box which will be isolated by this project. The catch tank will be isolated by regasketing three risers and capping a 1" steam line.

4.4.1.18 241-ER-311 Catch Tank Detail 3, SK-2-56937

This catch tank receives drainage from ER-151 and ER-152. The catch tank will be retained in service with the addition of a new pump pit. A liquid level gauge will be installed on the catch tank. The steam addition riser and pump back line will be cut and capped. The new pump back line, nozzle U-1 in 241-ER-151, will utilize an existing portion of the original pump back routing to the diversion box. A new gasket will be installed on one 4-inch riser. A second catch tank with the same number has been previously abandoned.

4.4.1.19 241-C-301 Catch Tank Plan 2, SK-2-56938

This catch tank receives drainage from the four diversion boxes discussed in Section 4.4.2.29. The catch tank will be isolated by installing new gaskets on eight risers.

4.4.1.20 241-AZ-151 Catch Tank SK-2-56927

This catch tank receives drainage from the 241-AZ-152 Sluice Transfer Box. The catch tank will be upgraded with a new liquid level gauge and CASS connection. An existing pump is in place.

4.4.1.21 241-A-302A Catch Tank Plan 1, SK-2-56935

This catch tank receives drainage from the 241-A-151 Diversion Box. The catch tank will be upgraded with the addition of new pump pit and liquid level gauge. The steam addition riser will be capped and a blind flange will be installed on a 6-inch riser. The pump back line will utilize an existing portion of the original return line which extends to nozzle U-4 in the A-151 Diversion Box.

4.4.2 Diversion Box, Nozzle Seals and Riser Modifications

An existing nozzle seal design shown on H-2-73453 will be used for this project. The seal can be installed remotely and meets the criteria for 12-inches of water pressure. Lines between isolated facilities will not be sealed. Projects B-145 and 181 will provide seals for lines routing from diversion boxes to the tanks (nearly all the lines). This project will isolate lines between an active and an isolated facility by sealing the nozzles in the active box. Stubbed lines with inadequate seals outside isolated boxes will be sealed inside the boxes.

Risers from boxes or buried catch tanks will be cut and capped or fitted with a new gasket. Blind flanges with over three feet of soil cover will not be modified. Electrical conduit, or other utility entry points will be sealed to achieve isolation.

4.4.2.1 240-S-152 Diversion Box SK-2-56930

The 240-S-152 Diversion Box will be isolated by plugging the encasement from 240-S-151. The process lines V552, V553 and V555 will be isolated by sealing nozzles U-3, U-8 and U-17 respectively in the 240-S-151 Diversion Box. A 2-inch spray riser used for decontamination in 240-S-152 will be cut and capped near 240-S-151. A weather cover will be placed over the cover block on 240-S-152.

4.4.2.2 240-S-151 Diversion Box SK-2-56930

This Diversion Box will remain active; however, 13 nozzles routing to the 202-S Building will be isolated to prevent transfers into the building. Three nozzles L-1, L-10 and L-18 will be sealed to prevent transfers to a swamp and L-8 will be sealed to prevent transfers to crib. Five nozzles routing to 241-U-153 and 240-S-152 are isolated by sealing nozzles (L-11, L-15, L-19, U-3 and U-8).

4.4.2.3 241-SX-151 Diversion Box SK-2-56930

The 241-SX-151 will be isolated from 241-S-151 by installing blanks on nozzles L-4, L-5, L-6, L-7 and L-8 in the 241-S-151 Box. Ten stub lines terminating outside of SX-151 will be isolated by sealing the corresponding nozzles. The pit spray nozzles will be sealed by capping two 2-inch spray risers located north of 241-SX-151. A weather cover will be installed over the cover blocks.

4.4.2.4 241-SX-152 Diversion Box SK-2-56930

The 241-SX-152 Diversion Box will be isolated by capping a 2-inch water line associated with the pit spray nozzles. Line 4853/V762 which connects 241-UX-154 with 241-SX-152 is isolated by sealing nozzle L-9 in the 154-UX Diversion Box. The portion of the encasement containing line 4853 which drains to 241-SX-152 will be plugged. Line 456 which previously connected 241-SX-152 and 241-U-151 is blanked by project B-135. A weather cover will be installed over the cover blocks.

4.4.2.5 241-S-151 Diversion Box SK-2-56930

This diversion box will remain active; however, the encasement from 151-S to the S Tank Farm will be blocked next to the Diversion Box to isolate the S-302-B Catch Tank. The jet pump back line V510 nozzle U-8 will be cut and rerouted to the 302-A Catch Tank pump pit as shown on Detail 3, SK-2-56939. Seal nozzles L-11 to crib, and nozzles L-4 through L-8 to 241-SX-151 are to be sealed as noted in 4.4.2.3.

4.4.2.6 241-S-152 Diversion Box SK-2-56930

This diversion box will be isolated by connecting lines SN-216 and SN-281 with a short section of a new line. Lines SL-138 and SL-139 connecting 152-S with 242-S will be isolated by sealing nozzles 18 and 19 in 242-S. Three lines connecting the SY Valve Pits with 152-S will be isolated by sealing nozzles R-2 (SN-282), R-3 (SL-176) and L-3 (SL-175). Line SL-100 and SL-101 connecting valve pits 241-U-C and 241-U-D with 152-S will be isolated by sealing nozzle L3 in 241-U-C and R3 in 241-U-D. A weather cover will be installed over the cover blocks.

4.4.2.7 241-U-252 Diversion Box SK-2-56933

This diversion box will be isolated by sealing the spray piping riser, sealing the sixteen nozzles on the stub lines, plugging the floor

drain to catch tank 241-U-301 and installing a weather cover. All other lines are stubbed or routed to isolated facilities. A weather cover will be installed over the cover blocks.

4.4.2.8 241-U-153 Diversion Box SK-2-56933

This diversion box will be isolated by sealing nozzles L-4, L-5, and L-6 in U-152 to isolate lines V-426, V-427 and V-428 connecting U-152 with U-153. Lines V-450 and V-451 are isolated by sealing nozzles L-1 and L-2 in U-151. Lines V-458, V-459 and V-460 are isolated by sealing nozzles L-11, L-15 and L-19 in 240-S-151 as discussed in 4.4.2.2. A two inch spray pipe riser will be capped outside U-153 and a weather cover will be placed over the cover blocks. The 10 stub lines terminating outside of 241-U-153 will be isolated by sealing the corresponding nozzles. The pit drain will be plugged south of U-153.

4.4.2.9 241-UR-152, UR-153 and UR-154 Diversion Boxes SK-2-56933

These diversion boxes will be isolated by installing weather covers over the cover blocks. Two 2-inch spray risers will be capped at each diversion box.

4.4.2.10 241-UR-151 Diversion Box SK-2-56933

This diversion box will be isolated by installing a weather cover over the cover blocks and capping four 2-inch spray risers.

4.4.2.11 241-TXR-151, TXR-152, TXR-153, and TX-153 Diversion Boxes SK-2-56931

These diversion boxes will be isolated by installing weather covers and sealing two 2-inch spray risers at each box. All lines and drains from these boxes are routed to facilities isolated by this or other projects and do not require sealing.

4.4.2.12 242-T-151 Diversion Box SK-2-56931

This diversion box will be isolated by sealing two nozzles L-1 and U-1 and a 3-inch floor drain. A weather cover will be installed over the cover blocks. The line routing to the 242-T Evaporator will be sealed with grout as shown on Detail 1, SK-2-56941.

4.4.2.13 241-TX-155 Diversion Box SK-2-56931

This diversion box will be replaced by TX-152 under Project B-208. The isolation effort will consist of cutting and capping two 2-inch spray piping risers and installing a weather cover over the cover blocks. Lines connecting TX-155 and TX-154 will be isolated by sealing nozzles L-2 (V-392), L-3 (V-391), L-6 (V-385), L-7 (V-384) and L-8 (V-383) in the TX-154 box. Lines connecting TX-155 and UX-154 will be isolated by sealing nozzles L-3 (V382), L-4 (V4851/4857), L-5 (4859/4703) and U-9 (V375) and U-10 (V376) in the UX-154 Diversion Box. Line V-410 connecting TX-155 and U-151 will be isolated by sealing nozzle U-2 in U-151.

4.4.2.14 241-TY-153 Diversion Box SK-2-56931

This box will be isolated by capping two 2-inch spray risers and installing a weather cover over the cover blocks. Other process lines and drains terminate in isolated facilities or are sealed by other projects.

4.4.2.15 241-T-252 Diversion Box SK-2-56932

This diversion box is isolated by cutting and capping a 2-inch spray riser. Fourteen nozzles stubbed outside the box are sealed inside the box since the stubs are only covered with paper outside the box. Line V-707 which routes from the 221-T Canyon Building to T-252 will be isolated by sealing nozzle 11 in cell 19 in 221-T. A weather cover will be installed over the cover blocks.

4.4.2.16 241-T-152 Diversion Box SK-2-56932

This diversion box will be isolated by sealing eight nozzles which are stubbed outside the box. These stubs are covered only by a heavy paper. Three lines routing from the 221-T Canyon Building will be isolated by sealing nozzle 11 (V-667) in cell 9, nozzle 53 (V-668) in cell 30 and nozzle 11 (V-669) in cell 29. Line V671/326 which routes from the 224-T Building will be sealed at nozzle "N" in Cell "C". One 2-inch spray riser will be cut and capped next to the diversion box. A weather cover will be installed over the cover blocks.

4.4.2.17 241-T-151 Diversion Box SK-2-56932

This diversion box will be isolated by sealing two nozzles U-5 and U-6 which connect to stubbed lines outside the box. Lines 653 and 654 routed to the 221-T Canyon Building are isolated by sealing nozzle 101 outside cell 17 and nozzle 101 outside cell 19 in the hot pipe trench. Line V663 connecting T-151 to crib will be isolated by sealing nozzle L-8 in T-151. One 2-inch spray riser will be cut and capped outside the box and a weather cover will be installed over the cover blocks.

4.4.2.18 241-T-153 Diversion Box SK-2-56932

This diversion box will be isolated by sealing eight nozzles connecting stubs or spares outside the box. One 2-inch spray riser will be capped and a weather cover will be installed over the cover blocks.

4.4.2.19 241-TR-152 Diversion Box SK-2-56932

This diversion box will be isolated by cutting and capping two 2-inch spray risers. A weather cover will be installed over the cover blocks. All pipes in the box terminate in facilities isolated by this project or other projects.

4.4.2.20 241-BYR-154, BXR-151, BYR-153, BXR-153, BYR-152, BXR-152 and BR-152 Diversion Boxes SK-2-56929

These seven diversion boxes will be isolated by cutting and capping a total of fourteen 2-inch spray risers. Line (V7507/9712) connecting BYR-154 to crib will be isolated by sealing nozzle L-8 in BYR-154. Line 9719 connecting BXR-151 and ER-151 will be isolated by sealing nozzle L-3 in ER-151. Weather covers will be installed over the cover blocks on each of the seven boxes.

4.4.2.21 241-BX-153 Diversion Box SK-2-56929

This diversion box will be isolated by cutting and capping one 2-inch spray riser and sealing six nozzles connected to lines stubbed outside the box. A weather cover will be installed over the top of the cover blocks.

4.4.2.22 241-B-252 Diversion Box SK-2-56929

This diversion box will be isolated by cutting and capping a 2-inch spray riser. Ten nozzles connected to stubs outside the box will be sealed. A weather cover will be installed over the cover blocks.

4.4.2.23 241-B-152, B-151, B-153 and 242-B-151 Diversion Box SK-2-56929

These four diversion boxes will be isolated by cutting and capping one spray riser outside each box. Nozzles to be sealed which terminate in stubs outside the boxes include six in B-152, one in 241-B-151, eight in B-153 and one in 242-B-151. Line V314 routing between 242-B-151 and 242-B Building will be plugged between the facilities. Line V-225 which extends between B-152 and ER-151 will be isolated by sealing the nozzle in ER-151 since this box remains active. All four diversion boxes will have weather covers installed over the cover blocks.

4.4.2.24 241-BX-155 Diversion Box SK-2-56928

This diversion box will be isolated by sealing five nozzles connected to stubs outside the box. One 2-inch spray riser will be cut off and capped and a weather cover will be installed over the cover blocks. All other process lines and drains terminate in isolated facilities.

4.4.2.25 241-B-154 Diversion Box SK-2-56928

This diversion box will be isolated by sealing nine nozzles in B-Plant to isolate the lines connecting B-154 and the 221-B Building. The nozzles and lines to be isolated in B-Plant are shown in Table 1 on SK-2-56928. Nozzle L-3 is sealed to isolate line V-204 which extends to the 216-B-9 crib. Nozzle L-2 is sealed to isolate line V-203 which extends to a crib. Six nozzles connected to stubs outside the box will be sealed. A 2-inch spray riser will be cut and capped, a 4-inch riser located on the 216-B-56 organic crib will be cut and capped and a weather cover will be installed over the cover blocks.

4.4.2.26 241-BX-154 Diversion Box SK-2-56928

This diversion box will be isolated by sealing seven nozzles in B-Plant to isolate lines connecting BX-154 and the 221-B Building. The nozzles to be sealed in B-Plant are summarized in Table 1 on SK-2-56928. Three nozzles connected to spare lines will be sealed and a 2-inch spray riser will be cut and capped. A weather cover will be installed over the cover blocks.

4.4.2.27 241-ER-151 Diversion Box SK-2-56928

This box will be retained in service, however 4 nozzles will be sealed. L2 (V219) routes to a crib, L9 (8653) is direct buried and nozzle L3 (9719) and L10 (V225) are connected to isolated facilities.

4.4.2.28 241-EW-151 Diversion Box SK-2-56937

This diversion box is located between the 200 East and West Areas and will be retained in service for venting the air from the transfer lines during startup. Modify by adding a 3-way valve on pump suction as shown on Plan 6, SK-2-56937.

4.4.2.29 241-C-151, C-152, C-153 and C-252 Diversion Boxes SK-2-56927

These four diversion boxes will be isolated by sealing one spray riser near each box. Line 8902/110 which connects the 151-C with 244-CR will be isolated by sealing nozzle U-12 on 244-CR. Line 812/108 which connects 151-C with 244-AR will be isolated by sealing nozzle T-9 in Cell 2 of 244-AR. Each box will have a weather cover installed over the cover blocks. A total of 39 nozzles connected to stubbed lines outside these four boxes will be sealed.

4.4.2.30 241-CR-151 Diversion Box SK-2-56927

This diversion box will be isolated by cutting and capping two 2-inch spray risers. Four lines originating in 244-CR will be sealed inside the 244-CR Building. Nozzle L-1 is sealed to isolate line 8601 from 244-CR. Seal nozzle L-9 in 241-ER-151 to isolate line 8653 connecting CR-151. The floor drain in CR-151 will be sealed with grout and a weather cover will be installed over the cover blocks.

4.4.2.31 241-CR-152 and CR-153 Diversion Boxes SK-2-56927

These diversion boxes will be isolated by cutting and capping four 2-inch spray risers. Line V-228 connecting ER-153 and CR-153 will be isolated by sealing nozzle 7 in the ER-153 Diversion Box. Line V-1000 connecting CR-152 and 244-CR will be isolated by sealing nozzle U-14 in 244-CR. Both diversion boxes will have weather covers installed over the cover blocks.

4.4.3 Encasements, Valve Pits, Flush Pits & Pump Pits

Encasements will be isolated from active facilities by re-routing or plugging drains and by installing a concrete dam in the inactive encasement when an active and inactive encasement are joined together. Most of the encasements to be isolated required no modification since many do not have drains while others were drained to isolated facilities. The test risers on the encasements have screwed caps which provide an acceptable isolation barrier.

4.4.3.1 240-S-152 Diversion Box to 205-S Encasements SK-2-56930

Isolation of the 240-S-152 Diversion Box (4.4.2.1) also isolates the encasements extending to 205-S facilities.

4.4.3.2 240-S-151 to 241-U-153 Encasement SK-2-56930

This encasement will be isolated by sealing the process lines in 240-S-151. Lines V458, V459 and V460 routing to 153-U will be isolated by sealing nozzles L-11, L-15 and L-19 in 240-S-151. The encasement drain originally routed to the 241-U-301 Catch Tank will be capped as discussed in Section 4.4.2.8.

4.4.3.3 241-SX-151 to SX Tank Encasements SK-2-56930

Isolation of the 241-SX-151 Diversion Box (4.4.2.3) also isolates the encasements to the SX Tanks.

4.4.3.4 241-SX-A and 241-SX-B Valve Pits SK-2-56930

The SX valve pits will be isolated in the flush pits by placing blanks in the two flush lines leaving each valve pit. This precludes the possibility of connecting water sources to the hose bibs in the flush pits and getting water in the valve pits. Weather covers will be installed over the cover blocks of the valve pits. These valve pits will be isolated after the salt well program is complete.

4.4.3.5 Encasement from 241-S-151 to 241-SX-151 SK-2-56930

This encasement will be isolated with a plug near 241-S-151 as shown in Detail 8 of SK-2-56939.

4.4.3.6 S-Farm Valve Pits and Flush Pits SK-2-56930

The S-Farm valve pits will be isolated by placing two blanks in each of the four flush pits as shown in Details 5 and 9 of SK-2-56939. Weather covers will be installed over the cover blocks of the four valve pits. Two lines connecting valve pits 241-S-A and B with valve pits 241-SY-A and B will be isolated by sealing nozzles L-1 (SN275) and R-1 (SN276) in 241-SY-A and B. Two lines connecting valve pits 241-S-A and B with 242-S Building will be isolated by sealing nozzles 16 (SL113) and 17 (SL114) in 242-S Building. These valve pits will be isolated after the salt well program is completed in the S-Farm Tanks.

4.4.3.7 U-Farm Valve Pits U-A, U-B, U-C and U-D SK-2-56933

These valve pits will be isolated after the salt well program. As shown in Details 4 and 5, SK-2-56942, two blanks will be installed in each of the four flush pits. Per Details 3 and 7, SK-2-56942, seven air purge lines for encasement leak detection will be capped per Detail 6. Two lines connecting valve pits 241-U-C and D with diversion box 241-S-152 will be isolated by sealing nozzles L-3 (SL-100) and R-3 (SL-101) in 241-U-C and D as described in 4.4.2.6. Weather covers will be installed over the cover block of each valve pit.

4.4.3.8 241-TX-14B Valve Pit SK-2-56931

This valve pit will be isolated per Detail 2, SK-2-56940 by cutting and capping the steam and raw water lines outside the flush pit. Weather covers will be installed over both the flush pit and the valve pit.

4.4.3.9 241-TR-153 Booster Pump Pit SK-2-56932

This pump pit will be isolated as shown in Detail 3 of SK-2-56940. One 2-inch spray piping riser will be capped above the pit. A 2-inch drain will be sealed in the evaporative cooler. Electrical conduit lines will be cut off at grade level and capped. Two half inch risers will be cut off flush with the top of the filter pit. A 1/8-inch plate blind flange will be inserted in a duct joint and seal welded outside the filter pit and at the evaporative cooler. Weather covers will be installed over the top of the pump pit and the filter pit.

4.4.3.10 Encasements South of CR-152, 153 SK-2-56927

These encasements will be isolated by installing two 4-inch thick concrete dams next to the active encasement containing line V224. Detail 5 on SK-2-56938 shows the concrete dam design.

4.4.3.11 Encasement Connecting 153-ER and 151-AX Containing Lines 4012 and 4013 SK-2-56926 and SK-2-56927

This encasement will be isolated with a typical concrete dam as shown in Detail 3 on SK-2-56936. One dam will be located near ER-153 and a second just east of 244-AR at the encasement intersections.

4.4.3.12 201-C Valve Pit and 241-C-154 Diversion Box SK-2-56955

This valve pit and diversion box will be isolated as shown on Detail 1 of SK-2-56955. Six lines entering the 201-C Building will be blanked or receive blind flanges to isolate the 201-C Valve Pit. One 3/4-inch line will be cut and capped at C-154 and a weather cover will be installed over the cover blocks of C-154 only because 201-C has a one piece steel cover two feet below grade. Line V839 will be isolated by installing one blind flange in Cell "C" and one blind flange in Cell "A" of the 201-C Building. Line V743 will be isolated by sealing nozzle 48 in Cell 8 of the 221-B Building per Table I, SK-2-56928. Line 8900 which connects 201-C with 244-CR will be isolated by sealing nozzle U-10 in the 244-CR Vault.

4.4.3.13 241-AY-501 Condensate Valve Pit SK-2-56935

This valve pit will be isolated by sealing four 2-inch nozzles which provide routing to the 241-AY and AZ Tanks. Four other nozzles will be covered under B-181 since they route to the AX-Farm Tanks. The RAW water inlet to the valve pit is isolated by B-139. The valve pit drain routes to the AX-152 Diverter Station and will be isolated with a grouted plug in the floor of AY-501. A weather cover will be installed over the top of the pit.

4.4.3.14 241-AX-152 Diverter Station SK-2-56927

This diverter station catch tank (241-AX-152) has a pump out through line 4022 which connects to an isolated facility 241-AX-151 diverter station. To provide a pump out routing cut and cap line 4022 and 4024 and tie them together as shown on Plan 4, SK-2-56935.

