

Mullinax Wash Architects, P.A.

*Larry*

December 5, 1986

Ms. Susan M. Gail  
Commander Atlantic Division  
Navy Facilities Engineering Command  
Norfolk, VA 23511-6287

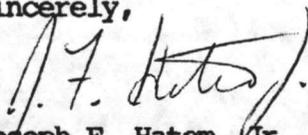
RE: Value Engineering Response for FY-88 MCON,  
Project P-256, Field Maintenance Shop  
Marine Corp Base, Camp Lejeune, NC

Dear Ms. Gail:

Enclosed please find an item by item review and evaluation of the Value Engineering Alternatives listed in the preliminary report provided by Edward J. Nichols & Associates, Inc. We stand ready to further discuss these items and await confirmation of the December 17, 1986 meeting.

Please advise should you require any additional information regarding this matter.

Sincerely,

  
Joseph F. Hatem, Jr., AIA  
MULLINAX WASH ARCHITECTS, PA

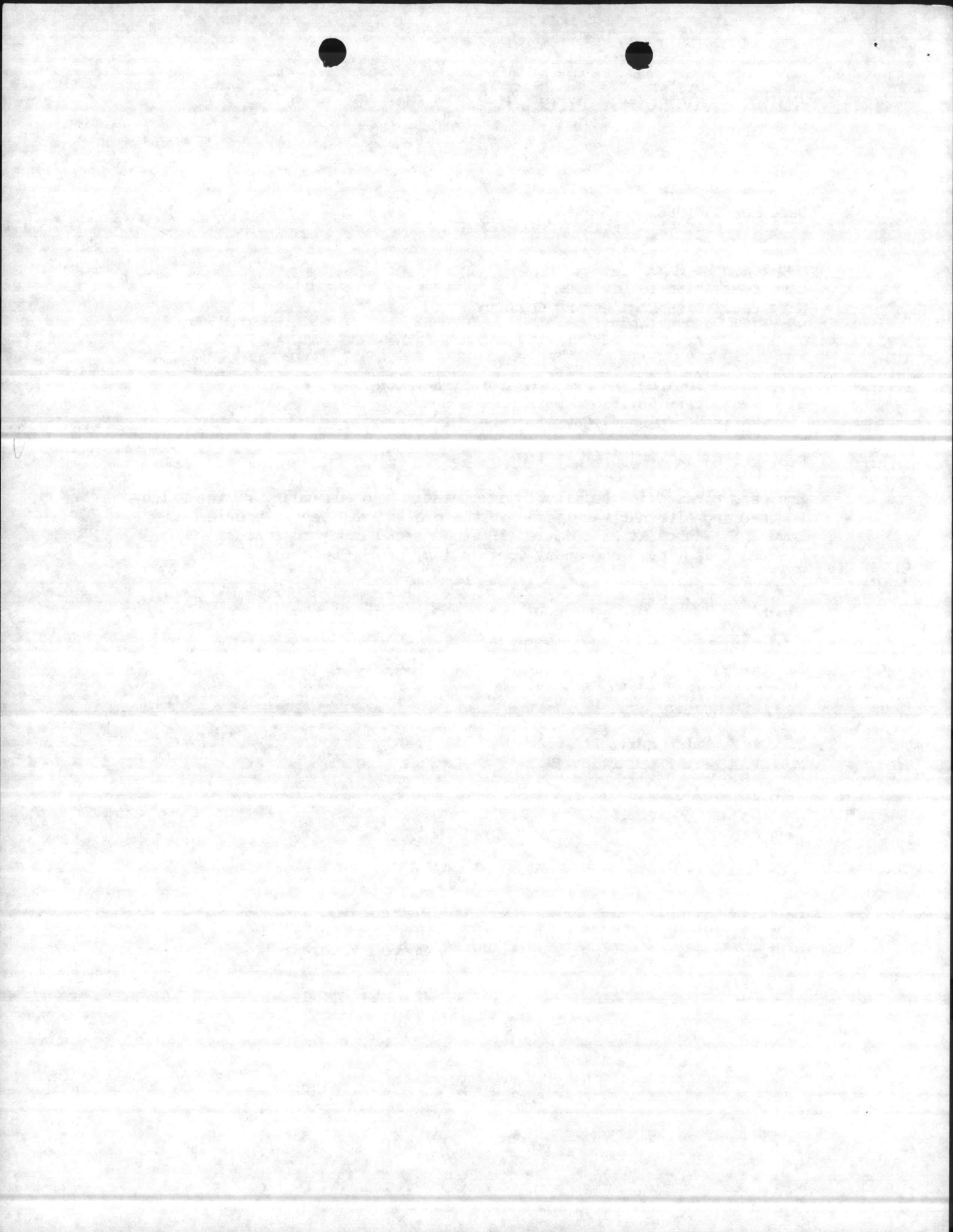
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Enclosure

