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WANL-TME-278

From: Ground Support Engineering

Date: February 21, 1963

Subject: Comments on E-MAD Phase II
Drawings Received Between
2/14/63 and 2/19/63

ASTRONUCLEAR LABORATORY

Mr. A. M. Poindexter

This document reflects our comments on the drawings and design information that we have received and is therefore contingent upon the drawings and specifications yet to be received from Vitro Engineering Company.

All comments contained herein are in agreement with previous comments and the criteria set forth by WANL-TNR-171 and various TME's.

1425-A-200

No comment.

MASTER

1425-A-207

No comment.

1425-A-300

No comment.

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1425-C-201

1. We would suggest the relocation of the road presently located between column lines 24 and 25 so that it runs parallel to the south face of the post-operative cells and ends about 10 feet east of the center line of the cell service and connects to the main road west of substation C. This will allow greater flexibility in design of additions to the E-MAD complex. In addition, the loading platform would not have to be removed and then replaced during construction period.

1425-H-204

1. Why is it necessary for Phase II funds to be utilized in completing the passageway under the south gallery? This passageway will only be required when additional facilities are provided for the post-operative cells at the E-MAD complex.

TME-278

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1425-K-203

No comment.

1425-H-209

No comment.

1425-K-209

1. The question concerning the necessity for down-stream filters as far as WANL knows has not been defined. We therefore suggest that sufficient room be allotted for possible later additions of these down-stream filters.

1425-K-210

1. The design of the filter boxes does not satisfactorily allow for removal of the CWS filters. We therefore suggest that the filter box design be modified to allow side openings so that handles can be attached to the filter prior to insertion in the filter box. Our suggested modification is noted in Figure No. 1.

2. There seems to be a discrepancy between the depth of the box opening for the CWS filter between AA and section DD. Please clarify.

1425-L-203

1. Item DD - two (2) Inch Diameter Conduit - Should be located in addition to the indicated position on the left side of W-103 and on the right side of W-108.

2. Item AA - Light Receptacle - Why are there no receptacles indicated for the bottom in-cell lights?

3. Item X - Autoradiography Drawer - The center line of this unit at W-106 and W-107 must be raised to the same height as Item V, the X-ray Drawer.

4. Item Z - Stereomicroscope - This unit should be located in addition to the places previously indicated, at W-108.

5. Item P - Periscope - There should not be a periscope located at window W-108.

6. Item FF - 1/2 Inch Diameter Cell Service Lines - These lines should be 3/4 of an inch in diameter as this is the minimum size for operating certain rotary pneumatic equipment on the plant air supply.

7. Item KK - Expansion Tank Assembly - This unit should be located at windows S-101 and S-102.

8. Item U - M/S Manipulator Sleeves - These manipulator sleeves should be located at window S-101 and S-102. The height should be changed so that it is above the height of the door.

9. Item N - Receptacle for M/S Manipulator - There should be such a unit located at windows S-101 and S-102.

10. Item D - Switch Panel - This item should be raised 18 inches in order to leave more working space in the area around the window.

1425-L-205

1. The over-hang of the door structure, cell service area side, which supports the drive mechanism could be shortened approximately six (6) inches by relocating the gear reducer closer to the door space and using a gear reducer with the input shaft at a right angle of the output shaft. The input shaft should be pointed upward in a vertical position.

2. The Reelite Appleton take-up reel should be located at the same place for all doors in the 12 cells. In addition, all doors should be exactly the same to provide the possibility of interchangeability.

3. All 12 cells should be equipped with either plug or lift doors. There is no longer any requirement to differentiate between the eight (8) small cells and the four (4) large cells when the mirror image between the cold and engine cells was agreed upon. The high cost of a swing door and its additional operation incumbrances make this type of door highly undesirable.

4. Why is there no guard unit upon closing the door?

5. There must be openings provided in the doors for cells 166 and 167 to allow material flow across the cell service area. The method suggested is presented in Figure 2 which indicates a 12 inch square opening through which material can be passed using a track mounted remote operated cart. It is expected that this pass-thru can be fabricated of Meehanite and positioned prior to the pouring of the high density concrete doors themselves. This scheme is considered more desirable in cost, equipment and time than a flow which would utilize a rectilinear manipulator in both cells and passage of material across the cell service area utilizing the rectilinear manipulator located there.

1425-L-211

1. It is our feeling that the 2.250 inch O.D. 1/8 wall seamless tube is not strong enough to pour the concrete around. We suggest increasing the wall thickness.

2. We cannot accept the design of manual operation. We suggest if this unit is to be eventually motorized that everything after the bevel gear, No. L-152, be removed. This would include the second bevel gear, gear reducer, etc. The designed manual operation would require a total of 195 turns in order to move this door 30 inches. Any person that is going to have to crank 195 turns will think twice about using the system since two doors have to be opened to pass through one cell wall. Therefore, the purpose of the transfer system will be defeated.

The operations group could not tolerate the operating time for this unit, and therefore after completion of the facility and before the arrival of the first engine the units will be motorized.

3. We suggest that the 2 inch diameter bar 14 inches long should have an internal thread one inch long, material bearing bronze, and a clearance on the thread O.D. one inch long, material bearing bronze, with a clearance for the center 12 inches. This type of design would provide the required guidance with a reduction in friction force and would provide a cost saving.

4. The method of attaching the screw mechanism to the door is completely unsatisfactory. Your method costs at least another three (3) inches on each side of the cell. Why can't the wall penetration be moved down two (2) inches and closer to the cell wall approximately three (3) inches so it is on the center line of the door, thereby allowing us to move the end of the nut into an oversized hole in the door where it is pinned in position. The designed type of operation would cause this unit to be knocked out of line everytime it is opened after the unit is mechanized.

5. Is there allowance in the link belt, No. F-210, unit for the thrust load that is placed upon it?

1425-R-205

1. Why are all of the rear cell coors not of either the plug or the lift type? See note No. 3 on Drawing 1425-L-205.

2. It is suggested that the roads exit from the post-operative cells be changed as noted above on note No. 1 of Drawing 1425-C-201.

3. We did not see the necessity for a monorail system in order to move components, manipulators, etc., from the each and west gallery. Any person utilizing this system would not be saving themselves work, since he could use the doors to the outside and transfer by this method.

1425-R-207

1. Is there crane and manipulator interference with the cell service area lights?

2. Design of the plug drains is unacceptable as in previous correspondence on this subject.

1425-R-208

1. Design of the plug drains is unacceptable as in previous correspondence on this subject.

2. Why is it necessary for Phase II funds to be utilized in completing the passageway under the south gallery? This is only a requirement when additional facilities are provided on the E-MAD complex.

3. Why is a monorail system required for movement between the east and west gallery? See Note 3 on Drawing 1425-R-205.

4. Why are the HVAC ducts in the gallery located at such a low height? This space may be required for moving master/slave manipulators and other equipment. This area can also be utilized for running conduit and utility lines; therefore, the duct should be located as high as possible.

5. The gallery area is going to be very difficult to work in due to the close proximity of personnel, working on different equipment and components, being located so close together. Has any provision been made for soundproofing the walls or ceilings?

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/b

Cut out Filter Housing each side as shown to allow attaching handles to sides
of CWS filter

Figure 1
WANL-TME-278