4.4.3.15 241-AY-152 Sluice Transfer Box SK-2-56927

This box originally provided routings between the 244-AR Vault and the AX, AY and AZ Tanks. Lines routing to the AX Tank Farm will be isolated by Project B-181. Two lines routing to 244-AR will be isolated by sealing nozzles T-4 (802) and T-11 (806) in 244-AR on SK-2-56926. Ten lines routing to pits on the AY Tanks are isolated by sealing nozzles in the AY Pits as summarized on the Table on SK-2-56927. Lines S-601 and D-601 routing to AY-152 are isolated by sealing nozzles U2 and U3 in the AZ-152 Box. The 4-inch drain which routes to the AY 102 Tank will be isolated with a concrete plug in the floor of AY-152. The raw water connection to AY-152 used for the pit spray will be isolated by removing a 2-inch valve located outside the box and capping both ends of the line. A weather cover will be installed over the cover blocks of the AY-152 Box.

4.4.3.16 241-AY-151 Pump Out Pit SK-2-56926

This pit will be isolated by sealing the U-6 nozzles on the AY-101 and AY-102 pump pits to take line 4513 out of service. The AY-151 pit drain which routes to another drain and eventually to a sluice pit on the AY-102 Tank will be isolated with a concrete plug in the floor of AY-151. Line 4021 which routes from AX-151 through AY-151 to AX-152 and branches to AX-153 will be sealed in AX-152 (SK-2-56935) only since AX-151 and AY-151 will be isolated by this project and the branch to AX-153 is sealed by Project B-181. A weather cover will be installed over the cover blocks of AY-151.

4.4.3.17 Encasements from 151-AX to A-Farm and 244-CR Vault SK-2-56926

These encasements will be isolated by installing a total of three concrete dams as shown on SK-2-56926. The A-Farm encasements do not drain to the tanks but do have a jet out line with a valve. The valve will be removed and then capped at six encasement terminations in A-Farm.

4.4.3.18 241-A-153 Transfer Box SK-2-56926

The 241-A-153 Transfer Box has two feed inlet lines from 244-AR Vault and eighteen outlet lines to the A-Farm Tanks. The lines to AR-Vault will be isolated by sealing nozzles T-6 (801) and T-13 (805) in cell 2 of AR-vault. The lines to the A Farm Tanks will be sealed under Projects B-145 and B-181. Raw water connections to the box will be isolated by removing a valve located outside the box and capping a 3-inch line. A weather cover will be installed over the cover blocks.

4.4.3.19 241-AX-151 Diverter Station See Detail 2, SK-2-56935

This diverter originally provided multiple diversion capabilities from which four Purex lines could be routed to lines connecting A, AX, and AY tanks and the 244-AR Vault. All the process lines from Purex are rerouted or blanked under Project B-181 Addendum 1 (151-AX Diverter Station Bypass). This project also provides encasement dams in all the encasements connecting 151-AX. The four diverter operator mechanisms will be removed and the risers will be sealed with a blind flange. The raw water routed to the valve pit will be isolated by cutting and capping the 3-inch line outside the valve pit. A total of eleven 3/4-inch flush lines and one test riser entering the diverter will have gaskets replaced. A raw water spigot and a 2-inch riser entering the valve pit will be cut off and capped. All electrically hot lines entering the instrument enclosure will be deactivated at their source. Electrical conduits will be isolated by removing the instrument enclosure and cutting and capping all lines below grade. Weather covers will be placed over the surfaces of the instrument pit, diverter station and the valve pit. Line 4022 routing to 152-AX will be isolated by capping near 241-AX-152 diverter station as shown on Plan A, Drawing SK-2-56935. Line 4021 will be isolated as discussed in Section 4.4.3.16. All other process lines leading from the 151-AX Diverter Station terminate in tanks and will be isolated by other projects.

4.4.4 Auxiliary Tanks and Vaults

Numerous different existing facilities at various locations within 200 East and 200 West Areas are covered by this project action. Four large

underground process vaults, each containing from three to nine individual process tanks and a sump for each tank, will be isolated. In addition, fifteen other individual tanks will receive isolation treatment. In tank farm process terminology, these systems were frequently called "Auxiliary Tanks" because they were used for intermediate process treatment rather than waste storage.

Isolation is defined as the physical effort required to prevent the inadvertent addition of any liquids into an inactive stabilized system and to protect the environment from possible releases of radioactive materials from these tanks. By definition, stabilization efforts must be completed prior to isolation. While the various facilities and systems have unique features, the following basic treatments apply:

- a) Sealing risers terminating above and below grade;
- b) Sealing pit, cell or vault drains and the covers on pits, cells or vaults;
- c) Severing and sealing water, steam and air lines; and
- d) Sealing process lines connecting to active facilities;
- e) Severing and sealing electrical conduits and instrument lines.

4.4.4.1 244-BXR Vault SK-2-56943 and SK-2-56944

The 244-BXR Vault System consists of a massive concrete underground structure compartmentalized into four process cells each containing a process tank and a sump. All operations in each tank have been discontinued and the entire vault will be isolated as a single system. Drawings SK-2-56943 and SK-2-56944 have been prepared to describe this system and to scope isolation requirements as outlined below:

- o Four above grade instrument and electrical enclosures will be removed. An underground conduit trench existing between each enclosure and the companion vault compartment will be sealed by casting a concrete slab over the enclosure footing.

- o Grade level raw water nozzles connected to the vault internal piping will be cut and capped.
- o Grade level steam distribution piping and control valving will be removed. Process steam lines connected to the vault internal piping will be cut and capped.
- o Process pipelines, which are routed through an underground encasement, interconnect the 244-BXR Vault with the 241-BXR-151 and 241-BYR-154 Diversion Boxes. Closure of these lines are not required as all three diversion boxes are isolated.
- o Process air lines will be cut and blind flanges installed onto both sides of each branch line isolated.
- o Conditioned inlet air to the vault was supplied through an above grade supply system located just north of the vault. This evaporative cooling unit will be abandoned in place and the ducting cut, then sealed with a cast concrete plug.
- o Exhaust air from the vault passed through an underground filter chamber then to an above grade exhaust fan and discharge stack. The above grade ventilation fans, above grade ducting and discharge stack have already been removed. The fan inlet plenum was built into the fan base structure and will be plugged by filling the plenum with sand and casting a fiberglass weather cover over the fan inlet ducts.
- o The grade level vault cover blocks will be sealed by a fiberglass weather cover.

4.4.4.2 244-UR Vault SK-2-56945 and SK-2-56946

The 244-UR Vault system consists of a massive concrete underground structure compartmentalized into four process vaults, each containing a process tank and a sump. All operations in each tank have been discontinued and the entire vault will be isolated as a single system.

- o Four above grade instrument and electrical enclosures will be removed. An underground conduit trench existing between each enclosure and the companion vault compartment will be sealed by casting a concrete slab over the enclosure footing.
- o Grade level raw water nozzles connected to the vault internal piping will be cut and capped.
- o Grade level steam distribution piping and control valving will be removed. Process steam lines connected to the vault internal piping will be cut and capped.
- o Process pipelines, which are routed through an underground encasement, interconnect the 244-UR Vault with the 241-UR-151 Diversion Box. Closure of these lines is not required as both diversion boxes are isolated.
- o Process air lines will be cut and blind flanges installed onto both sides of each branch line isolated.
- o Conditioned inlet air to the vault was supplied through an above grade supply system located just north of the vault. This evaporative cooling unit will be abandoned in place and the ducting cut, then sealed with a concrete plug.
- o Exhaust air from the vault passed through an underground filter chamber, then to an above grade exhaust fan and discharge stack. The above grade ventilation fans, above grade ducting, and discharge stack have already been removed. The fan inlet plenum was built into the fan base structure and will be plugged by filling the plenum with sand and casting a fiberglass weather cover over the fan inlet ducts.
- o The grade level vault cover blocks will be sealed by a fiberglass weather cover.

4.4.4.3 241-TXR Vault SK-2-56947 and SK-2-56948

The 241-TXR Vault system consists of a massive concrete underground structure compartmentalized into three (3) process vaults, each containing a process tank and a sump. All operations in each tank have been discontinued and the entire vault will be isolated as a single system.

- o Three above grade instrument and electrical enclosures will be removed. An underground conduit trench existing between each enclosure and the companion vault compartment will be sealed by casting a concrete slab over the enclosure footing.
- o Grade level raw water nozzles connected to the vault internal piping will be cut and capped.
- o Grade level steam distribution piping and control valving will be removed. Process steam lines connected to the vault internal piping will be cut and capped.
- o Process pipelines, which are routed through an underground encasement, interconnect the 241-TXR Vault with the 241-TXR-151 Master Diversion Box. Closure of these lines is not required as both diversion boxes are isolated.
- o Process air lines will be cut and blind flanges installed onto both sides of each branch line isolated.
- o Conditioned inlet air to the vault was supplied through an above grade supply system located just north of the vault. This evaporative cooling unit will be abandoned in place and the ducting cut, then sealed with a cast concrete plug.
- o Exhaust air from the vault passed through an underground filter chamber, then to an above grade exhaust fan and discharge stack. The above grade ventilation fans and above grade ducting exists and will be removed by this project. The stack has already been removed. The fan inlet plenum was built into the fan base structure and will be plugged by filling the plenum with sand and casting a fiberglass weather cover.
- o The grade level vault cover blocks will be sealed by a fiberglass weather cover.

4.4.4.4 Tanks 241-CX-70, 71 and 72, SK-2-56955

The three (3) direct buried tanks, 241-CX-70, 71 and 72, exist near the 201-C Building and were receivers of various waste streams from the process at 201-C. All operations within the building that affect these tanks have been discontinued. Each tank is different and will require separate isolation treatment.

241-CX-70

- o One original inlet line has previously been blanked near the tank. The remaining inlet line from the 201-C Building will be isolated by the installation of a blind flange on the line where it enters into Cell A of 201-C.
- o Nine risers exist on TK-70, all of which are now sealed. To provide extra confidence of isolation closure, above grade risers and risers with less than three feet of soil cover will be regasketed.

241-CX-71

- o Two fill lines route waste from the 201-C Building to Tank CX-71. One line is now blanked in Cell A and the other is connected to a sink drain in the building hot shop. Project action will verify closure of the Cell A line and seal the sink drain.
- o An outlet line routes from Tank CX-71 to the 216-C-1 Crib. This line will be cut and capped.

241-CX-72

- o Tank CX-72 has a hand-operated agitator with a handle extending to grade at the center of the tank. This riser-operating shaft combination will be cut one foot below grade and sealed with a pipe cap.
- o Process pipelines routed to the self concentrator vault will be sealed within the vault.
- o Instrument lines routed to the self concentrator vault will be sealed within the vault.

- o A fill line routed from the 201-C Building will be isolated by the installation of a blind flange on the line where it enters A Cell of 201-C.
- o Above grade risers and risers with less than three feet of soil cover will be regasketed.

4.4.4.5 Tank 216-A-5 and Proportional Sampler Pit No. 4 SK-2-56956

Tank 216-A-5 is a direct buried neutralization tank which provided waste treatment of 202-A Building waste routed to the 216-A-5 Crib. Discharge to this crib will be discontinued before isolation. The tank was used for process neutralization and is now filled with a inert neutralizing chemical.

The Proportional Sampler Pit No. 4 provided sampling of the treated waste from the 216-A-5 Tank.

Tank 216-A-5

- o The 40-inch riser on centerline of the tank will be cut 12-inches below grade and blanked per Detail 2 SK-2-56961.
- o The fill inlet line branches to two lines 7717 and 7718 just north of the tank. Both lines enter a cassion to be installed by Project B-203, Line 7717 is capped as shown on SK-2-52794. Line 7718 will be isolated by cutting and blanking inside the caisson.
- o The outlet line of Tank 216-A-5 will be sealed by installation of plugs on the two lines after it passes through Proportional Sampler Pit No. 4.

Proportional Sampler Pit No. 4

- o Cut and cap french drain vent one foot below grade.
- o Seal 4-inch floor drain.
- o Remove two water valves from north side of pit and install blind flanges on both ends.

- o The grade level vault cover blocks will be sealed by a cast in place fiberglass weather cover.

4.4.4.6 205-S Vault SK-2-56957

The 205-S Vault is a buried concrete vault containing Tanks 101 and 102. Process use of this vault has been discontinued.

- o Buried transfer lines interconnecting the 205-S Vault with the 205-S Building will be cut and capped. Seventeen such lines exist as a group at the northeast corner, two near the center of the east end wall, and five which exit the south wall.
- o Two buried encased lines exit the north hot pipe trench wall. One line is now capped and the other will be effectively isolated as 240-S-152 Diversion Box is isolated.
- o One line which provided a route to the 276-S Crib will be cut and capped adjacent to the south vault wall.
- o An unused buried filter housing south of the vault will be sealed with a fiberglass weather cover.
- o The grade level vault cover block system will be sealed by a cast in place fiberglass weather cover.

4.4.4.7 Tanks 276-S-306 A and B SK-2-56958

Tanks 306-A and B are direct buried holding tanks for Isobutyl Methyl Ketone: synonym: Hexone which was a Redox process solvent. Fresh solvent arriving in railroad cars was unloaded into these tanks for later process use. At the time the Redox plant was laid away, an inventory of contaminated Hexone was placed into these tanks for future disposal. This inventory still exists within the tanks and stabilization plan holds the responsibility for safe disposal prior to tank isolation. Hexone is flammable, and proper isolation of the tanks must comply with National Fire Code (NFPA) practice. In particular, NFPA 30, "Flammable and Combustible Liquids Code" Appendix C, "Abandonment or Removal of Underground Tanks"

and NFPA 317, "Cleaning and Safeguarding Small Tanks and Containers" apply. Stabilization of these tanks will be coordinated with the D&D program.

- o Tank fill lines will be isolated by the installation of blind flanges at two above grade valve stations just east of the tank location.
- o Three existing above grade risers on each tank, which had served for instrument, breather and liquid level purposes, will be sealed by the installation of pipe caps.
- o In compliance with Paragraph C-3 of NFPA-30 Appendix C, each tank will be filled with an inert material. Sand has been selected as the filler.

4.4.4.8 Tanks 241-T-361 and 241-U-361 SK-2-56959

Tanks 241-T-361 and 241-U-361 are essentially identical buried neutralization tanks used for waste treatment of low level discharge. Process use of both tanks has been discontinued.

TK-241-T-361

- o Closure of the inlet and outlet pipelines has previously been completed. This work was accomplished in satisfactory compliance with this project criteria and has been documented on record drawings.
- o Eight tank risers are now closed with blind flanges. Above grade risers and risers with less than three feet of soil will be regasketed.
- o The tank was used for process neutralization and is now filled with an inert neutralizing chemical. The existing center vent riser will be cut and capped one foot below grade.

TK-241-U-361

- o Closure of the outlet line will be accomplished by cutting and plugging.

- o The fill line accumulated process waste from three known sources. Each source point will be blanked and to provide extra confidence that additional unknown routes would not fill the tank, the fill line will be plugged near the tank.
- o The existing vent will be removed and the riser closed with a blind flange.
- o The tank was used for process neutralization and is now filled with an inert neutralizing chemical. The existing center vent riser will be cut and capped one foot below grade.
- o Six tank risers are now closed with blind flanges. Above grade risers and risers with less than three feet of soil cover will be regasketed.

4.4.4.9 Tank 241-B-361 SK-2-56960

Tank 241-B-361 is a buried settling tank used for process treatment of B Plant waste. Process use of this tank has been discontinued.

- o Two existing inlet line closures were previously installed in satisfactory compliance with this project criteria and have been documented on record drawings.
- o The outlet line to the 216-B-5 Drywell will be sealed by cutting and plugging.
- o The existing center vent riser will be cut and capped one foot below grade.
- o Seven tank risers are now closed with blind flanges. Above grade risers and risers with less than three feet of soil cover will be regasketed.

4.4.4.10 Tanks 270-E1 and 270-W SK-2-56961

Tanks 270-E1 and 270-W are buried neutralization tanks which are both essentially identical to Tank 216-A-5. Discharge to both tanks has been discontinued.

TK-270-E1

- o The fill inlet line originates at the 241-ER-151 Diversion Box. This line will be sealed at this point with a remote connector nozzle seal.
- o The outlet line has previously received a line closure which is in satisfactory compliance with this project criteria and has been documented on record drawings.
- o One 6-inch riser will be cut one foot below grade and sealed with cast in place concrete plugs.
- o The 40-inch center charging riser will be cut one foot below grade and sealed with a steel plate.

TK-270-W

- o Closure of the outlet line will be accomplished by casting grout caps over each side of the severed line.
- o The fill inlet line surfaces to an above grade route near the 224-U Building. One branch, going to the 221-U Building, is now capped in satisfactory compliance with this project criteria. The other branch, routed to 224-U Building, will be isolated by removing an existing above grade valve and installing blind flanges onto each side of the line and to provide extra confidence that additional unknown routes would not fill the tank, the fill line will be plugged near the tank.
- o The 270-W Tank exists under the site of 2715-UA Building, which has a cast concrete floor. Risers, which all terminate below this floor, will not be disturbed.

4.4.4.11 Tanks 241-Z-361 and TK-216-Z-8 SK-2-56962

Tank 241-Z-361 is a buried settling tank and Tank 216-Z-8 is a buried silica storage tank both of which were used for Z Plant waste treatment. Both tanks have transuranic contamination present. Discharge to both tanks has been discontinued.

Tank 241-Z-361

- o An existing 4-foot diameter, 2-foot deep caisson which was utilized to provide access to an entry manhole will be filled with sand. The manhole cover will be sealed.
- o Two fill inlet lines will be sealed by cutting and plugging.
- o The tank overflow lines will be sealed by cutting and plugging.
- o Flanged and gasketed risers will be regasketed.
- o An existing HEPA filter assembly will be removed from the tank and the riser sealed by installing a blind flange.

Tank 216-Z-8

- o Two fill inlet lines are now closed with previously installed pipe caps in satisfactory compliance with this project criteria. These caps, located in Z-Plant Pipe Tunnel No. 2, are documented on record drawings.
- o The tank outlet line will be sealed by cutting and plugging.

4.4.4.12 241-WR Vault SK-2-56951, SK-2-56952 and SK-2-56953

The 241-WR Vault system consists of a massive concrete underground structure compartmentalized into nine (9) process vaults, each containing a process tank and a sump. The structure is divided into a "hot" zone and "cold" zone differentiated by the processing of radioactive or nonradioactive solutions. Adjacent to the four (4) cold zone vaults is a cold operating gallery. The remaining five (5) tank vaults are radioactively contaminated. Despite the zoning, contamination spreads have occurred during operation and this project isolation will treat the entire structure as if contaminated.

- o Nine (9) above grade instrument and electrical enclosures will be removed. An underground conduit trench existing between each enclosure and the companion vault compartment will be sealed by casting a concrete slab over the enclosure footing.

- o Buried raw water distribution piping will be isolated by a line blank at the header source. Buried control valves will be closed and their surface level operating handles cut one foot below grade.
- o Grade level steam distribution piping and control valving will be removed. Process steam lines connected to the vault internal piping will be cut and capped. Existing timber support structures will be removed.
- o Process air lines will be cut and isolated with line blanks.
- o An underground electrical trench encasement will be sealed at the location of a motor control center by casting concrete into the open footings after removal of the motor control enclosure. This trench and an instrument trench will also be sealed at the southwest corner of the vault where they branch to other U-Plant facilities.
- o Process pipelines which are routed through an underground encasement and terminate at numerous locations in Diversion Box 241-UX-154 and the 221-U Building process cells will be sealed with remote connector nozzle seals on the terminal nozzles.
- o Conditioned inlet air to the hot side of the vault was supplied through an above grade supply system located just south of the vault. This evaporative cooling unit will be abandoned in place and ducting cut, then sealed with a blank.
- o Exhaust air from the vault hot zones was routed to the 291-U Stack Gas Filter. This underground duct will be isolated by filling with a concrete plug at a location near the 291-U Filter.
- o Conditioned inlet air to the cold side of the vault was supplied through an above grade system located on the northerly side of the vault. This evaporative cooling unit will be abandoned in place and the ducting cut, then sealed with a concrete plug.

- o Exhaust air from the vault cold zone was collected by ducting above the vault cover blocks and routed to a fan and discharge stack north of the vault. The collector ducting, the exhaust fan and the discharge stack will be removed.
- o The grade level vault cover blocks will be sealed by a cast in place fiberglass weather cover.

4.4.4.13 Tank 241-A-417 SK-2-56954

The 241-A-417 Tank is a direct buried condensate receiver tank which has numerous A Farm Area condensate routings. This tank will continue in use for recycle of process condensate to aging waste tanks in AY and AZ Tank Farms.

- o Six condensate lines will be blanked near the 241-A-501 Valve Pit by Project B-138 action. (B-138, "Isolate 241-A-152 Diversion Box and Miscellaneous French Drains.")
- o Piping rerouting planned in Project B-180, "Salt Well Receiver Vessels," will provide alternate routes to the AN Tank Farm for two (2) 6-inch condensate lines with valves for diverting flow either to V-417 or AN Tank Farm.
- o Six tank risers will be gasketed.
- o Several lines which originate near the Ion Exchange Column will be blanked.

4.5 UTILITIES

All water, steam and instrument lines servicing isolated systems and those unused utility lines within 15 feet from the system will be severed and sealed.

4.6 WORK PLANNED FOR OPERATING CONTRACTOR

Rockwell will perform the following work:

- . Cover block removals (except flush pits and water valve pits)
- . Pit decontamination and removal of jumpers and process blanks
- . Installation of isolation nozzle blanks
- . Write overall contractor QA Plan
- . Procure pumps, FIC gauge and remote connecting blanks

4.7 STANDARD EQUIPMENT

Connector nozzles to be sealed by this project will each receive a standard remotely operated nozzle seal identical to units now in use and planned for other isolation projects. These devices are effectively an economy blank connector head designed to provide isolation seal of the nozzles.