cc Larry Brant  
L. K. Gardner, PE  
Ben Thompson

Charlie Hall  
Jim Story  
Steve Browning



## A. Architectural

## 2. Eliminate Locker Room areas:

The Locker Room area was a program requirement of the user as outlined in an attachment to Appendix A. The user requested showers and lockers for 108 males and 12 females. The elimination of these areas should be reviewed by the user to determine their necessity.

## 3. Eliminate Shower Areas:

See Comment Item #2.

## 6. Eliminate Small Arms Armory:

This space was a requirement of the user for the storage of Level A Packaged Weapons. This area is proposed to be used for the breakdown and repair of such weapons, and in addition, opticle siting equipment will be stored in this area in a commercial grade hot box. The elimination of this area may pose security problems with regard to weapons brought on site and may adversely affect the operations of the maintenance facility.

## 15. Eliminate Parapet:

Elimination of the parapet may result in some cost savings. It is our opinion, however, that the parapet as detailed adds to the aesthetic quality of the building by screening roof-top mechanical equipment and is in keeping with the design of adjacent facilities.

## 16. Use exterior down spouts:

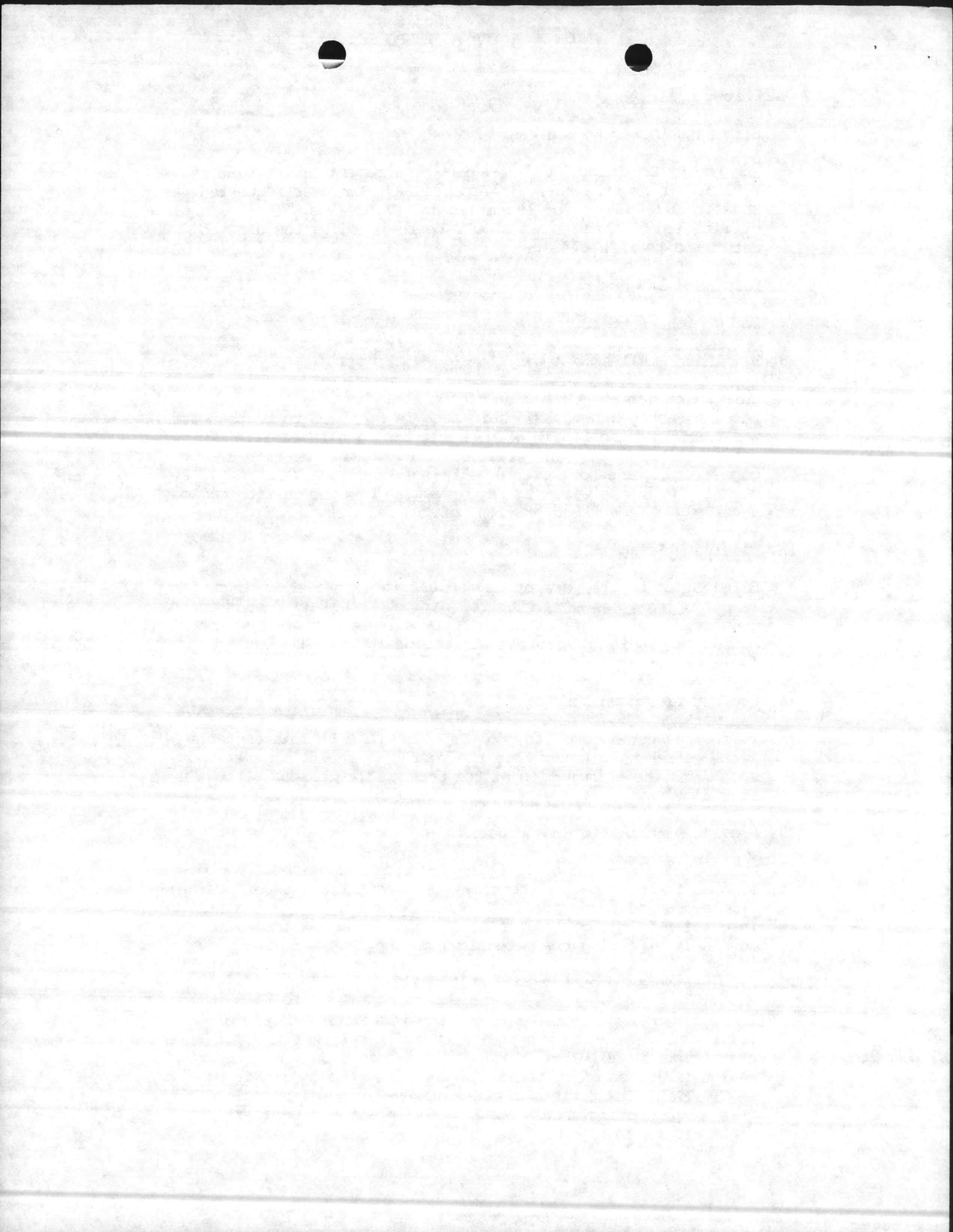
If the parapet is omitted, down spouts would be an acceptable means of removing water from the roof. We would, however, not recommend the elimination of the parapet for reasons stated in Item 15 above.