Cover block systems over isolated pits, cells, and vaults will receive cast in place fiberglass weather covers. Although each cover is unique in size to the particular site, the style will be identical to weather covers already installed and planned for other isolation projects.

4.8 TRANSFERRED CAPITAL PROPERTY OR EQUIPMENT

No capital property or equipment will be transferred for this project.

4.9 RESEARCH AND DEVELOPMENT REQUIREMENTS

None.

5.0 PERFORMANCE REQUIREMENTS

The isolation barriers provided by this project shall be capable of retaining a minimum pressure of 12 inches of water by design. An acceptance test procedure to verify that each barrier can withstand the 12-inch water criteria is not practical. All closures used are standard industrial equipment which has been proven through use and field testing. The construction materials used on fabrication of the various isolation barriers shall be capable of withstanding all weather conditions throughout a twenty (20) year useful life.

6.0 APPLICABLE CODES AND STANDARDS

Design and construction of the system described herein will be in accordance with the following codes, standards and regulations:

- . DOE Manual Chapter 0505, Construction Safety
- . DOE Manual Chapter 0524, Standards for Radiation Protection
- . DOE Manual Chapter 0550, Operational Safety Standards
- . DOE Manual Chapter 0552, Industrial Fire Protection
- . DOE Manual Chapter 0820, Quality Assurance
- . DOE Manual Chapter 6301, Facilities General Design Criteria
- . ASTM Standards 3370-74T, Tentative Practices for Sampling Water
- . RHO-CD-36, Rev. 1, Standard Quality Assurance Plan for Construction Projects
- . RHO-MA-150, Rockwell Quality Assurance Manual, May 1, 1978
- . RHO-MA-220 Radiological Control
- . VITRO-MA-5, Quality Assurance Manual, May 24, 1978

In general, applicable Hanford Plant Standards, applicable Occupational Safety and Health Act Standards, and the "national consensus" codes and standards as developed by such organizations as the American Society of Mechanical Engineers, the Institute of Electrical and Electronic Engineers, American National Standards Institute, and the American Concrete Institute will apply.

7.0 SCHEDULE AND METHODS OF PERFORMANCE

7.1 DESIGN AND INSPECTION

Vitro Engineering will perform Title I, II and III design services.

7.2 PROCUREMENT

Rockwell Hanford Operations will procure the items specified under Paragraph 4.6, Work Planned for Operating Contractor.

7.3 CONSTRUCTION

Construction will be performed by J.A. Jones Construction under a CPAF Contract.

Rockwell shall remove pit covers, decontaminate the pits and covers, enter the pits, perform the required operation, and replace the covers. The proposed work will be submitted to DOE-RL's Labor Standards Board for plant forces work review determination.

7.4 SCHEDULE

The Schedule is included in Appendix A.

8.0 REQUIREMENTS AND ASSESSMENTS

8.1 SECURITY

All isolation work will be within the 200 Areas of the Hanford Reservation. No additional security provisions are required.

8.2 SAFETY

Hazards associated with construction in radiation areas are routinely encountered and can be overcome safely. No additional safety hazards will be caused by this project.

The work for this project involves isolation of catch tanks, diversion boxes, auxiliary tanks and vaults and will not introduce new hazards or risks.

Some work with contaminated equipment may be required. Standard procedures will be followed to detect and control any contamination that may exist.

Rockwell Hanford Operations recommends that a final safety evaluation document is not needed for this project.

8.3 SAFEGUARDS

None.

8.4 ENERGY CONSERVATION

Energy conservation has been considered in accordance with the energy conservation requirements specified in DOE Manual Chapter 6301, Part I, Section D and was found not to be applicable.

8.5 ENVIRONMENT

Since all systems in this project are abandoned, obsolete, contaminated process facilities with no intended future use, isolation will substantially reduce the potential for leakage into or out of the systems. Confident isolation requires complete separation of the system from all potential liquid sources and the environment.

Completion of isolation will provide better confinement and confidence that atmospheric and ground releases will not occur from the abandoned systems.

Environmental assessments for line item projects are submitted with the construction project data sheet, RHO-CD-108, March 8, 1979.

8.6 DECONTAMINATION AND DECOMMISSIONING

Whenever possible, existing installed contaminated equipment will be abandoned in place within the vault system without handling. When necessary to affect proper isolation, routine decontamination, such as flushing, spraying, or containment will be employed prior to burial or disposal.

Inventory of all vault contents is to be completed by Rockwell prior to isolation. This inventory is to be used in assisting the decontamination and decommissioning program.

8.7 PROVISIONS FOR THE PHYSICALLY HANDICAPPED

None.

8.8 PROVISIONS FOR FALLOUT SHELTERS

None.

8.9 QUALITY ASSURANCE LEVELS

Quality Assurance (QA) activities for all contractors involved in the design, construction and testing of the proposed facility shall be formulated and executed to assure that the product meets the intent of the design.

The Quality Assurance Program requirements shall be in accordance with RHO-MA-150 (unclassified), Rockwell Quality Assurance Manual, May 1, 1979.

Three QA levels, established for classifying structures and components according to the degree of quality required for safety and consideration for system design, are identified in RHO-CD-36, Rev. 1 (unclassified), Standard Quality Assurance Plan for Construction Projects, and VITRO-MA-5, Quality Assurance Manual, QAP-V-7, May 24, 1978. System and component QA levels to be applied for this project are as follows:

Level I

1. Process piping

Level II

1. Closure devices installed on process lines.
2. Jumpers
3. Pumps

Level III

1. All other systems and components.
2. Fiberglass weather covers.

8.10 MAINTENANCE REQUIREMENTS

None required.

8.11 COMMUNICATION REQUIREMENTS

None required.

9.0 DRAWINGS

The following Drawings are included in Appendix B:

<u>Drawings</u>	<u>Title</u>
SK-2-56920	Drawing Index
SK-2-56921	Piping Flow Diagram, 200 East Area
SK-2-56922	Piping Flow Diagram, 200 West Area
SK-2-56923	Piping General Notes and Legend
SK-2-56924	Piping Key Plan, 200 East Area
SK-2-56925	Piping Key Plan, 200 West Area
SK-2-56926	Piping Plot Plan, 241-A and 202-A Areas
SK-2-56927	Piping Plot Plan, 241-AX, AY, AZ, C and CR Areas
SK-2-56928	Piping Plot Plan 221-B and 241-B Areas
SK-2-56929	Piping Plot Plan, 241-B, BX and BY Areas
SK-2-56930	Piping Plot Plan, 241-S, SX and SY Areas
SK-2-56931	Piping Plot Plan, 241-TX and TY Areas
SK-2-56932	Piping Plot Plan, 241-T and TY Areas
SK-2-56933	Piping Plot Plan, 241-U Areas
SK-2-56934	Piping Catch Tank and Pump Pit Arrangement
SK-2-56935	Piping Plans Elevations and Sections, 241-A and 202-A Areas
SK-2-56936	Piping Details, 241-B and BX Areas
SK-2-56937	Piping Details, 221-B and 241-B Areas
SK-2-56938	Piping Plans, 241-C Area
SK-2-56939	Piping Details, 241-S, SX and SY Areas
SK-2-56940	Piping Details, 241-T and TX Areas
SK-2-56941	Piping Details, 241-T, TX and TY Areas
SK-2-56942	Piping Details, 241-U Area
SK-2-56943	Piping Plan BXR Vault Isolation
SK-2-56944	Piping plan Details BXR Vault Isolation
SK-2-56945	Piping Plans UR Vault Isolation
SK-2-56946	Piping Plans and Sections UR Vault Isolation
SK-2-56947	Piping Plan TXR Vault
SK-2-56948	Piping Plan TXR Vault

<u>Drawings</u>	<u>Title</u>
SK-2-56949	
SK-2-56950	
SK-2-56951	HVAC and Process Piping Modifications
SK-2-56952	Instr/Elec and Process Piping Modifications
SK-2-56953	Utility Piping Modification
SK-2-56954	Piping Plan Tank 241-A-417
SK-2-56955	Piping Plans 241-CX Tanks 70, 71 and 72
SK-2-56956	Piping Plan and Detail Tank 216-A-5
SK-2-56957	Piping Plans 205-S Vault
SK-2-56958	Piping Plan and Detail Tanks 306A and B
SK-2-56959	Piping Plans Tanks 241-U-361 and 241-T-361
SK-2-56960	Piping Plan and Elevation Tank 241-B-361
SK-2-56961	Piping Plans and Section Tank 270-E1 and Tank 270W
SK-2-56962	Piping Plans and Sections Tank 241-Z-361 and Tank 216-Z-8

10.0 OUTLINE SPECIFICATIONS

The Outline Specifications are included in Drawing SK-2-56923.

11.0 COST ESTIMATE

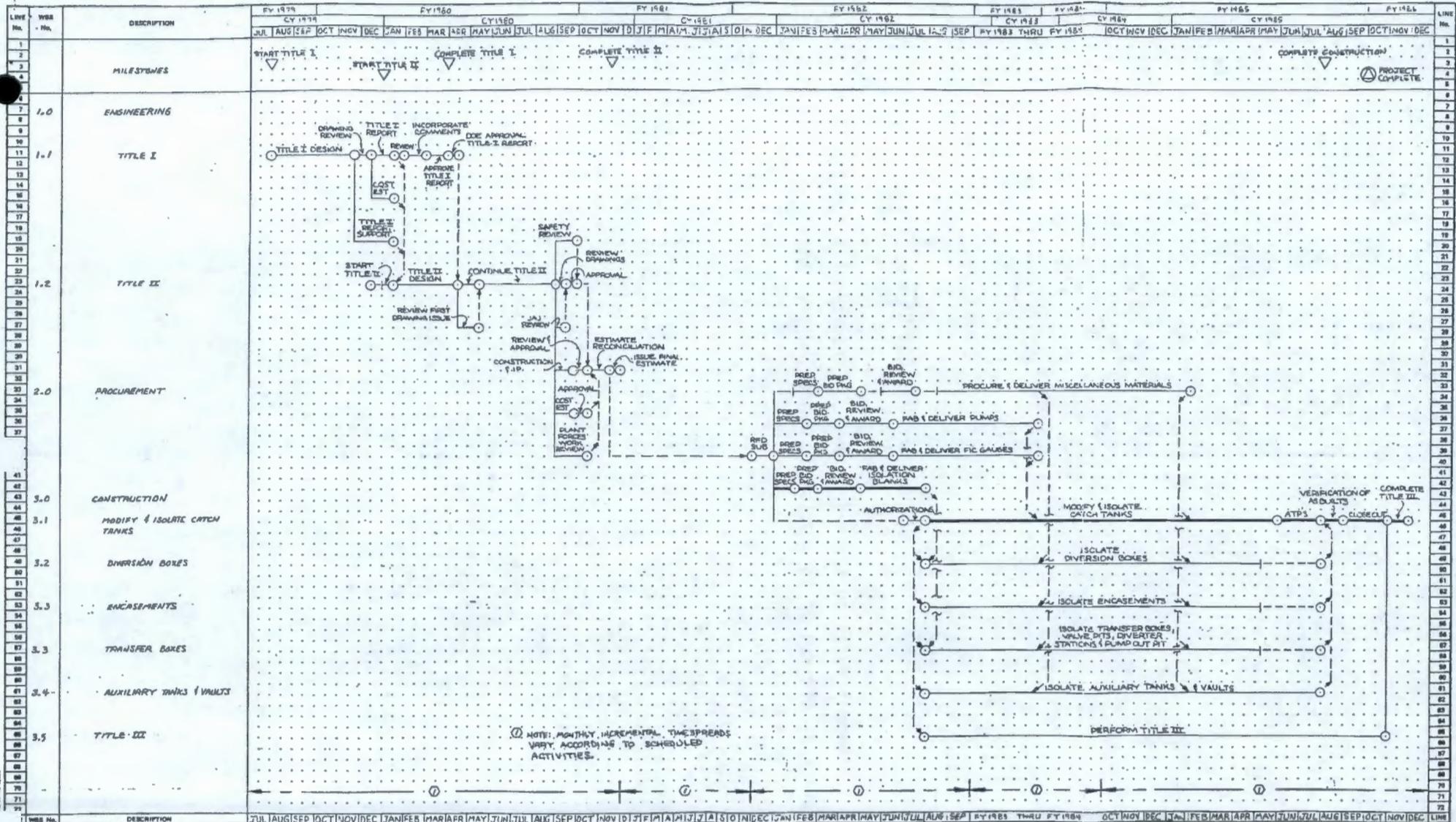
The Cost Estimate is included in Appendix A.

5201G/0145G

APPENDIX A

SCHEDULE/COST ESTIMATE

The Schedule referred to in Section 7.0 Paragraph 7.4 and the Cost Estimate referred to in Section 11.0 are included herein.



APPROVALS
 C.B. M... 4/8/80
 CONSTRUCTION/DESIGN ENGR
 M... 4/1/80
 MANAGER CONSTRUCTION DESIGN

LEGEND
 ○ EVENT
 ▽ INTERMEDIATE MILESTONE
 △ KEY MILESTONE
 ● MAJOR MILESTONE
 — ACTIVITY
 - - - - - FLOAT
 → RESTRAINT

Rockwell International
 PROGRAM TITLE: WASTE MANAGEMENT
 PROJECT TITLE: PROJECT 8-231 ISOLATION OF AUXILIARY TANK FARM FACILITIES
 SCHEDULE NO.: FS-231-1
 PLANNER: A. S. THADDIX
 REV: 2-21-77
 REVISION NO.: 3
 SHEET NO.: KF71
 DATE: 4-17-80
 PAGE: 1 OF 1

PROJECT COST ESTIMATE SUMMARY
R111A1

TITLE	PREPARED FOR	PREPARED BY	CHECKED BY	PROJECT NO.	DATE
Isolation of Catch Tanks & Diversion Boxes	RHO	HHR/RWC	A-	B-231 X23101	1/16/80

	TITLE I	TITLE II	TITLE III	\$ TOTAL
A. ENGINEERING				
ARCHITECT - ENGINEER	60,000	203,000	142,000	405,000
OTHER ENGINEERING - SPECIFY				
SUBTOTAL	60,000	203,000	142,000	405,000
ESCALATION	<u> I</u> <u> II</u> <u> III</u>			
	% 8.5 %	17,000	78,000	95,000
CONTINGENCY	% 13.6 %	30,000	70,000	100,000
SUBTOTAL ENGINEERING	60,000	250,000	290,000	600,000
OPERATING CONTRACTOR				
TOTAL A				600,000
B. CONSTRUCTION				
(1) IMPROVEMENTS TO LAND				
(2) BUILDINGS				
BUILDING NO. _____ SQ. FT.				
BUILDING NO. _____ SQ. FT.				
(3) OTHER (DETACHED) STRUCTURES				
(4) SPECIAL FACILITIES AND INSTAL.				CPAF Contractor
(5) UTILITIES				
(6) OPERATING EXPENSE CHARGES				Operating Contractor
(7) CONTRACT ADMINISTRATION				
(8) WASHINGTON STATE TAX				
SUBTOTAL				3,635,000
ESCALATION	54.0	%	4.08	YEARS
CONTINGENCY	34.0	%		
TOTAL B				1,962,900
C. STANDARD EQUIPMENT				
TOTAL C				1,902,100
D. TRANSFERRED CAPITAL PROP. OR EQUIPMENT				
CURRENT ENR. COST INDEX	BUILDING 1895.5	CONSTRUCTION 3129.6		
				TOTAL PROJECT ESTIMATE
				\$8,100,000

PROPOSED FUNDS ALLOCATION

FUNDS PURPOSE	OPER. CONTR.	ENR - RL
ENGINEERING	405,000	
PROCUREMENT	375,000	
CONSTRUCTION	3,260,000	
ESCALATION	2,057,900	
CONTINGENCY	2,002,100	
TCP/TCE		
WASH. STATE TAX		
TOTAL	8,100,000	

TYPE OF ESTIMATE: Title I

APPROVALS: *A. L. Vosmer* 1/16/80 DATE: 1-16-80

ESTIMATING: _____

PROJECT MANAGER: *C. B. McJey* 2/11/80

CLIENT ENGINEER: _____

REMARKS:

ESTIMATE SHEET 1 OF 8

VITRO ENGINEERING CORPORATION

PROJECT COST ESTIMATE

R111A1

PROJECT NO
B-231/X23101

TITLE
Isolation of Catch Tanks & Diversion Boxes

DATE PREPARED
1/16/80

CODE	WORK PERFORMED BY OPERATING CONTRACTOR			
	DESCRIPTION	LABOR	MATERIAL	TOTAL
	Remove and replace pit and diversion box covers			
	RHO Letter 79-0183 Appendix C updated 10/19/79			
	25 Pits @ \$ 865.00 =			21,600
	75 D. Boxes @ 1460.00 =			109,500
	7 Vaults @ 4380.00 =			30,600
	Remove cover blocks and install seal nozzles in:			
	B Plant	*	*	
	221-T Canyon Building	*	*	
	Assemble and test pumps			
	7 Each @ 10,000			70,000
	Fab jumper assemblies with valves and accessories 17 each			142,000
				373,700
			SAY	375,000
	*Operating Funds - Telcon with John Garfield 2/20/79.			
	(1) SUBTOTAL DIRECT COST			
	(2) OTHER DIRECT COSTS			
	(3) INDIRECT COSTS (_____ % OF LABOR - ITEM 1)			
	(4) TOTAL OPERATING CONTRACTOR'S COST			

Estimate Basis

Isolation of Catch Tanks & Diversion Boxes
R111A1/B-231/X231011. Documents & Drawings

Documents: RHO Letter R79-0657
RHO Letter R79-0183 App. C

Drawings: SK-2-56920 to 56948
SK-2-56951 to 56962
Comment Issue

2. Material Prices

Unit costs represent current prices for specified material.

3. Labor Rates

Current base rates as issued by Vitro (Issue #3, dated 8/24/79) include fringe benefits, labor insurances and taxes, and travel where applicable. No casual overtime included.

4. Escalation

Calculated at .67% per month for 1979, and 1.13% per month thereafter from 11/1/79 to 12/1/83, the mid-point of construction per attached schedule.

5. Contingency

Calculated at approximately 34% of the estimated construction per the attached contingency analysis. Increased contingency to provide funding for potential of mask work factor.

6. Remarks

In addition to the referenced documents this estimate is based on the following:

- a. All cover block removal and replacement and any decontamination required for "Hands-On" work is by RHO. Block removal cost is based on RHO Ltr. R79-0183, Appendix C.

Estimate Basis
Isolation of Catch Tanks & Diversion Boxes
R111A1/B-231/X23101
January 16, 1980

6. Remarks (Continued)

- b. Labor for installation of Seal Nozzles in B-Plant (221-B) and Canyon Building (221-T) is by RHO at zero cost to project. (Telcon - Garfield to Rode 2/20/79).
- c. Radiation and Productivity - Job factor for field work, including SWP, is estimated at 35%, i.e., no radiation or hot work (See 5 above).
- d. All excavation within tank farm boundaries is by hand.
- e. Surveillance Ports (Det'1 S1/30-1, H2-73630-2, Revision 1) included for all pits and boxes that will have weather covers installed. Cover thickness assumed to be 30".
- f. Item 3 of RHO Ltr. R79-0657 not included in estimate.
- g. Contingency factor updated January 12, 1980.

RWC:ad

RECEIVED

OCT 30 1979

Page 1 of 2

Rev. 1

VITRO ENGINEERING CORPORATION

ESCALATION ANALYSIS SCHEDULE

ESTIMATING

PROJECT NO./WORK ORDER NO. B231 / R111A1-3

TITLE Isolation of Capon Tanks and

Diverted Boxes

PREPARED BY LH GANZLEY DATE 10/30/79

REQUESTED BY Rockwell / McVay CB

APPROVED BY _____ DATE _____

Tasks are shown as forecasted work and do not represent approved schedules nor manpower assignments.

FISCAL YEAR	1979												1980												1981												1982
CALENDAR YEAR	1979												1980												1981												
MONTHS	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
TITLE I																																					
TITLE II																																					
TITLE III (See Page 2 of 2)																																					
PROCUREMENT (2)																																					
CONSTRUCTION (See Page 2 of 2)																																					



5/2

49 Mos.

1/2

1/2 →

ENGINEERING ESCALATION
From November 2, 1979

TITLE I - Mos. At 2/3% / Month =
 TITLE II - Mos. At 2/3% / Month = $4.9 \times \frac{1}{3} = 1.6\%$
 TITLE III - Mos. At 2/3% / Month = See Page 2 of 2

(II) CONSTRUCTION AND PROCUREMENT ESCALATION

79 2 Mos. @ .67 = 1.34
 80-83 47 Mos @ 1.13 = 53.11
 54.45 Say 54%

- (1) To be provided by Estimating Department.
- (2) May/Not be required to be broken out separately

VE-201 (7-78)

Sheet 6 of 8

OCT 1979 **WIND ENGINEERING CORPORATION**

ESCALATION ANALYSIS SCHEDULE

Rev 1

ESTIMATING PROJECT NO./WORK ORDER NO. _____

Note: The years 1982 & 1984 are shown at 1/2 scale. (B)

TITLE _____

PREPARED BY CLP Gentry DATE 12/30/79

REQUESTED BY _____

APPROVED BY _____ DATE _____

Tasks are shown as forecasted work and do not represent approved schedules nor manpower assignments.

FISCAL YEAR	1982	1983		1984		1985							
CALENDAR YEAR	1982	1983				1984	1985						
MONTHS		J	F	M	A	M	J	J	A	S	O	N	D
TITLE I													
TITLE II													
TITLE III													
PROCUREMENT (2)													
CONSTRUCTION													

ENGINEERING ESCALATION
From November, 1979

TITLE I - Mos. At 2/3% / Month - } See Page 1 of 2
 TITLE II - Mos. At 2/3% / Month - }
 TITLE III - Mos. At 2/3% / Month - $49 \times \frac{1}{3} = 32.67\%$

(1) CONSTRUCTION AND PROCUREMENT ESCALATION

(1) To be provided by Estimating Department.

(2) May/May Not be required to be looked out separately.

CLC - 10

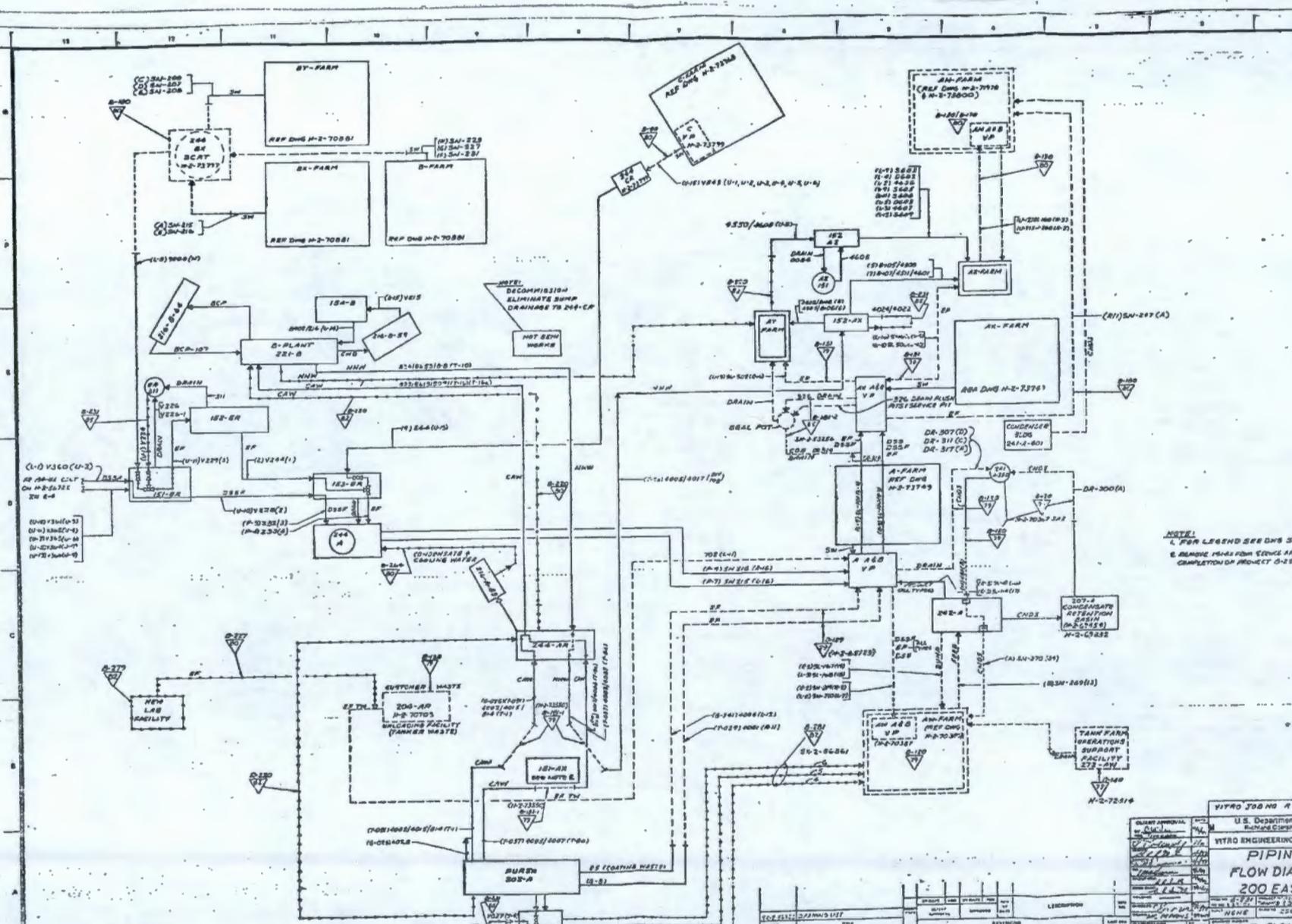
VITRO E	ERING CORPORATION	Date	Work By <input type="checkbox"/> Upr. <input checked="" type="checkbox"/> L.S. <input checked="" type="checkbox"/> CPFF	Type Estimate <input type="checkbox"/> Prelim. <input type="checkbox"/> Title II <input type="checkbox"/> Budget <input checked="" type="checkbox"/> Title I <input type="checkbox"/>	CONTINGENCY ANALYSIS		
Proj/Wo. No. E-231	Proj. Title ISOLATION OF CATCH TANKS & DRAINER BOXES			Prepared By RNC	Checked By (Upr)	Sheet 8 of 8	

CSI DIV. NO.	DESCRIPTION	DIRECT COST	ESCALATION		SUBTOTAL	CONTINGENCY		TOTAL
			Percent	Dollars		Percent	Dollars	
02	Sitework							
03	Concrete							
04	Masonry							
05	Metals							
06	Wood and Plastics							
07	Thermal and moisture protection							
08	Doors and Windows							
09	Finishes							
10	Specialties	1943,300	54	1,049,400	2,992,700	25	748,200	3,740,900
11	Equipment							
12	Furnishings							
13	Special Construction							
14	Conveying Systems							
15	Mechanical							
16	Electrical							
	Direct Cost Totals	1,943,300	54	1,049,400	2,992,700	25	748,200	3,740,900
01	General Requirements	405,200	54	219,100	624,900	25	156,200	781,100
01	Technical Services	564,400	54	304,800	869,200	25	217,300	1,086,500
	Overhead and Profit	346,500	54	187,100	533,600	25	133,400	667,000
	Construction Cost Totals	2,260,000	54	1,260,400	5,020,400	25	1,255,100	6,275,500
	Contract Administration / Construction Management							
	ADDITIONAL CONTINGENCY / (SLE ESTIMATE BASIS)	—	—	—	—	—	500,000	500,000
	CPAF Work							
	Procured Equipment OPERATING CONTRACTOR	375,000	54	202,500	577,500	25.5	147,100	724,600
	TOTALS	3,635,000	54	1,962,900	5,597,900	24.1%	1,402,100	7,000,000

APPENDIX B

DRAWINGS

The Drawings referred to in Section 9.0 are included herein.



NOTE:
 1. FOR LEGEND SEE DWS SK-2-5622
 2. REMOVED FROM ENGINEERING COMPLETION PROJECT 0-100

NO.	REVISION	DATE	BY	CHKD.	DESCRIPTION
1					ISSUED FOR CONSTRUCTION
2					REVISIONS
3					REVISIONS
4					REVISIONS
5					REVISIONS
6					REVISIONS
7					REVISIONS
8					REVISIONS
9					REVISIONS
10					REVISIONS

VITRO 300 NO. 4 (1/1)

U.S. DEPARTMENT OF ENERGY
 Nuclear Operations Office

WTRD ENGINEERING CORPORATION

**PIPING
 FLOW DIAGRAM
 200 EAST AREA**

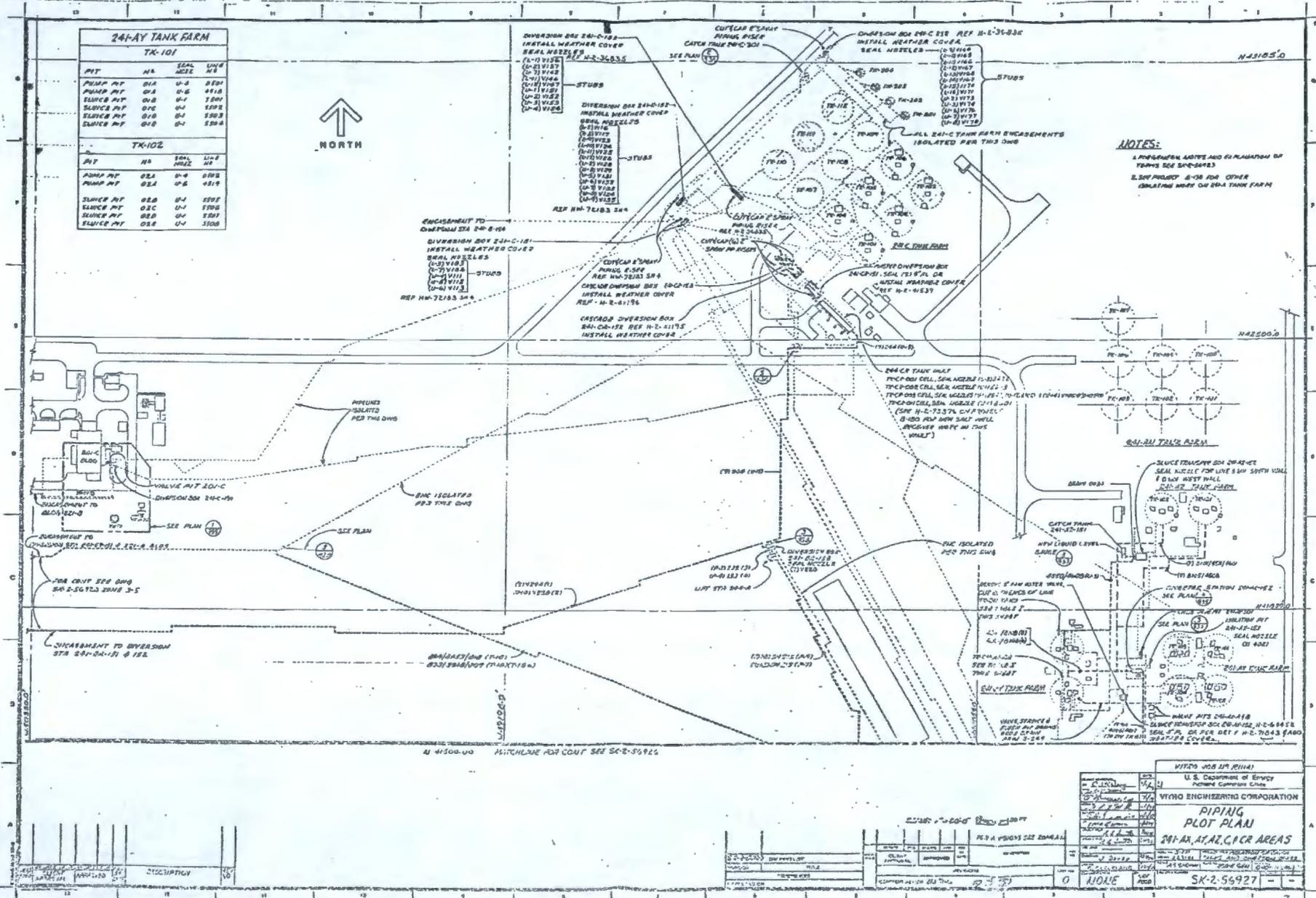
DATE: 11/1/78
 DRAWN BY: J. L. WILSON
 CHECKED BY: J. L. WILSON
 APPROVED BY: J. L. WILSON

SCALE: AS SHOWN

SK-2-5622

24-HY TANK FARM			
TX-101			
PVT	NO	SEAL	LINE
		NO	NO
PUMP PVT	01A	U-3	2501
PUMP PVT	01B	U-6	4713
SLUICER PVT	01C	U-1	1501
SLUICER PVT	01D	U-1	1502
SLUICER PVT	01E	U-1	1503
SLUICER PVT	01F	U-1	1504

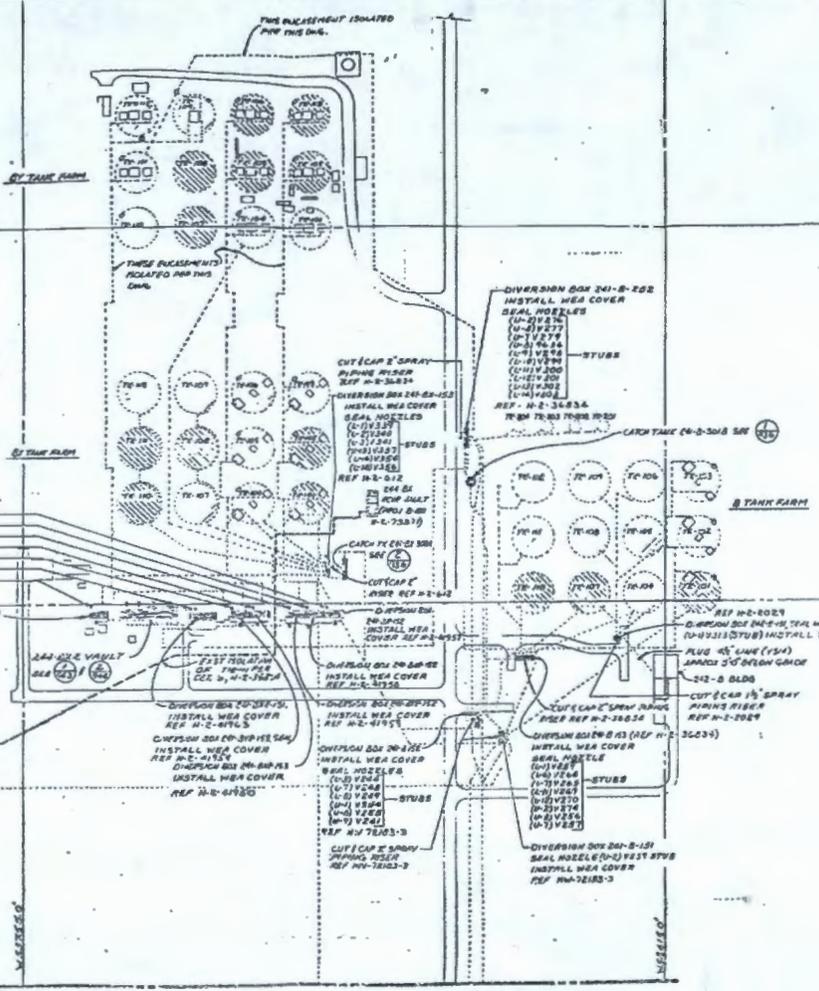
TX-102			
PVT	NO	SEAL	LINE
		NO	NO
PUMP PVT	02A	U-4	2502
PUMP PVT	02B	U-6	4519
SLUICER PVT	02C	U-1	1505
SLUICER PVT	02D	U-1	1506
SLUICER PVT	02E	U-1	1507



NOTES:
 1. DIMENSIONS AND EXPLANATION OF TERMS SEE SPEC-2413
 2. SEE PLOT 24-108 FOR OTHER ISOLATION MAPS ON 24-HY TANK FARM

WYHO JOB NO. 10114	
U. S. DEPARTMENT OF ENERGY	
Nuclear Conversion Office	
WYHO ENGINEERING CORPORATION	
PIPING	
PLOT PLAN	
24-HY, AT, C, CCR AREAS	
DATE: 11-20-65	BY: J. W. B. / J. W. B.
SCALE: AS SHOWN	PROJECT NO. 24-101
NO. 0	REV. 1
DATE: 11-20-65	BY: J. W. B. / J. W. B.
SCALE: AS SHOWN	PROJECT NO. 24-101
NO. 0	REV. 1

NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	11-20-65
2	REVISION	
3	REVISION	
4	REVISION	
5	REVISION	
6	REVISION	
7	REVISION	
8	REVISION	
9	REVISION	
10	REVISION	



NOTES:
 1. FOR GENERAL NOTE AND EXPLANATION OF TERMS SEE SHEET 5488.
 2. ALL THE ENCLOSURE'S ARE ISOLATED BY THIS COMPANY.

CUT CAP 2" SPRAY
 PIPING RISERS 6" CH 60F
 REF. N-2-4187
 REF. N-2-4188
 REF. N-2-4189
 REF. N-2-4190
 REF. N-2-4191
 REF. N-2-4192

DIVERSION BOX 241-B-151
 INSTALL WEA COVER
 REF. N-2-4227

DIVERSION BOX 241-B-152
 INSTALL WEA COVER
 REF. N-2-4193

DIVERSION BOX 241-B-153
 INSTALL WEA COVER
 REF. N-2-4194

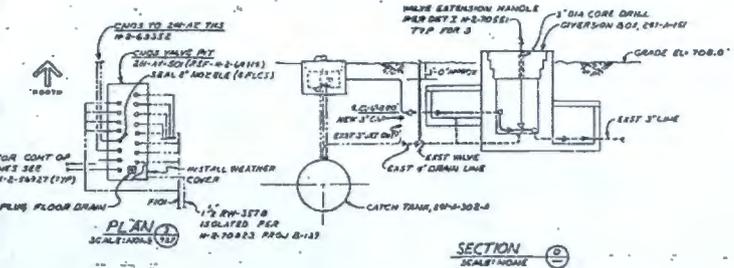
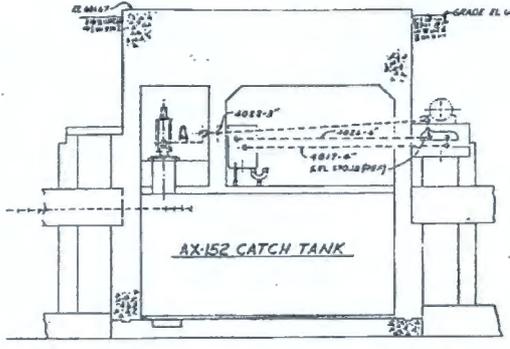
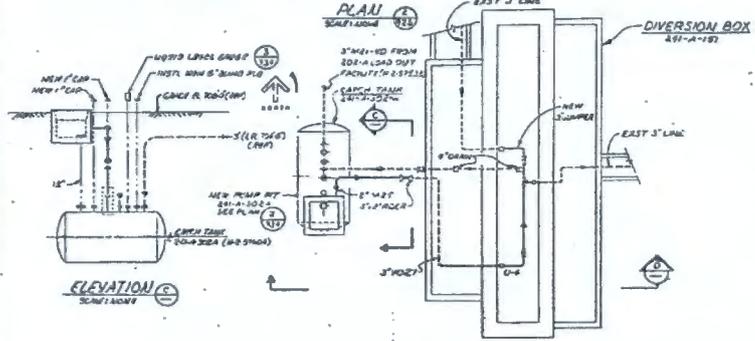
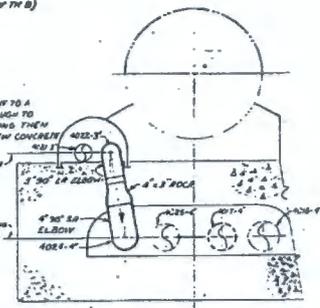
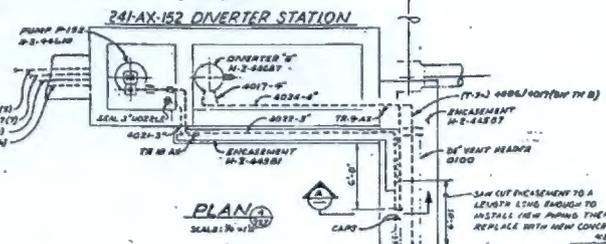
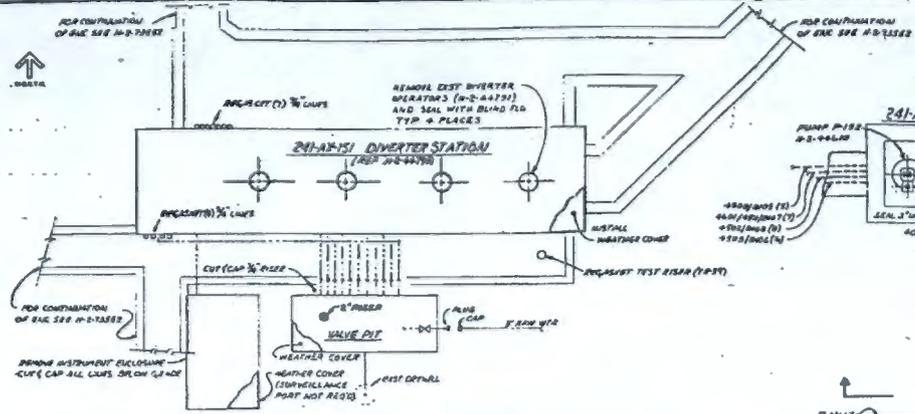
DIVERSION BOX 241-B-154
 INSTALL WEA COVER
 REF. N-2-4195

DIVERSION BOX 241-B-155
 INSTALL WEA COVER
 REF. N-2-4196

M 44135.00 MATCHLINE REF. SHEET 5488-5489

VITRO 203 AND 211A1	
U. S. Government of Energy Research Operations Office	
VITRO ENGINEERING CORPORATION	
PIPING PLOT PLAN 241-B, 241-C, 241-D AREAS	
DATE: 1971	PROJECT: 241-B, 241-C, 241-D AREAS
DESIGNED BY: [Name]	CHECKED BY: [Name]
DRAWN BY: [Name]	DATE: 1971
SCALE: AS SHOWN	NO. 5488-5489
APP. [Name]	DATE: 1971

NO. 5488-5489	DATE: 1971	SCALE: AS SHOWN
DESIGNED BY: [Name]	CHECKED BY: [Name]	DRAWN BY: [Name]
APP. [Name]	DATE: 1971	NO. 5488-5489