## 17. Provide alternate overhead doors:

Due to the placement of lighting fixtures and overhead equipment such as overhead reels, there may be a conflict between overhead type doors and these items. We would, however, agree that the insulation in the coil doors as shown could be omitted without adversely affecting the mechanical design.

## 22. Eliminate damp proofing and cavity wall:

It is our opinion that damp proofing in addition to rigid polystyrene insulation provides a superior system for vapor protection. In addition, this system is based on a wall system design indicated on criteria drawings provided by LANINAVFACENCOM to this office. However, the elimination of this damp proofing should not severely impair the weather tightness of this wall.



23. Eliminate the acoustical metal liner panel:

The purpose of the acoustical liner panel is two fold:

1. It provides a more durable interior finish than a gypboard backing.
2. Additional sound attenuation to this high noise area.

24. Provide water resistant drywall ceiling in toilet and locker rooms in lieu of plaster:

Agree that this item would be a cost savings, and this office recommends this substitution.

26. Eliminate cermaic tile:

From a maintenance standpoint, the elimination of this item is not recommended.

27. Reduce building height by 2' in non-lift work areas:

The proposed reduction in-building height may be feasible if the user is able to relocate vehicle lift and bridge crane and foresees no other special height requirement for the various types of vehicle services.

34. Eliminate roof insulation:

This is a D.O.D. requirement. We are also of the opinion that life cycle energy cost would increase if the roof insulation is omitted.