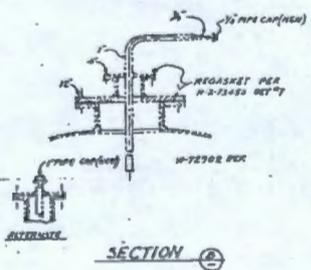
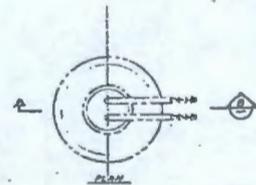
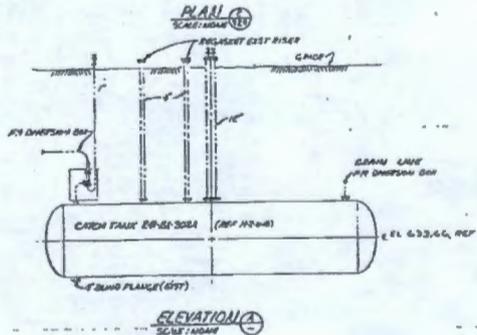
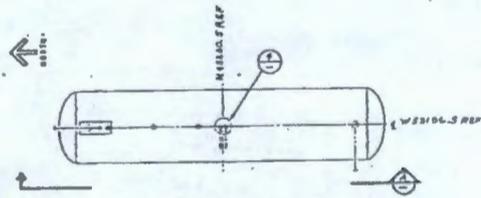
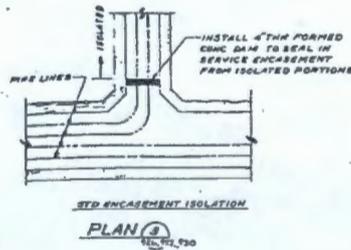
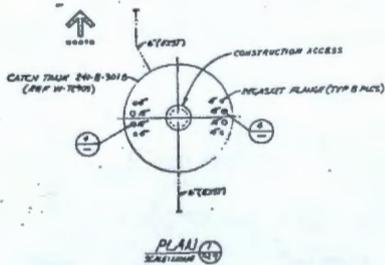


NOTES:
 1 FOR GENERAL NOTES AND EXPLANATION OF TERMS USED SEE SK-2-6352

SEE NOTE #2 SK-2-7072

NO.	DATE	BY	CHKD.	APP.	REVISION
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

VITRO JOB # M-2-11141	
U. S. Department of Energy	
Rockwell Contracting Office	
VITRO ENGINEERING CORPORATION	
PIPING	
PLANS, ELEVATIONS (SECTIONS)	
24-1-A & 20-2-A AREAS	
DATE	1/27/68
BY	J. D. DAVE
CHKD.	J. D. DAVE
APP.	J. D. DAVE
SCALE	NONE
PROJECT NO.	SK-2-56935

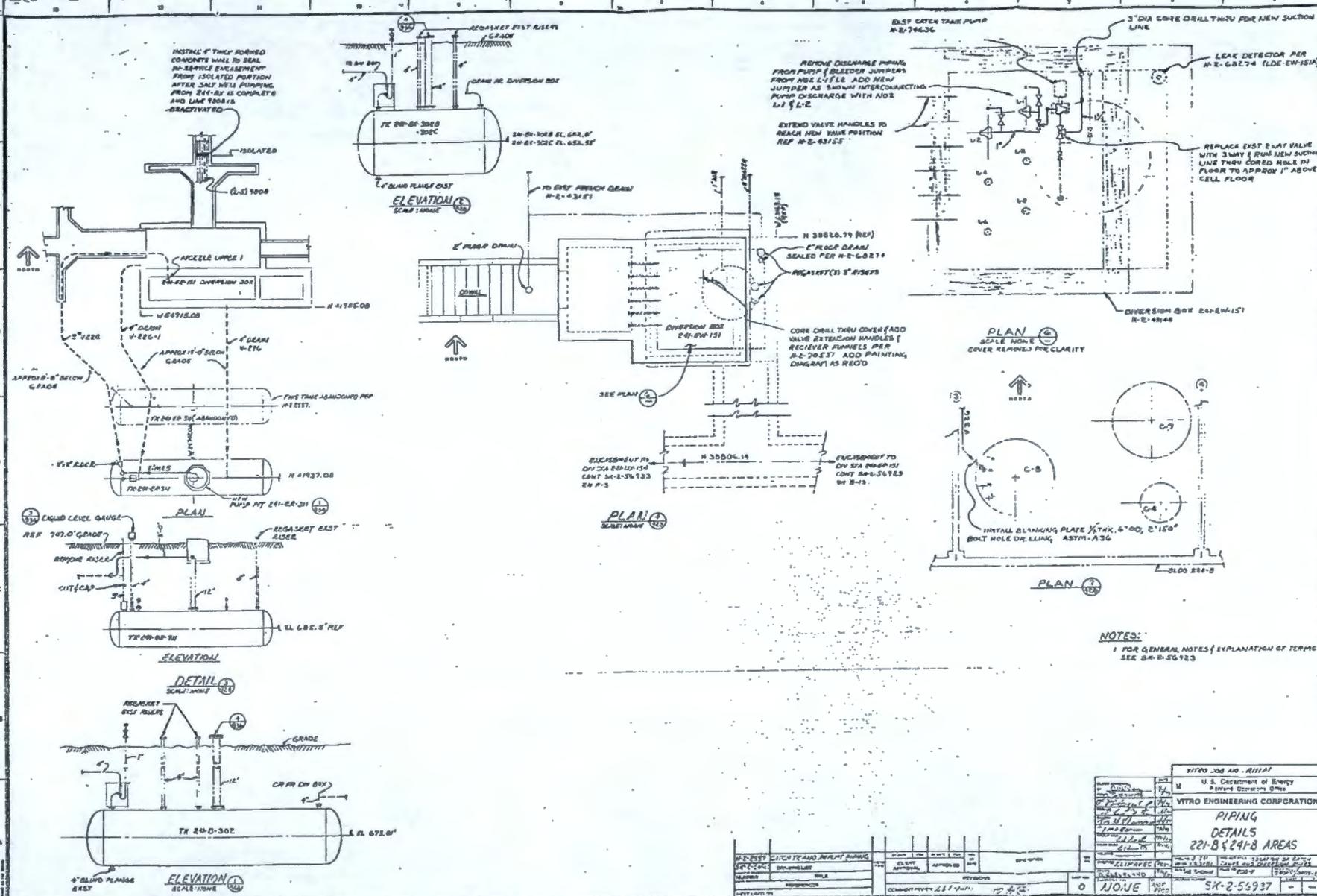


NOTES:
A. FOR GENERAL NOTES AND DIMENSIONS OF TANKS SEE 241-B-3016

NO.	DATE	BY	CHKD	APP'D	DESCRIPTION
1	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
2	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
3	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
4	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
5	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
6	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
7	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
8	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
9	10/1/72	J. L. ...	J. L. ...	J. L. ...	...
10	10/1/72	J. L. ...	J. L. ...	J. L. ...	...

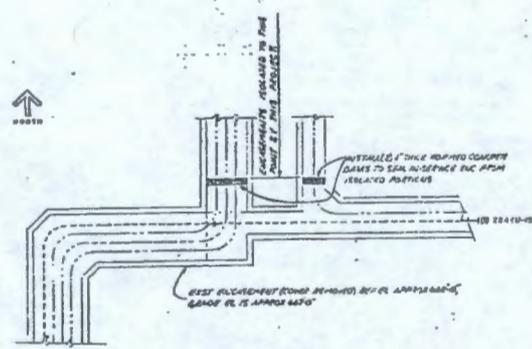
VITRO JOB 217-10101
U. S. Department of Energy
Barrow Operations Office
VITRO ENGINEERING CORPORATION
PIPING
DETAILS
241-B 18X AREAS

5K-2-56936

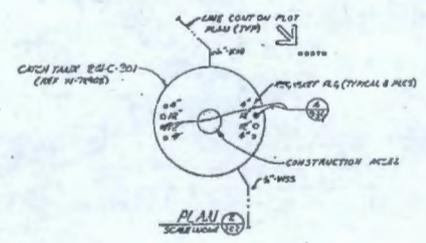


NO. 54-D-50723	DATE 11/11/71	BY J. J. ...	CHKD. ...	APP. ...	REV. ...	NO. 54-D-50723	DATE 11/11/71	BY J. J. ...	CHKD. ...	APP. ...	REV. ...
U.S. DEPARTMENT OF ENERGY WITRO ENGINEERING CORPORATION PIPING DETAILS 221-B & 241-B AREAS											
0 NO. 54-D-50723										54-D-50723	

NOTES:
 1. FOR GENERAL NOTES AND EXPLANATION OF TERMS
 SEE SK-2-56933



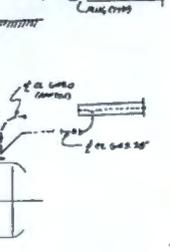
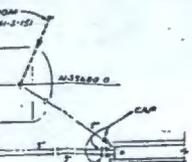
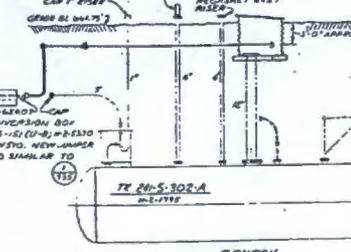
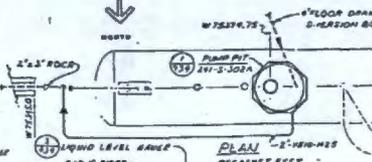
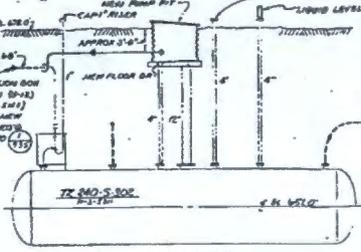
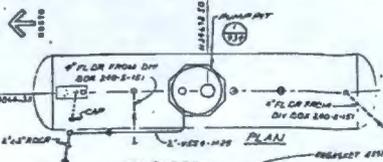
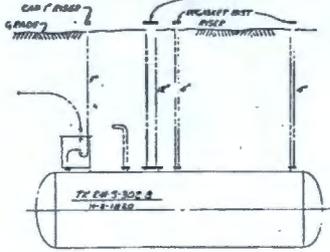
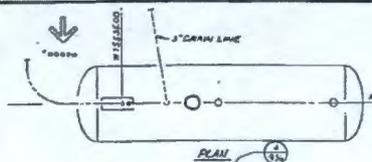
PLAN
 SCALE 1/8" = 1'-0"



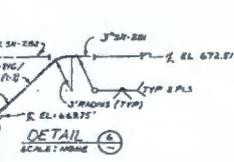
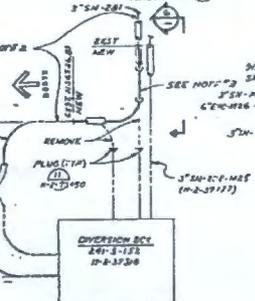
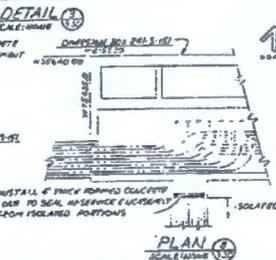
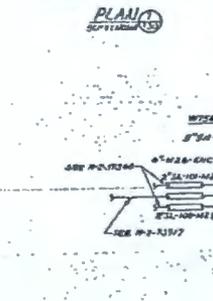
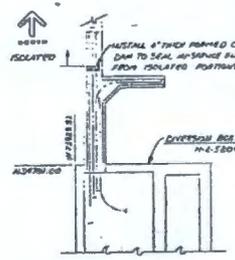
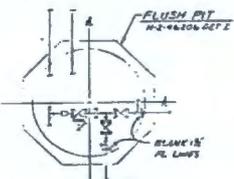
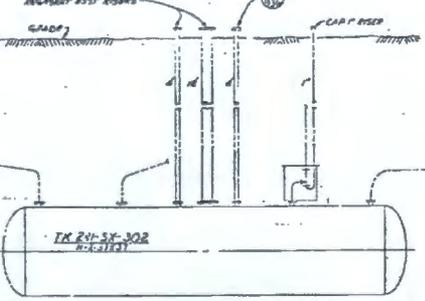
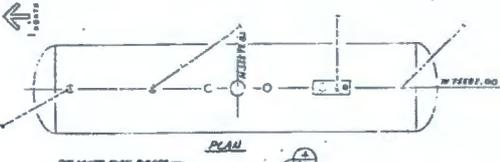
PLAN
 SCALE 1/8" = 1'-0"

NO.	DATE	BY	CHKD.	APP'D.	REVISIONS
1	01/23/68	DRUMMELT			
2					
3					
4					
5					
6					
7					
8					
9					
10					

VITRO 432 AP-2 (RHN)	
U.S. Department of Energy Research Operations Office	
VITRO ENGINEERING CORPORATION	
PIPING PLANS	
241-C AREA	
DATE: 01/23/68	SCALE: AS SHOWN
BY: DRUMMELT	CHKD: [Signature]
APP'D: [Signature]	NO. OF SHEETS: 2
PROJECT NO: SK-2-56933	SHEET NO: 1

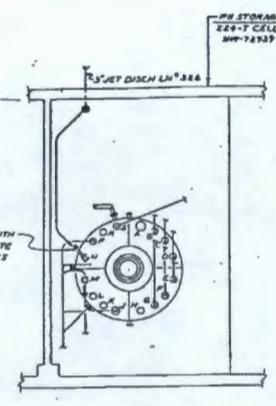
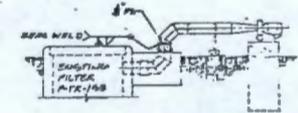
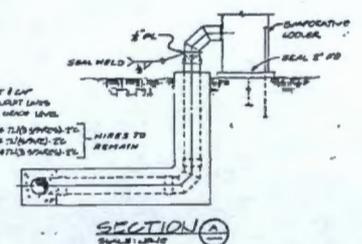
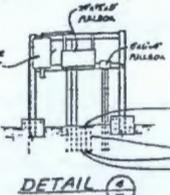
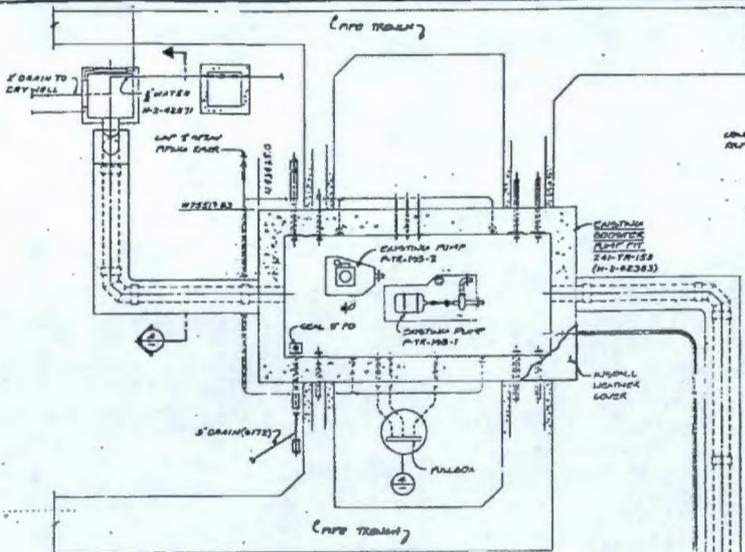


- NOTES:**
1. FOR CHECK, NOTES AND EXPLANATION OF TERMS SEE SP-15533
 2. EXISTING HEAT TRACES TO BE RETAINED IN SERVICE ON LINES 3" SN-216 AND 3" SN-281
 3. NEW SECTION OF PIPE AND ENCASEMENT DOES NOT REQUIRE HEAT TRACE BUT WILL HAVE INSULIBLE CAP AND POLYURETHANE INSULATION.

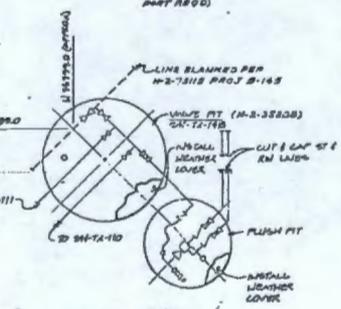


VITRO JOB NO: 81141	
U. S. Department of Energy Portland Operations Office	
VITRO ENGINEERING CORPORATION	
PIPING DETAILS	
241-S, 5X4 SY AREAS	
DATE: 11/11/77	SCALE: 1/8" = 1'-0"
BY: J. W. JONES	CHKD: J. W. JONES
APP'D: J. W. JONES	DATE: 11/11/77
PROJECT: 200-W	SK-2-56939

NO.	DATE	BY	DESCRIPTION
1	11/11/77	J. W. JONES	ISSUED FOR CONSTRUCTION
2	11/11/77	J. W. JONES	REVISION
3	11/11/77	J. W. JONES	REVISION
4	11/11/77	J. W. JONES	REVISION
5	11/11/77	J. W. JONES	REVISION



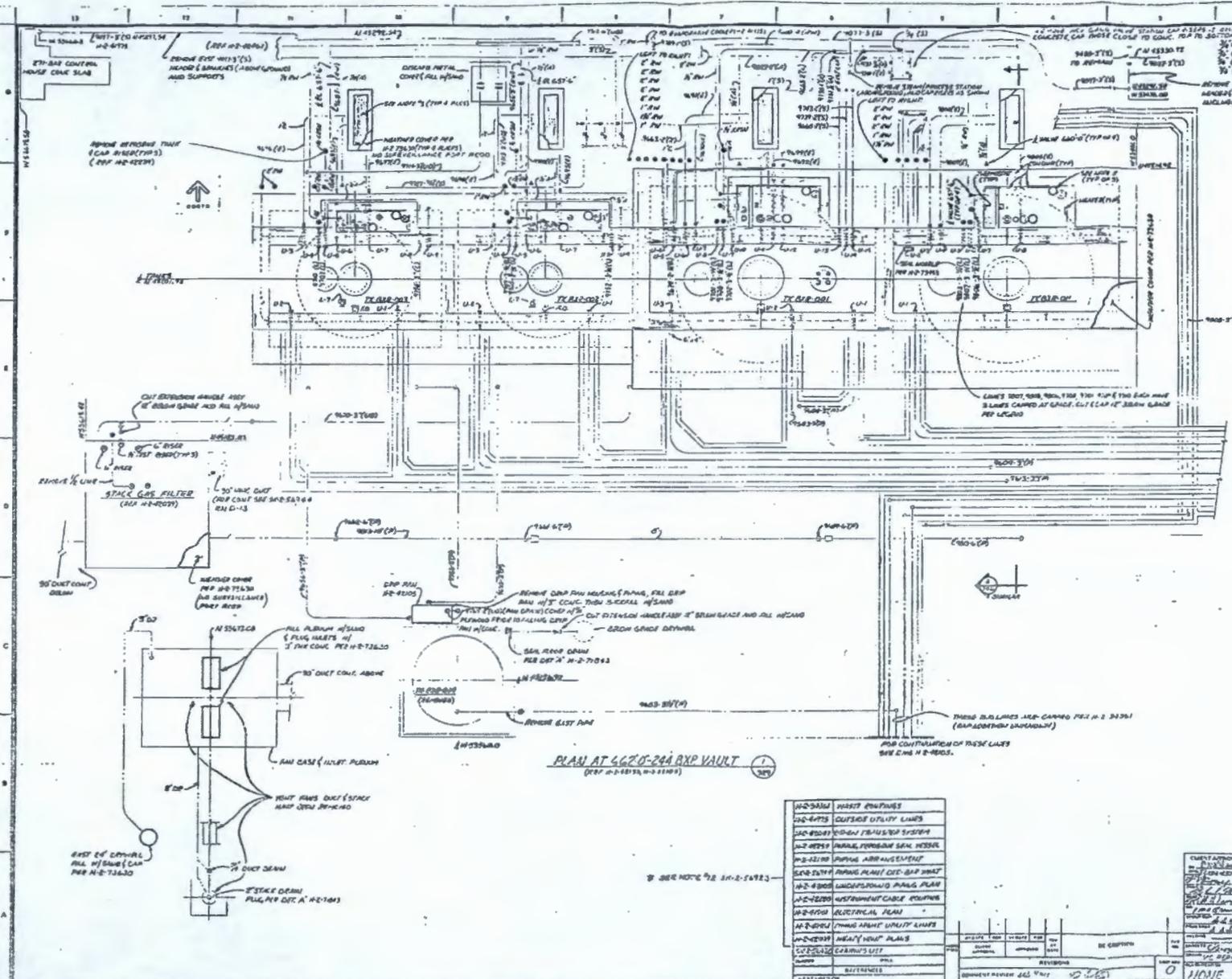
← BOOSTER PUMP PIT PLAN (1/8" = 1'-0")



↑ PLAN SCALE: 1/8" = 1'-0"

NOTES
A. FOR GENERAL NOTES AND EXPLANATION ON TERMS SEE SW-8-5192

VITRO JOB NO. R11A1 U.S. Department of Energy National Consumer Office VITRO ENGINEERING CORPORATION PIPING DETAILS 241-T&TX AREAS		SCALE: 1/8" = 1'-0" SHEET NO. 0 TOTAL SHEETS 1
DESIGNED BY: [blank] DRAWN BY: [blank] CHECKED BY: [blank]	APPROVED BY: [blank]	DATE: [blank]
PROJECT NO.: [blank]	DRAWING NO.: [blank]	SHEET NO.: [blank]
CONTRACT NO.: [blank]	REV: [blank]	DATE: [blank]

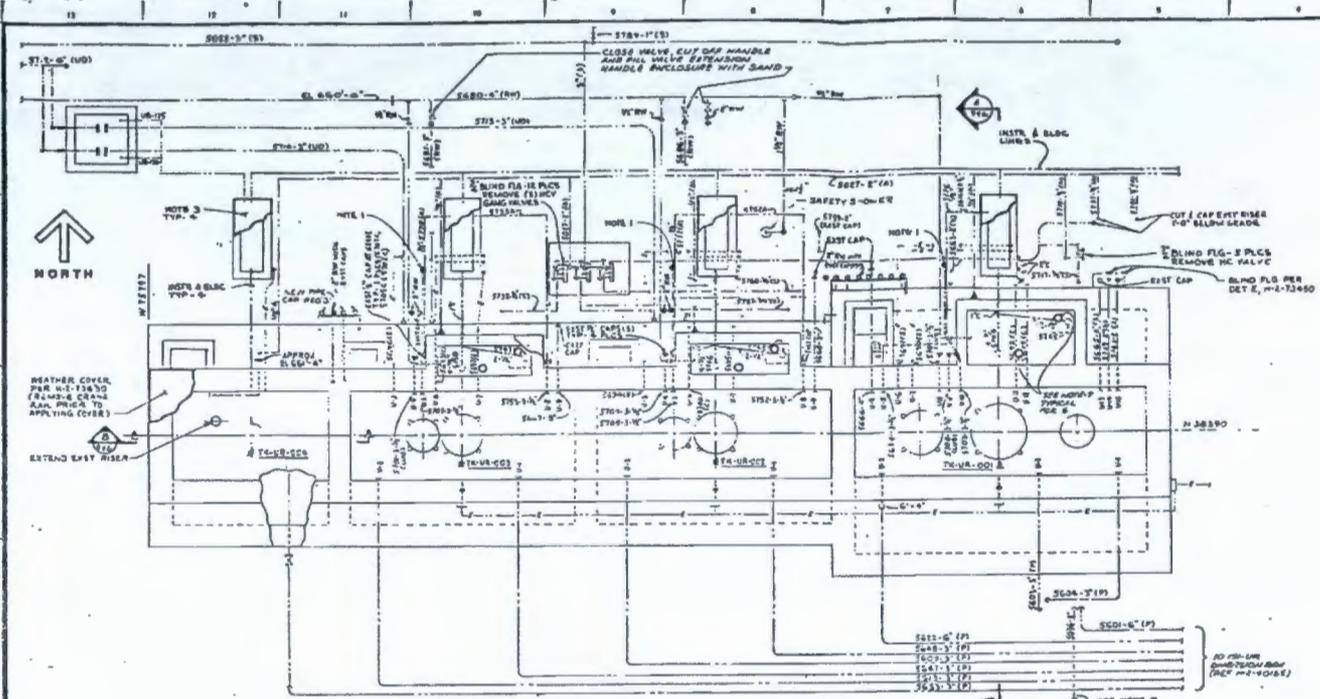


- NOTES:**
1. PIPING SYMBOLS AND GENERAL ANNOTATIONS SEE SK-2-56943.
 2. GENERAL NOTES.
 3. INSTRUMENTATION AND ELECTRICAL CONNECTIONS SHALL BE PROVIDED. ALL LINES AND CONNECTIONS CAPPED, FILL PIT HYDRO AND COVER PER N-2-73230.
 4. PER REV PLAN SEE ONE SK-2-56943.
 5. REMOVE LIQUID LEVEL MEASURING DEVICE TO INSTALL BOND PLANGE FOR SURVEILLANCE POINT.

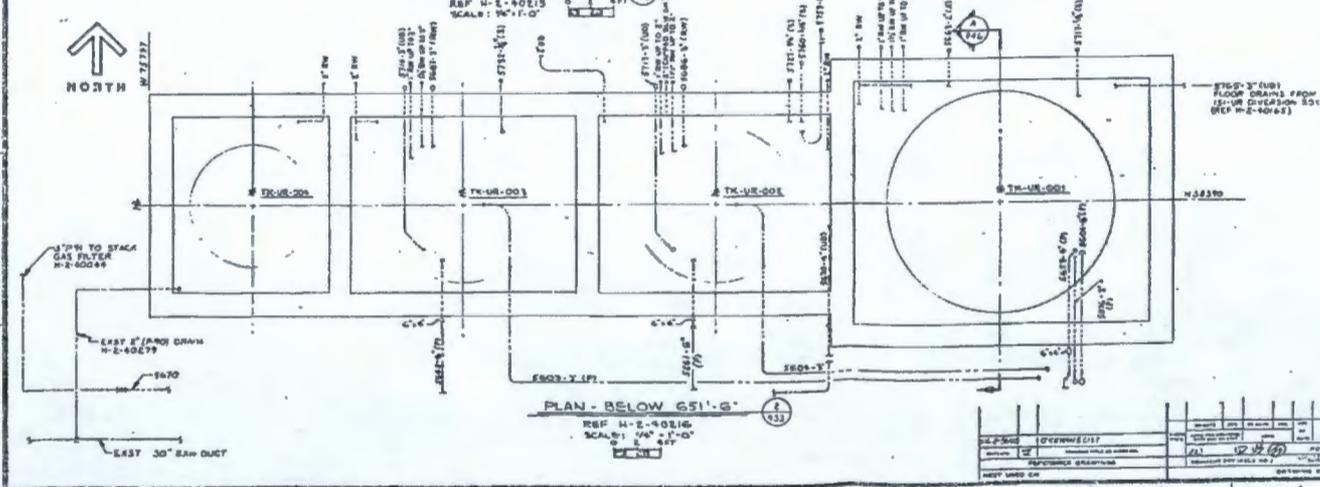
PLAN AT 4670-244 BXP VAULT
(REV. N-2-56943, N-2-51183)

NO.	DESCRIPTION	DATE
N-2-56943	ISSUE DRAWINGS	
N-2-5475	OUTSIDE UTILITY LINES	
N-2-5007	WATER TREATMENT SYSTEM	
N-2-5051	WATER TREATMENT SYSTEM	
N-2-5052	WATER TREATMENT SYSTEM	
N-2-5053	WATER TREATMENT SYSTEM	
N-2-5054	WATER TREATMENT SYSTEM	
N-2-5055	WATER TREATMENT SYSTEM	
N-2-5056	WATER TREATMENT SYSTEM	
N-2-5057	WATER TREATMENT SYSTEM	
N-2-5058	WATER TREATMENT SYSTEM	
N-2-5059	WATER TREATMENT SYSTEM	
N-2-5060	WATER TREATMENT SYSTEM	
N-2-5061	WATER TREATMENT SYSTEM	
N-2-5062	WATER TREATMENT SYSTEM	
N-2-5063	WATER TREATMENT SYSTEM	
N-2-5064	WATER TREATMENT SYSTEM	
N-2-5065	WATER TREATMENT SYSTEM	
N-2-5066	WATER TREATMENT SYSTEM	
N-2-5067	WATER TREATMENT SYSTEM	
N-2-5068	WATER TREATMENT SYSTEM	
N-2-5069	WATER TREATMENT SYSTEM	
N-2-5070	WATER TREATMENT SYSTEM	

U.S. Department of Energy Technical Operations Office VITRO ENGINEERING CORPORATION PIPING PLAN BXP VAULT ISOLATION	
PROJECT NO. SK-2-56943 SHEET NO. 1 OF 1 DATE: 11/15/78 DRAWN BY: J. J. JONES CHECKED BY: J. J. JONES APPROVED BY: J. J. JONES	PROJECT NO. SK-2-56943 SHEET NO. 1 OF 1 DATE: 11/15/78 DRAWN BY: J. J. JONES CHECKED BY: J. J. JONES APPROVED BY: J. J. JONES



PLAN - ABOVE 651'-6"
 REF H-2-40215
 SCALE: 1/8" = 1'-0"



PLAN - BELOW 651'-6"
 REF H-2-40216
 SCALE: 1/8" = 1'-0"

NOTES:

1. REMOVE KEYSIDE DIA (H-2-13450) AND CAP 1/2" DIA PER DET 1 H-2-13450
2. FOR REFERENCE DRAWINGS, SEE SK-2-54946
3. INSTRUMENTATION AND ELECTRICAL ENVELOPES SHALL BE REMOVED. ALL UNDERGROUND OVERHEAD LINES (LAL) AND FOUNDATION SHALL BE REMOVED (CONCRETE) WITH WEATHER COVER, 3/4" H-2-13450, NO SURVEILLANCE PORT NEED
4. FOR VAULT VENTILATION, SEE SK-2-54946
5. UNDER VAULT SHAFT (H-2-13450) IS ISOLATED FROM VAULT ESCAPE WALK, FITS BY WEATHER COVER PER H-2-13450, OR 3" HORIZONTAL NOZZLE SEAL ASSEMBLIES PER H-2-13453
6. APPROXIMATE GRADE ELEVATION IS 654'-0"
7. REMOVE LEVEL MEASURING DEVICE + SMALL BLIND FLS FOR SURVEILLANCE PORT.
8. FOR LEGEND, SYMBOLS AND GENERAL NOTES SEE DRAWING SK-2-54946

DATE	DESCRIPTION	BY	CHKD	APP'D
10/1/77	ISSUED FOR CONSTRUCTION	W. J. ...	...	...
10/1/77	REVISED	...	...	...
10/1/77	...	...	...	...

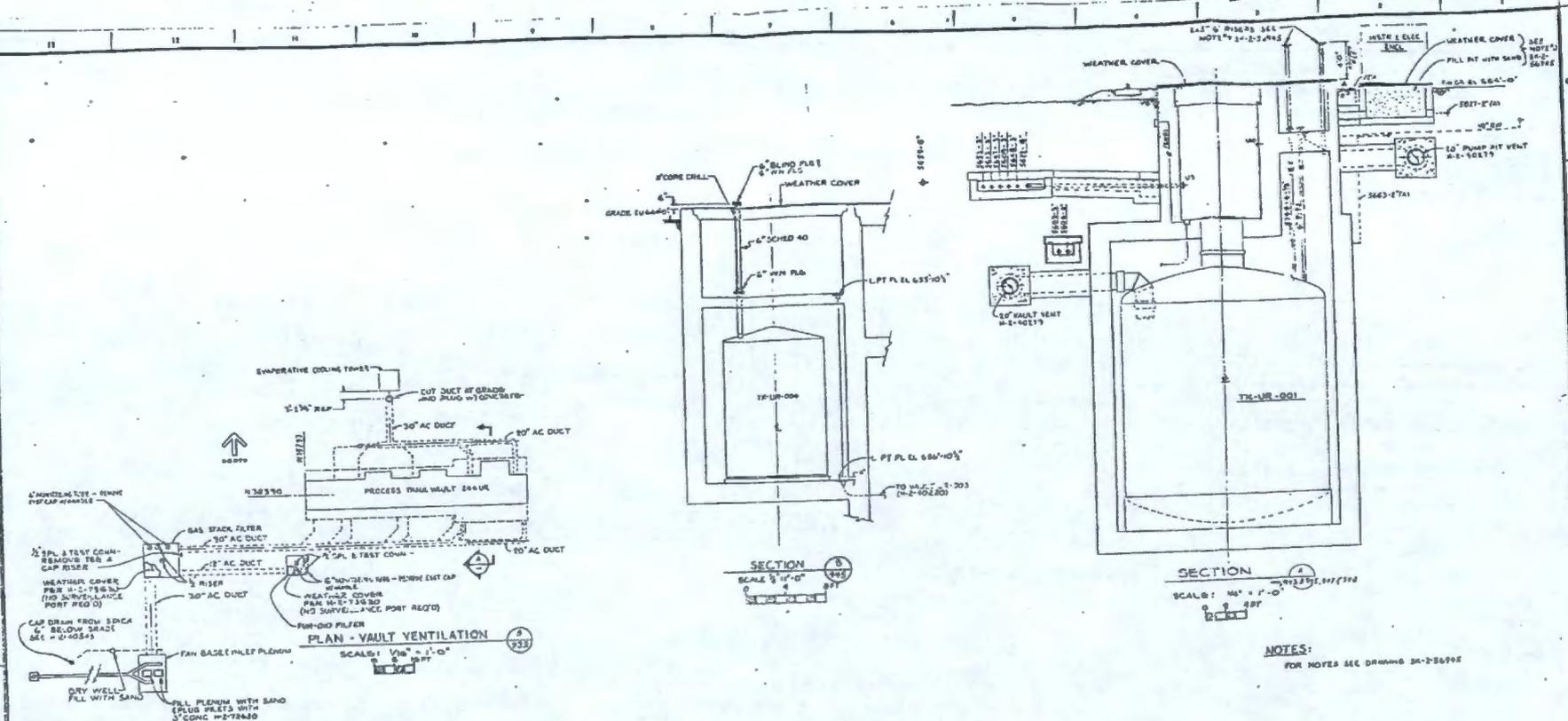
VITRO JOB NO. 81041

U. S. Department of Energy
 Atomic Energy Division

VITRO ENGINEERING CORPORATION
 PIPING
 PLANS - UR VAULT
 ISOLATION

SCALE: 1/8" = 1'-0"

SK-2-56945

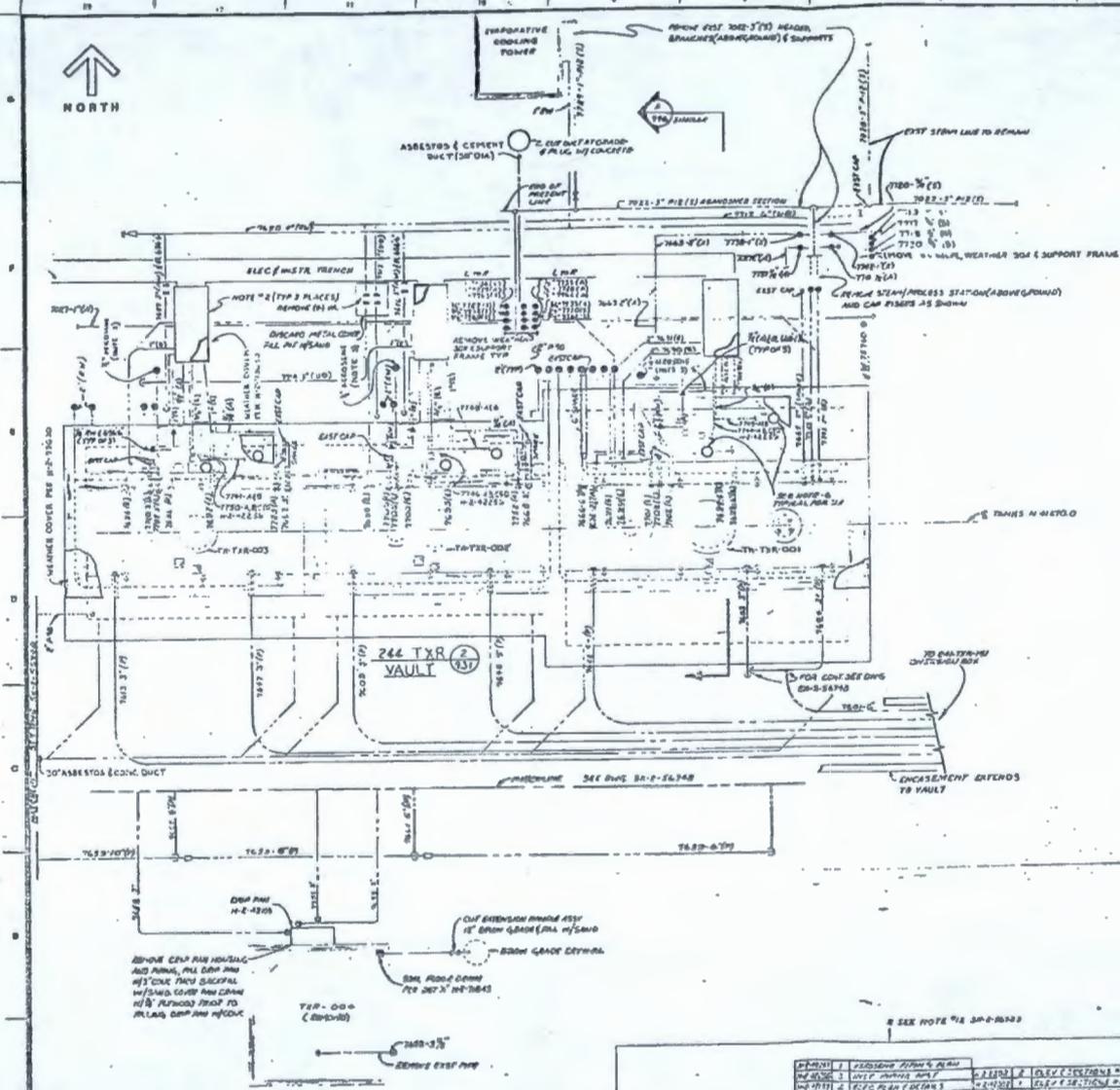


NOTES:
FOR NOTES SEE DRAWING SK-2-56946

SEE NOTE "A" SK-2-56928

NO.	DESCRIPTION	DATE	BY	CHECKED	APPROVED
1	DESIGN	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
2	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
3	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
4	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
5	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
6	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
7	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
8	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
9	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS
10	REVISED	11-15-50	J. W. HARRIS	J. W. HARRIS	J. W. HARRIS

APPROVED J. W. HARRIS 11-15-50		U.S. Department of Energy National Cooperative Office YITRO ENGINEERING CORPORATION	
PIPING PLANS AND SECTIONS UR VAULT ISOLATION			
PROJECT NO. SK-2-56946 SHEET NO. 1 OF 1	DATE: 11-15-50	DRAWN BY: J. W. HARRIS	CHECKED BY: J. W. HARRIS



REMOVE CAP AND HOUSING AND PIPING, AND DEMO AND RELOCATE FROM EXISTING TO NEW LOCATION. SEE PLAN, CAP AND HOUSING.

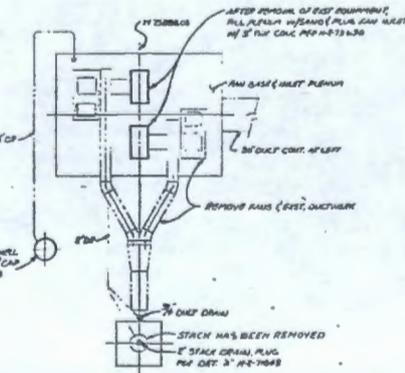
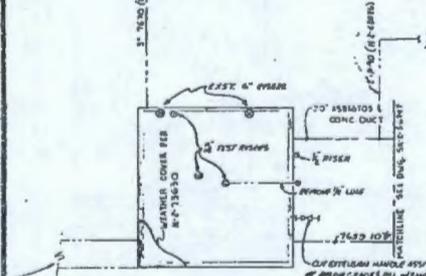
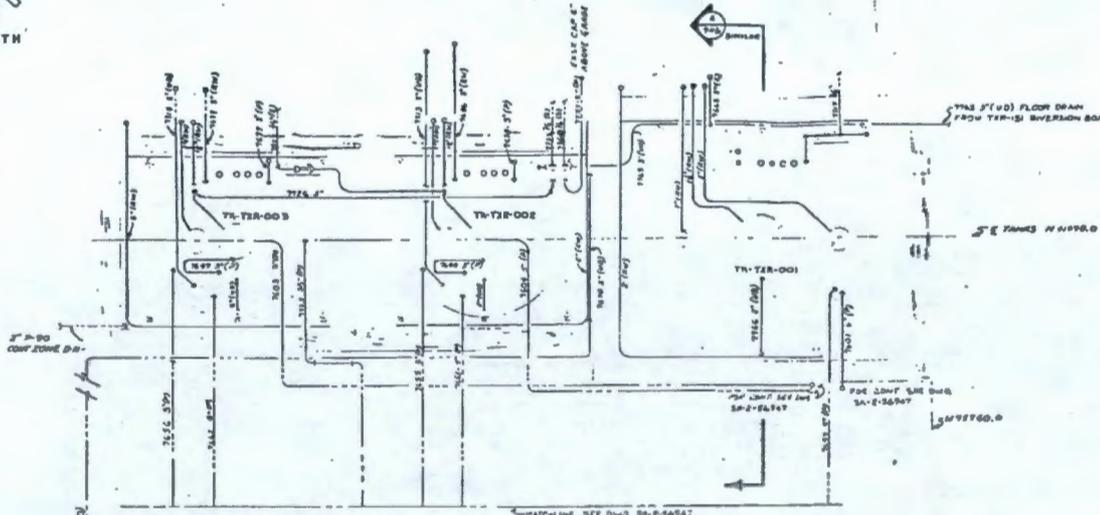
PLAN AT 660'-0" 244-TXR VAULT
SCALE 3" = 1'-0"