35. Provide built-up roof in lieu of EPDM single-ply roof:

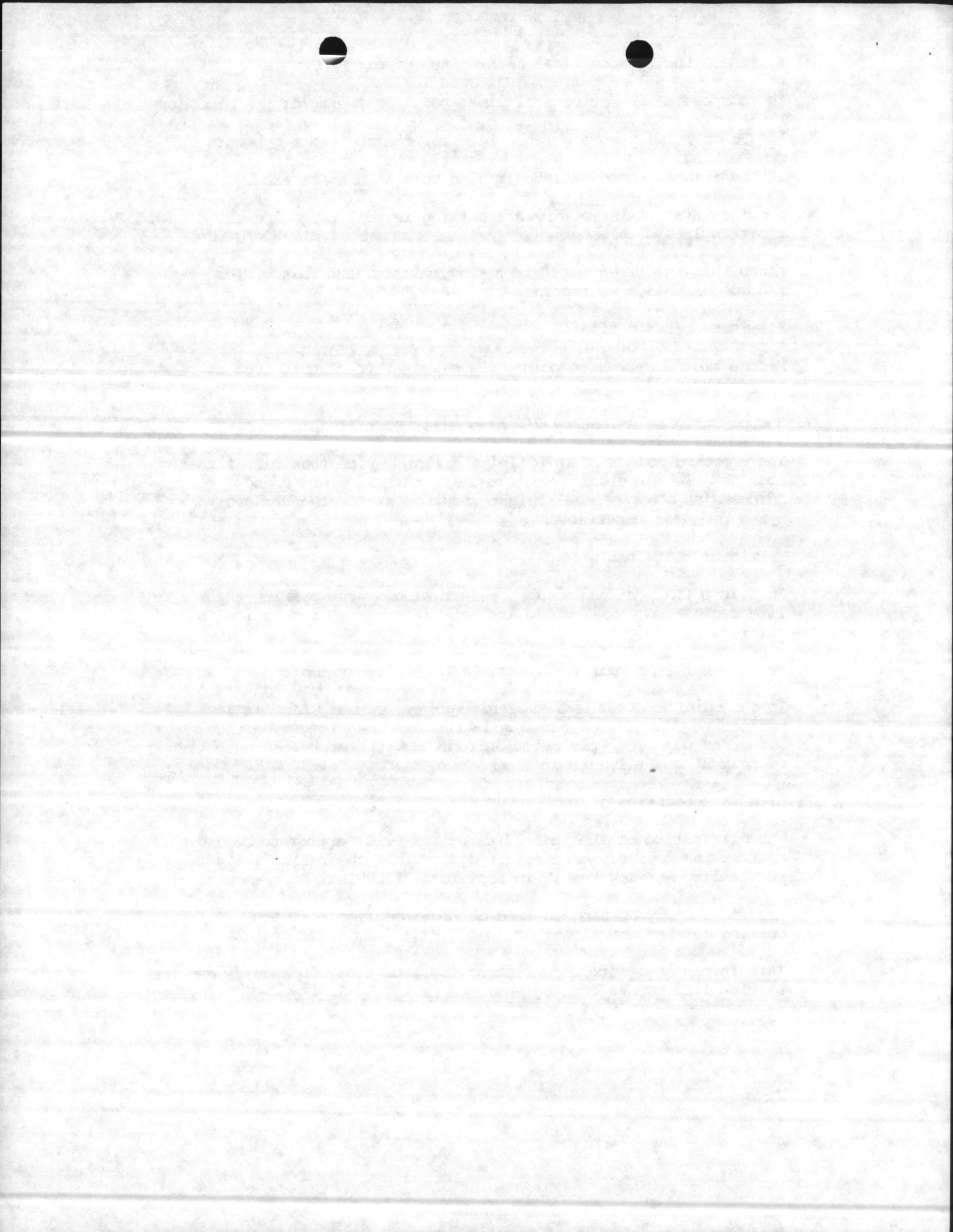
In our opinion, EPDM is a superior roofing system which is less subject to damage from abuse and will provide a longer service life than will four ply built-up roof. We, therefore, do not recommend this substitution.

37. Eliminate painting of roof structure:

The elimination of the painted structure would appear to be a cost saving measure, however, it will affect the reflectivity of the ceiling and may result in additional lighting requirements.

50. Provide a epoxy coating in lieu of fluid applied resiness coating for battery floor:

This item may provide some cost savings, however, durability and service life may be compromised.



## VALUE ENGINEERING RESPONSE

### S. Structural

3. Use pre-engineer structure for shop area with 26 gauge insulated roof and wall panels:

Pre-engineered metal building was not a part of the original criteria drawings provided by LANINAVFACENCOM for this office's use. While a pre-engineered metal building may be feasible, other facilities in the area of a similar size and nature do not utilize this system.

4. Turn roof framing 90 degrees, replace column lines to use masonry bearing walls where possible:

The original column grid was determined for two reasons.

1. The bay configuration.
2. Ease of construction.

The structure as designed could actually be completed and roof deck installed prior to any masonry work being started. Should masonry low-bearing walls be used, additional coordination would be required between the masonry work and the super-structure work. Thereby, possibly delaying construction.

12. Eliminate mild reinforcing in shop area slabs on grade:

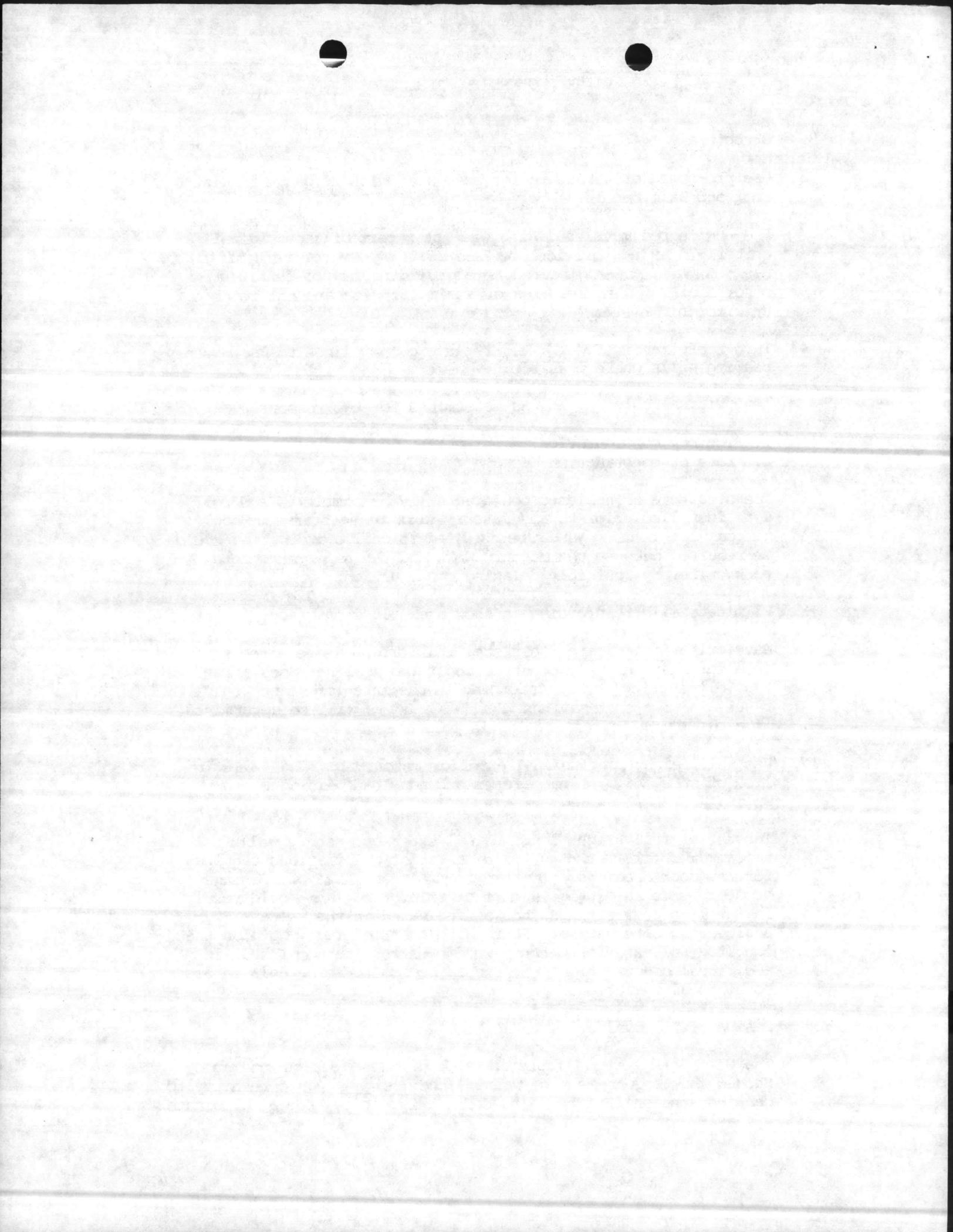
Navy criteria indicates that some reinforcing is required for interior slab on grade construction. The designer does agree that eliminating some reinforcing in the interior slabs would result in some cost savings. Further studies will be determined if a deduction in reinforcing is possible.