NOTES:
FOR NOTES SEE DWG SK-2-56948

SEE NOTE 718 342-16348

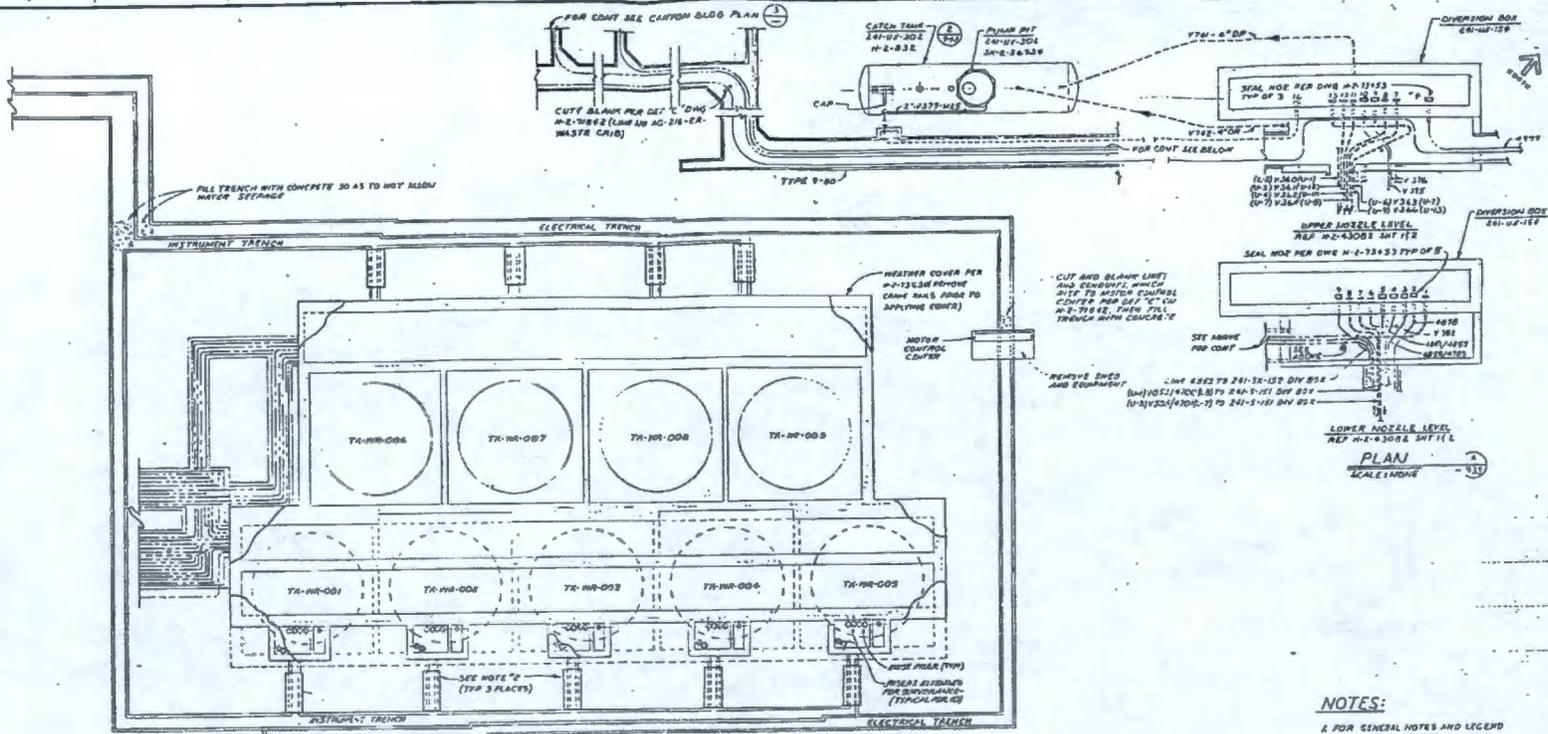
NO.	DESCRIPTION	DATE	BY	CHECKED
1	DESIGNED	10/15/64	J. W. B.	J. W. B.
2	REVISED	11/10/64	J. W. B.	J. W. B.
3	REVISED	12/15/64	J. W. B.	J. W. B.
4	REVISED	1/10/65	J. W. B.	J. W. B.
5	REVISED	2/10/65	J. W. B.	J. W. B.
6	REVISED	3/10/65	J. W. B.	J. W. B.
7	REVISED	4/10/65	J. W. B.	J. W. B.
8	REVISED	5/10/65	J. W. B.	J. W. B.
9	REVISED	6/10/65	J. W. B.	J. W. B.
10	REVISED	7/10/65	J. W. B.	J. W. B.
11	REVISED	8/10/65	J. W. B.	J. W. B.
12	REVISED	9/10/65	J. W. B.	J. W. B.
13	REVISED	10/10/65	J. W. B.	J. W. B.
14	REVISED	11/10/65	J. W. B.	J. W. B.
15	REVISED	12/10/65	J. W. B.	J. W. B.
16	REVISED	1/10/66	J. W. B.	J. W. B.
17	REVISED	2/10/66	J. W. B.	J. W. B.
18	REVISED	3/10/66	J. W. B.	J. W. B.
19	REVISED	4/10/66	J. W. B.	J. W. B.
20	REVISED	5/10/66	J. W. B.	J. W. B.
21	REVISED	6/10/66	J. W. B.	J. W. B.
22	REVISED	7/10/66	J. W. B.	J. W. B.
23	REVISED	8/10/66	J. W. B.	J. W. B.
24	REVISED	9/10/66	J. W. B.	J. W. B.
25	REVISED	10/10/66	J. W. B.	J. W. B.
26	REVISED	11/10/66	J. W. B.	J. W. B.
27	REVISED	12/10/66	J. W. B.	J. W. B.
28	REVISED	1/10/67	J. W. B.	J. W. B.
29	REVISED	2/10/67	J. W. B.	J. W. B.
30	REVISED	3/10/67	J. W. B.	J. W. B.
31	REVISED	4/10/67	J. W. B.	J. W. B.
32	REVISED	5/10/67	J. W. B.	J. W. B.
33	REVISED	6/10/67	J. W. B.	J. W. B.
34	REVISED	7/10/67	J. W. B.	J. W. B.
35	REVISED	8/10/67	J. W. B.	J. W. B.
36	REVISED	9/10/67	J. W. B.	J. W. B.
37	REVISED	10/10/67	J. W. B.	J. W. B.
38	REVISED	11/10/67	J. W. B.	J. W. B.
39	REVISED	12/10/67	J. W. B.	J. W. B.
40	REVISED	1/10/68	J. W. B.	J. W. B.
41	REVISED	2/10/68	J. W. B.	J. W. B.
42	REVISED	3/10/68	J. W. B.	J. W. B.
43	REVISED	4/10/68	J. W. B.	J. W. B.
44	REVISED	5/10/68	J. W. B.	J. W. B.
45	REVISED	6/10/68	J. W. B.	J. W. B.
46	REVISED	7/10/68	J. W. B.	J. W. B.
47	REVISED	8/10/68	J. W. B.	J. W. B.
48	REVISED	9/10/68	J. W. B.	J. W. B.
49	REVISED	10/10/68	J. W. B.	J. W. B.
50	REVISED	11/10/68	J. W. B.	J. W. B.
51	REVISED	12/10/68	J. W. B.	J. W. B.
52	REVISED	1/10/69	J. W. B.	J. W. B.
53	REVISED	2/10/69	J. W. B.	J. W. B.
54	REVISED	3/10/69	J. W. B.	J. W. B.
55	REVISED	4/10/69	J. W. B.	J. W. B.
56	REVISED	5/10/69	J. W. B.	J. W. B.
57	REVISED	6/10/69	J. W. B.	J. W. B.
58	REVISED	7/10/69	J. W. B.	J. W. B.
59	REVISED	8/10/69	J. W. B.	J. W. B.
60	REVISED	9/10/69	J. W. B.	J. W. B.
61	REVISED	10/10/69	J. W. B.	J. W. B.
62	REVISED	11/10/69	J. W. B.	J. W. B.
63	REVISED	12/10/69	J. W. B.	J. W. B.
64	REVISED	1/10/70	J. W. B.	J. W. B.
65	REVISED	2/10/70	J. W. B.	J. W. B.
66	REVISED	3/10/70	J. W. B.	J. W. B.
67	REVISED	4/10/70	J. W. B.	J. W. B.
68	REVISED	5/10/70	J. W. B.	J. W. B.
69	REVISED	6/10/70	J. W. B.	J. W. B.
70	REVISED	7/10/70	J. W. B.	J. W. B.
71	REVISED	8/10/70	J. W. B.	J. W. B.
72	REVISED	9/10/70	J. W. B.	J. W. B.
73	REVISED	10/10/70	J. W. B.	J. W. B.
74	REVISED	11/10/70	J. W. B.	J. W. B.
75	REVISED	12/10/70	J. W. B.	J. W. B.
76	REVISED	1/10/71	J. W. B.	J. W. B.
77	REVISED	2/10/71	J. W. B.	J. W. B.
78	REVISED	3/10/71	J. W. B.	J. W. B.
79	REVISED	4/10/71	J. W. B.	J. W. B.
80	REVISED	5/10/71	J. W. B.	J. W. B.
81	REVISED	6/10/71	J. W. B.	J. W. B.
82	REVISED	7/10/71	J. W. B.	J. W. B.
83	REVISED	8/10/71	J. W. B.	J. W. B.
84	REVISED	9/10/71	J. W. B.	J. W. B.
85	REVISED	10/10/71	J. W. B.	J. W. B.
86	REVISED	11/10/71	J. W. B.	J. W. B.
87	REVISED	12/10/71	J. W. B.	J. W. B.
88	REVISED	1/10/72	J. W. B.	J. W. B.
89	REVISED	2/10/72	J. W. B.	J. W. B.
90	REVISED	3/10/72	J. W. B.	J. W. B.
91	REVISED	4/10/72	J. W. B.	J. W. B.
92	REVISED	5/10/72	J. W. B.	J. W. B.
93	REVISED	6/10/72	J. W. B.	J. W. B.
94	REVISED	7/10/72	J. W. B.	J. W. B.
95	REVISED	8/10/72	J. W. B.	J. W. B.
96	REVISED	9/10/72	J. W. B.	J. W. B.
97	REVISED	10/10/72	J. W. B.	J. W. B.
98	REVISED	11/10/72	J. W. B.	J. W. B.
99	REVISED	12/10/72	J. W. B.	J. W. B.
100	REVISED	1/10/73	J. W. B.	J. W. B.

VITRO JOB NO. 81841	
U. S. Department of Energy	Project No. 81841-024
VITRO ENGINEERING CORPORATION	
PIPING PLAN	
TXR VAULT	
DATE: 10/15/64	SCALE: 3" = 1'-0"
BY: J. W. B.	CHECKED: J. W. B.
APPROVED: J. W. B.	DATE: 10/15/64
REVISIONS:	DATE: 10/15/64
1	AS SHOWN
2	AS SHOWN
3	AS SHOWN
4	AS SHOWN
5	AS SHOWN
6	AS SHOWN
7	AS SHOWN
8	AS SHOWN
9	AS SHOWN
10	AS SHOWN
11	AS SHOWN
12	AS SHOWN
13	AS SHOWN
14	AS SHOWN
15	AS SHOWN
16	AS SHOWN
17	AS SHOWN
18	AS SHOWN
19	AS SHOWN
20	AS SHOWN
21	AS SHOWN
22	AS SHOWN
23	AS SHOWN
24	AS SHOWN
25	AS SHOWN
26	AS SHOWN
27	AS SHOWN
28	AS SHOWN
29	AS SHOWN
30	AS SHOWN
31	AS SHOWN
32	AS SHOWN
33	AS SHOWN
34	AS SHOWN
35	AS SHOWN
36	AS SHOWN
37	AS SHOWN
38	AS SHOWN
39	AS SHOWN
40	AS SHOWN
41	AS SHOWN
42	AS SHOWN
43	AS SHOWN
44	AS SHOWN
45	AS SHOWN
46	AS SHOWN
47	AS SHOWN
48	AS SHOWN
49	AS SHOWN
50	AS SHOWN
51	AS SHOWN
52	AS SHOWN
53	AS SHOWN
54	AS SHOWN
55	AS SHOWN
56	AS SHOWN
57	AS SHOWN
58	AS SHOWN
59	AS SHOWN
60	AS SHOWN
61	AS SHOWN
62	AS SHOWN
63	AS SHOWN
64	AS SHOWN
65	AS SHOWN
66	AS SHOWN
67	AS SHOWN
68	AS SHOWN
69	AS SHOWN
70	AS SHOWN
71	AS SHOWN
72	AS SHOWN
73	AS SHOWN
74	AS SHOWN
75	AS SHOWN
76	AS SHOWN
77	AS SHOWN
78	AS SHOWN
79	AS SHOWN
80	AS SHOWN
81	AS SHOWN
82	AS SHOWN
83	AS SHOWN
84	AS SHOWN
85	AS SHOWN
86	AS SHOWN
87	AS SHOWN
88	AS SHOWN
89	AS SHOWN
90	AS SHOWN
91	AS SHOWN
92	AS SHOWN
93	AS SHOWN
94	AS SHOWN
95	AS SHOWN
96	AS SHOWN
97	AS SHOWN
98	AS SHOWN
99	AS SHOWN
100	AS SHOWN

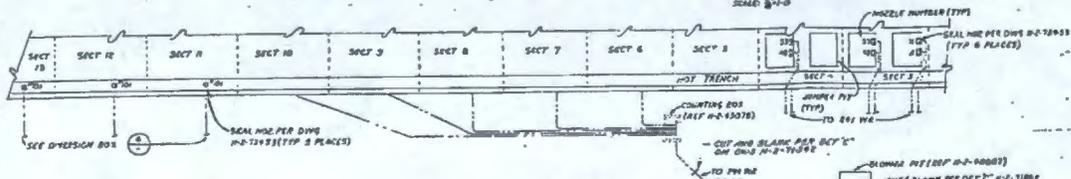


- NOTES:**
1. APPROX. GRADE IS 840'-0"
 2. WTR. AND ELEC. ENCLOSURES SHALL BE REMOVED. ALL WTR. & CONDUITS CAPPED. FILL W/ GRAVEL & COVER W/ 6" CONC. SEE SH-2-56943.
 3. REMOVE REBAR FROM (W-0-1225) AND CAP RISE.
 4. FOR GENERAL NOTES, LEGEND & SYMBOLS SEE DWG. SH-2-56943.
 5. FOR REF. DWGS. SEE SH-2-56947.
 6. REMOVE LIQUID LEVEL MEASURING DEVICE AND INSTALL BLIND FLANGE FOR SURVEILLANCE POINT.

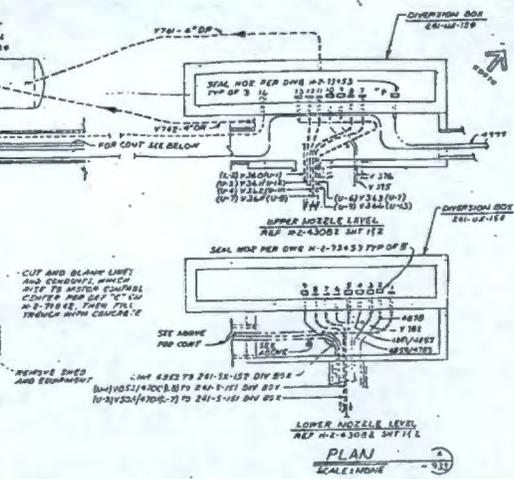
VITRO 205 ME. 21111		U.S. Department of Energy Nuclear Regulatory Commission	
VITRO ENGINEERING CORPORATION		VITRO ENGINEERING CORPORATION	
PIPING PLAN		PIPING PLAN	
TRX VAULT		TRX VAULT	
DATE: 11/11/83	BY: J. J. [unclear]	DATE: 11/11/83	BY: J. J. [unclear]
SCALE: 1/8"=1'-0"	PROJECT: 264-TRX VAULT	SCALE: 1/8"=1'-0"	PROJECT: 264-TRX VAULT
NO. 1	DATE: 11/11/83	NO. 1	DATE: 11/11/83
NONE		SM-2-56943	



PLAN 241-WR BLDG
(REF M-0-4890)



PLAN 221-U CANYON BLDG
(REF M-0-4893)
SCALE: NONE

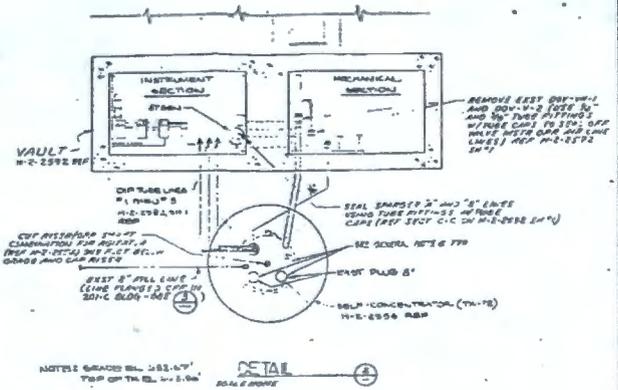
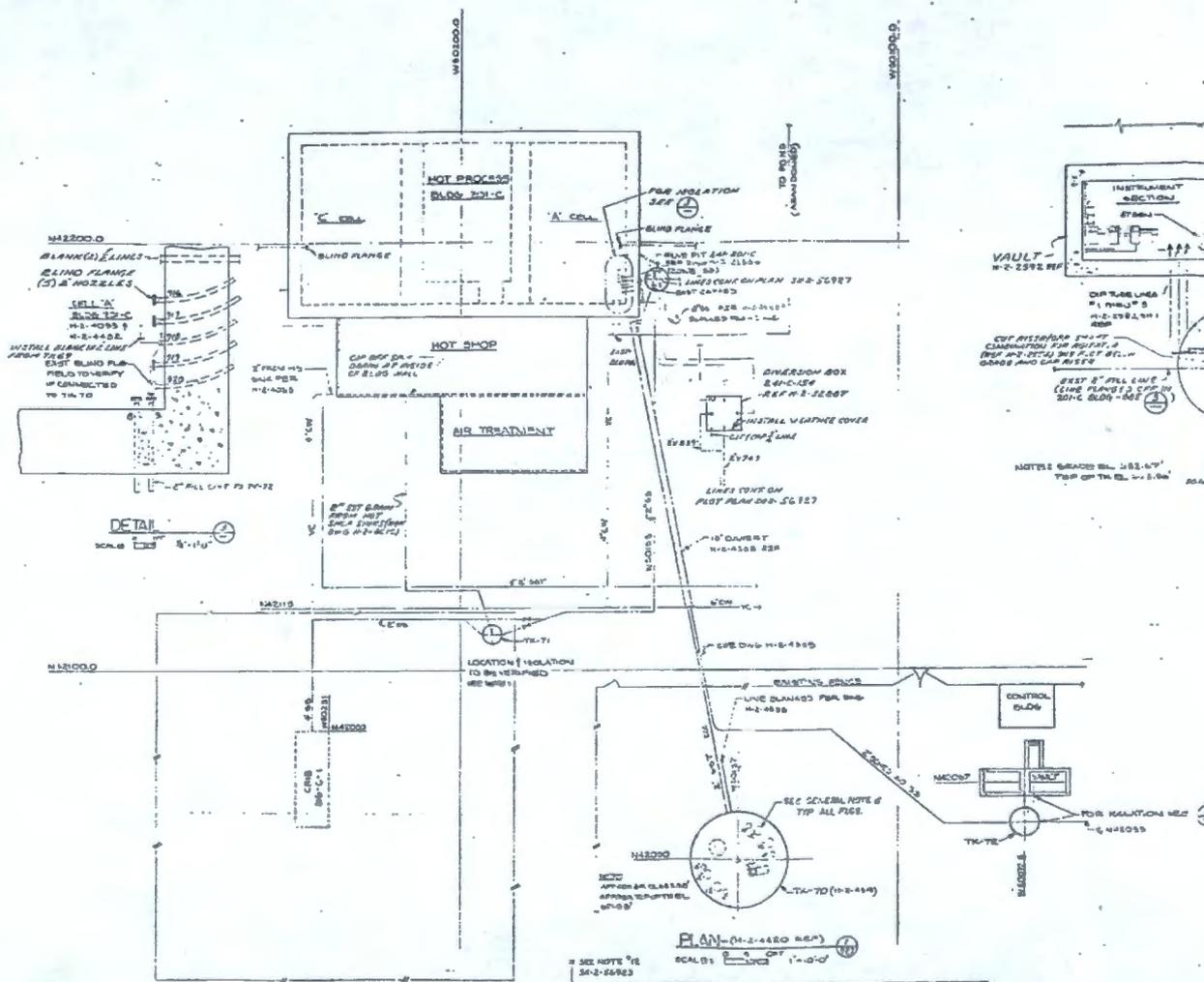


- NOTES:**
- FOR GENERAL NOTES AND LEGEND SEE DWG M-2-58923
 - INSTRUMENTATION AND ELECTRICAL ENCLOSURES SHALL BE REMOVED. ALL LINES, CONDUITS AND THE REMAINING GROUNDS FILLED WITH CONCRETE.
 - FOR KEY PLAN AND COORDINATES SEE DWG M-2-58923

NO.	DATE	BY	CHKD	APP'D	DESCRIPTION
1					ISSUED FOR CONSTRUCTION

NO.	DATE	BY	CHKD	APP'D	DESCRIPTION
1					ISSUED FOR CONSTRUCTION

VITRO JOB NO. 24144		U.S. Department of Energy Nuclear Operations Office	
VITRO ENGINEERING CORPORATION		INSTR. ELEC. PIPING MODIFICATIONS	
DATE	BY	CHKD	APP'D
10/15/50	NONE		
SCALE: NONE		SK-2-56952	



- NOTES:**
1. UNABLE TO FIND ADEQUATE INSTALLATION DRAWINGS FOR 70-71.
 2. FOR ISOLATION SYMBOLS AND GENERAL NOTES SEE SK-2-56923

PLAN (M-2-4480 REP) SCALE: 1"=10'-0"

NO.	DATE	DESCRIPTION	BY	CHKD.
1	11-15-55	ISSUED FOR CONSTRUCTION	J.P.	J.P.
2	11-15-55	REVISION	J.P.	J.P.
3	11-15-55	REVISION	J.P.	J.P.
4	11-15-55	REVISION	J.P.	J.P.
5	11-15-55	REVISION	J.P.	J.P.
6	11-15-55	REVISION	J.P.	J.P.
7	11-15-55	REVISION	J.P.	J.P.
8	11-15-55	REVISION	J.P.	J.P.
9	11-15-55	REVISION	J.P.	J.P.
10	11-15-55	REVISION	J.P.	J.P.
11	11-15-55	REVISION	J.P.	J.P.
12	11-15-55	REVISION	J.P.	J.P.