17. Use full height longitudinal exterior masonry bearing walls in lieu of steel beam/column frames and non-load bearing masonry walls:

The use of full height longitudinal exterior masonry walls is not recommended due to the number of exterior penetrations required for bay door openings. The large number and size of openings would require an extreme amount of reinforcing and would result in far less cost savings than as indicated in the value engineering alternative. It is also the designer's opinion that longitudinal exterior masonry wall construction may result in additional construction time and is prone to being delayed due to seasonal variations.

20. Design review/evaluate wind load:

The wind load formula found in DM-2 is a Navy design criteria. Should this requirement be waived, the designer would be happy to consider the uniform building code or the bocca code as alternate guides.



## VALUE ENGINEERING RESPONSE

### M. Mechanical

#### 2. Reduce Number of Floor Drains:

The designer agrees with reducing the floor drains to the minimum number required. We do not agree to reducing drains to a point where floor would need to be squeegeed for drainage.

#### 3. Use Floor Mounted Water Closets In Lieu Of Wall Mounted Water Closets:

The designer does not agree that the cost savings are justified. This is a service oriented building and will require considerably more than normal cleaning maintenance. The indicated advantage of reducing plumbing installation time is inconsequential. The amount of time required for installation of water closets is fractional compared to building schedule and would influence project completion time only in an extreme case.

#### 4. Use No-Hub Cast Iron Drain Waste and Vent in Lieu Of Service Weight Cast Iron:

The designer agrees with the use of no-hub cast iron waste piping but strongly recommends that it be used only below grade.

#### 5. Use PVC Drain Waste and Vent In Lieu Of Service Weight Cast Iron:

Because of the heavy vehicle traffice (tanks and trucks) expected in the area of this project, the designer recommends that PVC waste and vent piping not be used.

#### 6. Use Schedule 40 Galvanized Steel Water Pipe In Lieu Of Type L Copper:

Because of the corrosive and fouling possibilities when using galvanized steel pipe, the designer recommends that galvanized steel pipe not be used for domestic water.