VITRO JOB NO. 4444

U. S. DEPARTMENT OF ENERGY
 RESEARCH AND DEVELOPMENT

VITRO ENGINEERING CORPORATION

PIPING PLANS
 TANKS 70, 71, 72

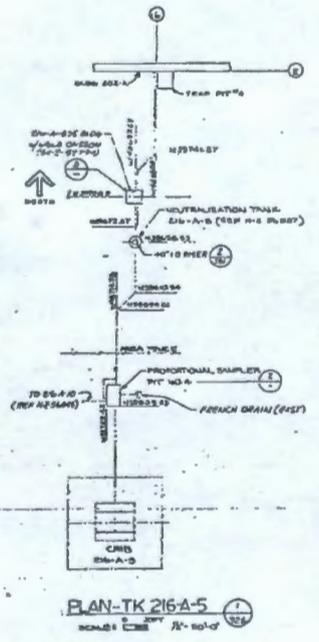
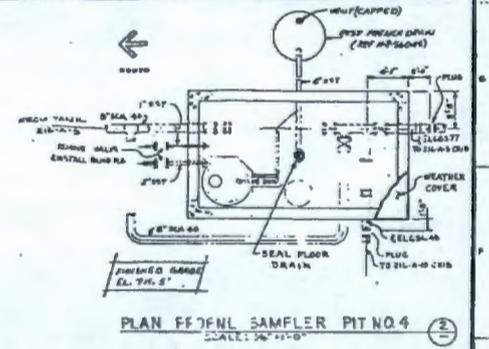
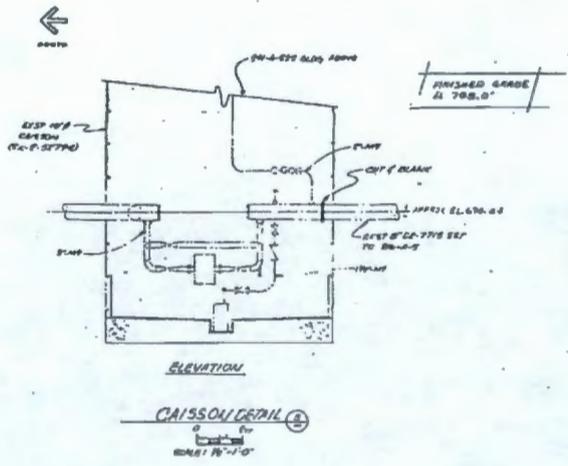
DATE: 11-15-55

SCALE: AS SHOWN

REVISIONS:

NO.	DATE	DESCRIPTION
1	11-15-55	ISSUED FOR CONSTRUCTION
2	11-15-55	REVISION
3	11-15-55	REVISION
4	11-15-55	REVISION
5	11-15-55	REVISION
6	11-15-55	REVISION
7	11-15-55	REVISION
8	11-15-55	REVISION
9	11-15-55	REVISION
10	11-15-55	REVISION
11	11-15-55	REVISION
12	11-15-55	REVISION

SCALE: AS SHOWN



NOTE: FOR GENERAL NOTES SEE SK-2-5623

SEE NOTE #2 SK-2-5623

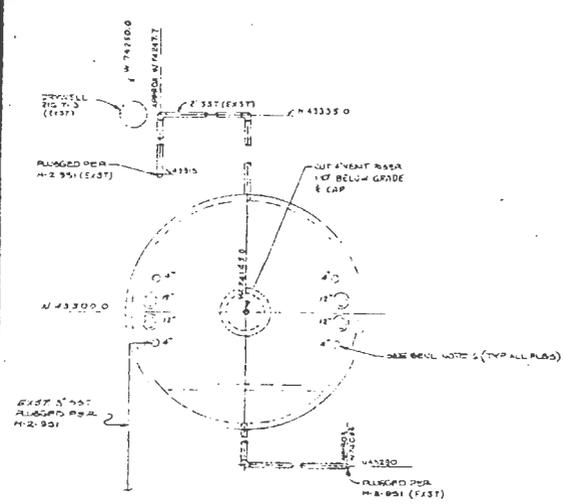
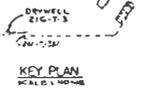
NO. 175100	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175101	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175102	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175103	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175104	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175105	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175106	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175107	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175108	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175109	WATER TANK SAMPLING SYSTEM	DATE	10/1/50
NO. 175110	WATER TANK SAMPLING SYSTEM	DATE	10/1/50

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/1/50	DESIGNED	W. J. H.	
2	10/1/50	CHECKED		
3	10/1/50	APPROVED		

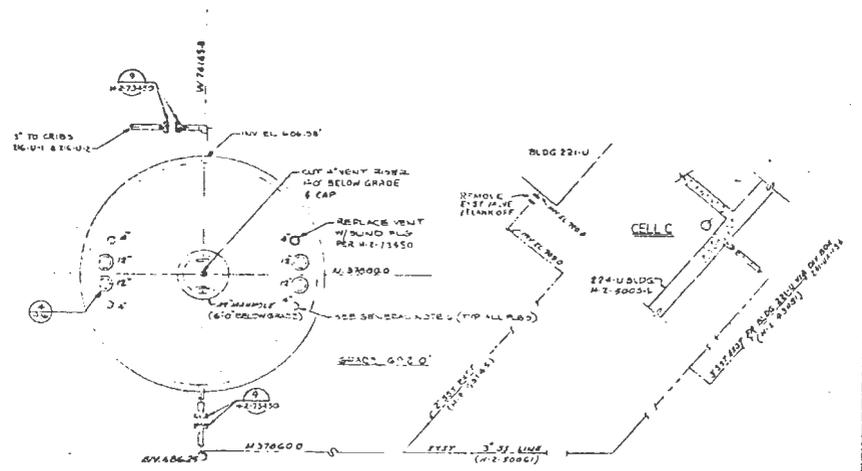
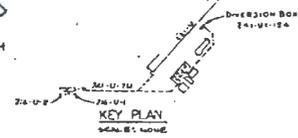
VITRO WORK NO. 216-A-5 U.S. Department of Energy Health, Safety & Environment Office VITRO ENGINEERING CORPORATION PIPING PLAN AND DETAIL TANK 216-A-5	
CLIENT APPROVAL DATE NAME TITLE	PROJECT NO. DRAWING NO. SHEET NO. OF TOTAL SHEETS DATE
DESIGNER DATE NAME TITLE	CHECKED DATE NAME TITLE
APPROVED DATE NAME TITLE	NOTE: SK-2-5623



CRIB 21-U-36(1)
CRIB 21-U-36(2)



EXISTING 20'-0" DIA SETTLING TANK
241-T-361



EXISTING 20'-0" DIA SETTLING TANK
241-U-361

NOTE: FOR GENERAL NOTES, SYMBOLS & LEGEND
SEE SK-2-56923

0 2 4 6 8 FT
1/8" = 1'-0"

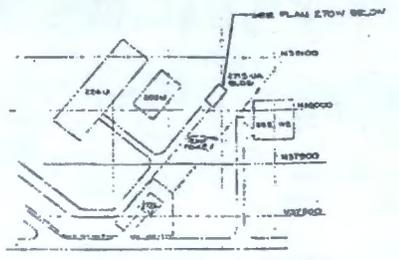
SEE NOTE #12
SK-2-56923

NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	11/20/63
2	ISSUED FOR CONSTRUCTION	11/20/63
3	ISSUED FOR CONSTRUCTION	11/20/63
4	ISSUED FOR CONSTRUCTION	11/20/63
5	ISSUED FOR CONSTRUCTION	11/20/63
6	ISSUED FOR CONSTRUCTION	11/20/63
7	ISSUED FOR CONSTRUCTION	11/20/63
8	ISSUED FOR CONSTRUCTION	11/20/63
9	ISSUED FOR CONSTRUCTION	11/20/63
10	ISSUED FOR CONSTRUCTION	11/20/63

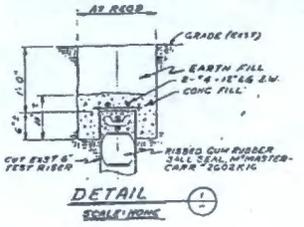
NO.	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	11/20/63
2	ISSUED FOR CONSTRUCTION	11/20/63
3	ISSUED FOR CONSTRUCTION	11/20/63
4	ISSUED FOR CONSTRUCTION	11/20/63
5	ISSUED FOR CONSTRUCTION	11/20/63
6	ISSUED FOR CONSTRUCTION	11/20/63
7	ISSUED FOR CONSTRUCTION	11/20/63
8	ISSUED FOR CONSTRUCTION	11/20/63
9	ISSUED FOR CONSTRUCTION	11/20/63
10	ISSUED FOR CONSTRUCTION	11/20/63

PIPING PLANS
TANKS 241-U-361 & 241-T-361

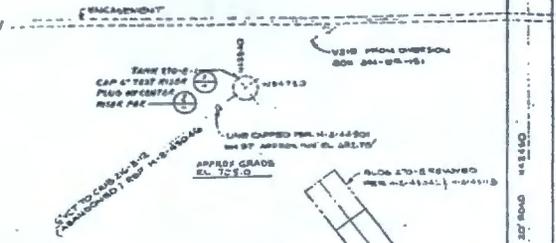
SK-2 569591111



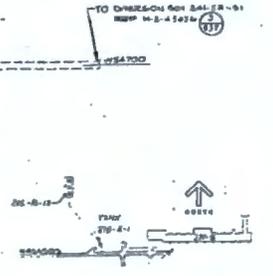
KEY PLAN-270W
SCALE: NONE



DETAIL 1
SCALE: NONE

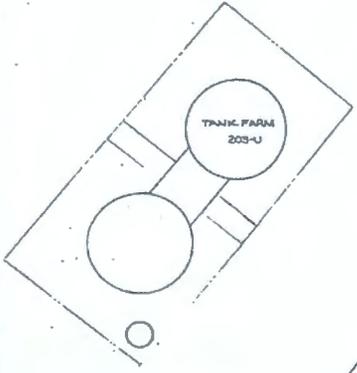


DETAIL 2
SCALE: NONE

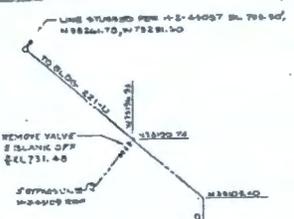


KEY PLAN-270E
SCALE: NONE

NOTE:
FOR ISOLATION SYMBOLS, GENERAL NOTES & LEGEND SEE 94-2-25913



PLAN-270-W
SCALE: 1"=20'-0"



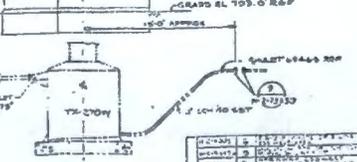
TANK 270-E RISER PULSED AND 6" DAMPLE RISER CAPPED PER H-2-24495 AND BLDG. 270-10A BUILT OVER.

TANK 270-W 200 H-2-6310 (OUT OF SERVICE)
BLDG. 270-10A REF H-2-24488



SECTION 1
SCALE: NONE

SEE NOTE #12 H-2-24483

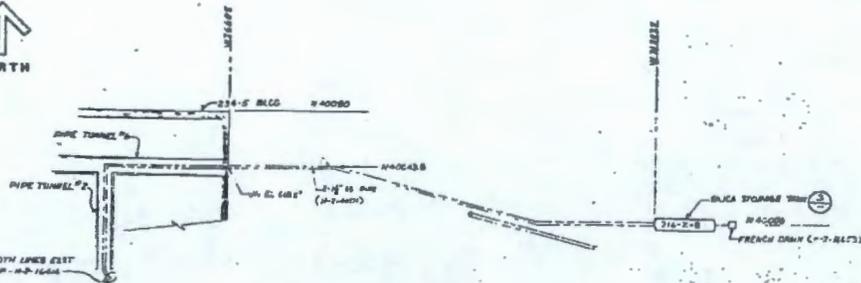


PLAN-270-E
SCALE: 1"=20'-0"

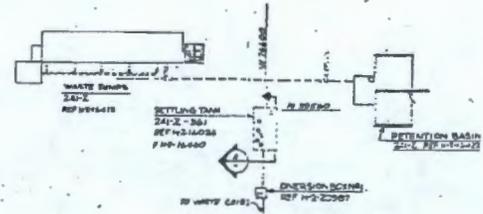
NO.	DATE	DESCRIPTION	BY	CHECKED
1	11/15/55	ISSUED FOR CONSTRUCTION	JH	JH
2	11/15/55	REVISIONS	JH	JH
3	11/15/55	REVISIONS	JH	JH
4	11/15/55	REVISIONS	JH	JH
5	11/15/55	REVISIONS	JH	JH
6	11/15/55	REVISIONS	JH	JH
7	11/15/55	REVISIONS	JH	JH
8	11/15/55	REVISIONS	JH	JH
9	11/15/55	REVISIONS	JH	JH
10	11/15/55	REVISIONS	JH	JH
11	11/15/55	REVISIONS	JH	JH
12	11/15/55	REVISIONS	JH	JH
13	11/15/55	REVISIONS	JH	JH
14	11/15/55	REVISIONS	JH	JH
15	11/15/55	REVISIONS	JH	JH
16	11/15/55	REVISIONS	JH	JH
17	11/15/55	REVISIONS	JH	JH
18	11/15/55	REVISIONS	JH	JH
19	11/15/55	REVISIONS	JH	JH
20	11/15/55	REVISIONS	JH	JH

NO.	DATE	DESCRIPTION	BY	CHECKED
1	11/15/55	ISSUED FOR CONSTRUCTION	JH	JH
2	11/15/55	REVISIONS	JH	JH
3	11/15/55	REVISIONS	JH	JH
4	11/15/55	REVISIONS	JH	JH
5	11/15/55	REVISIONS	JH	JH
6	11/15/55	REVISIONS	JH	JH
7	11/15/55	REVISIONS	JH	JH
8	11/15/55	REVISIONS	JH	JH
9	11/15/55	REVISIONS	JH	JH
10	11/15/55	REVISIONS	JH	JH
11	11/15/55	REVISIONS	JH	JH
12	11/15/55	REVISIONS	JH	JH
13	11/15/55	REVISIONS	JH	JH
14	11/15/55	REVISIONS	JH	JH
15	11/15/55	REVISIONS	JH	JH
16	11/15/55	REVISIONS	JH	JH
17	11/15/55	REVISIONS	JH	JH
18	11/15/55	REVISIONS	JH	JH
19	11/15/55	REVISIONS	JH	JH
20	11/15/55	REVISIONS	JH	JH

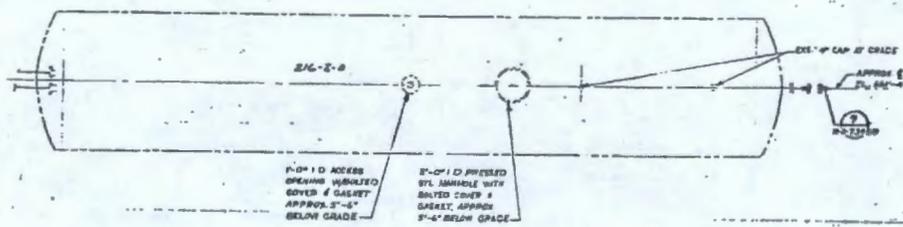
VITRO ENGINEERING CORPORATION
U.S. DEPARTMENT OF ENERGY
Piping Plans and Section TK-270-E1 and TK-270-W
SCALE: 1"=20'-0"
SK-2-36961



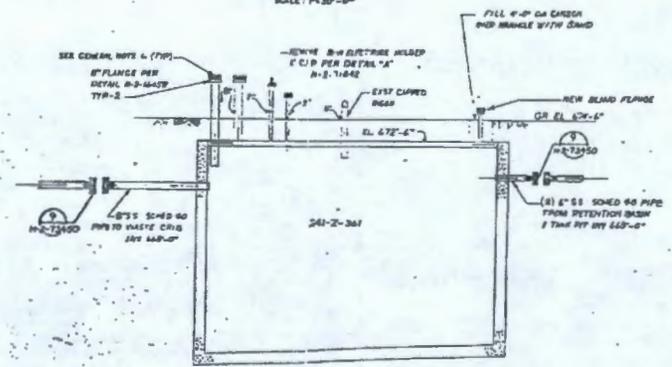
PLOT PLAN
SCALE: 1" = 30'-0"



PLAN
SCALE: 1" = 30'-0"



PLAN
SCALE: 1" = 7'-0"



SECTION
SCALE: NONE

NOTE:
FOR GENERAL NOTES, LEGEND & SYMBOLS SEE DWG. SK-2-56962

W. SEE NOTE #12 SK-2-56962

NO. 1	DATE	BY	CHKD.	APP'D.
NO. 2				
NO. 3				
NO. 4				
NO. 5				
NO. 6				
NO. 7				
NO. 8				
NO. 9				
NO. 10				
NO. 11				
NO. 12				
NO. 13				
NO. 14				
NO. 15				
NO. 16				
NO. 17				
NO. 18				
NO. 19				
NO. 20				

VITRO JOB NO. 8114
 U. S. Department of Energy
 RESEARCH & DEVELOPMENT OFFICE
 VITRO ENGINEERING CORPORATION
PIPING PLANS & SECTS
TK-241-Z-361 & TK-214-Z-8
 DATE: 11/15/62
 DRAWN BY: J. L. HARRIS
 CHECKED BY: J. L. HARRIS
 APPROVED BY: J. L. HARRIS
 NONE SK-2-56962

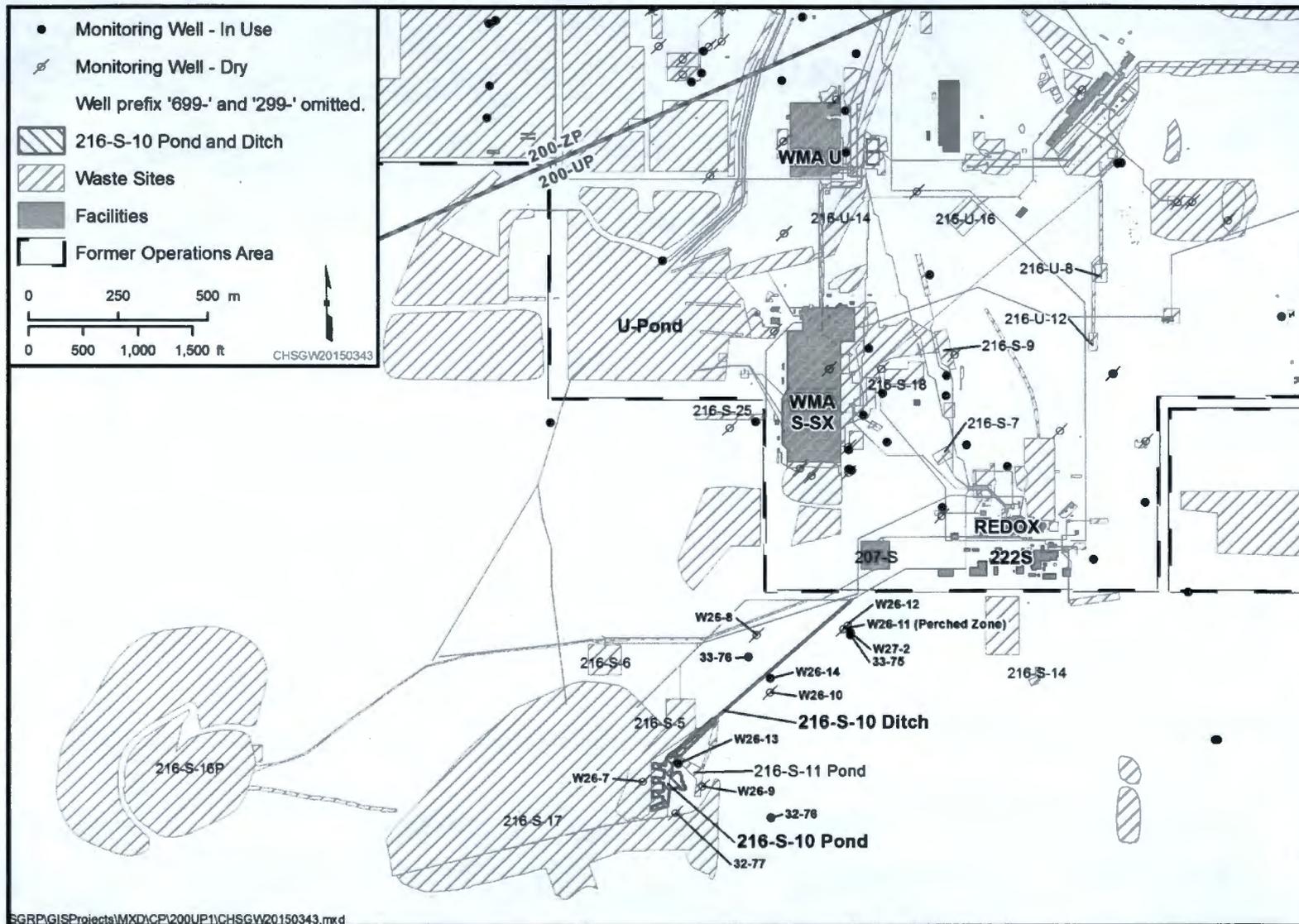


Figure 2-1. Map of the 216-S-10 Pond and Ditch