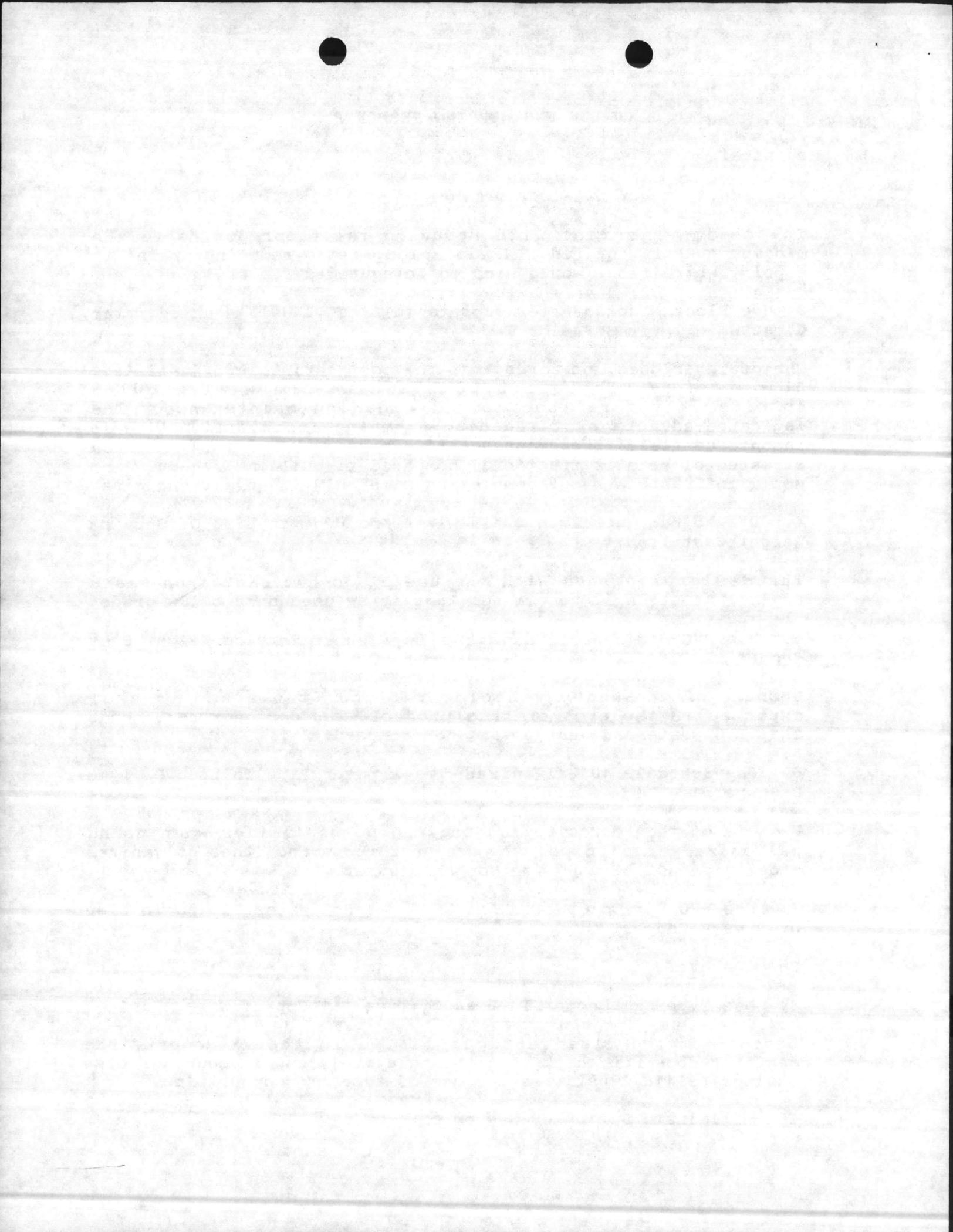
#### 7. Use PVD For Cold Water And CPVC For Hot Water Piping In Lieu Of Type L Copper:

See 5 above.

#### 8. Use Type 'M' Copper In Lieu Of Type 'L' Copper Water Piping:

Because of the disadvantages listed in the VE Report, the designer does not think that the relatively small amount of cost savings (\$1458) justifies the use of type 'M' copper pipe.

#### 10. Eliminate Sprinkler System:



Elimination of Sprinkler System should be a user decision.

14. Delete Hot Water to Wash Racks:

Deletion of hot water supply to wash racks should be a user decision.

22. Combine Lube Stations:

Combining lube station and reducing number from quantity indicated on drawings should be a user decision.

27. Use Oil Fired Boiler For Heat:

Use of boiler in lieu of steam from central plant should be a user decision. The designer takes exception with the VE Report indicating that reduced spare parts inventory and maintenance would be realized with the use of a boiler. The boiler would need to be steam to provide heating for make-up air. Therefore, replacement parts for steam specialities such as traps, etc. would still need to be stocked. Also additional, parts for a package type boiler would be required in inventory since they would be different in most cases from parts required for the large, high-pressure boilers in the central plant.

33. Evaluate Compressed Air System:

The designer will make further evaluation of the compressed air system requirements during a meeting with the user. If the amount of high pressure air outlets is small enough to warrant two systems, then the booster type system indicated will be used.

The revised cost estimate reduces the cost of the compressed air system. Therefore, the total life cycle cost savings indicated by the VE Report will be reduced.

35. Evaluate Engine Exhaust System:

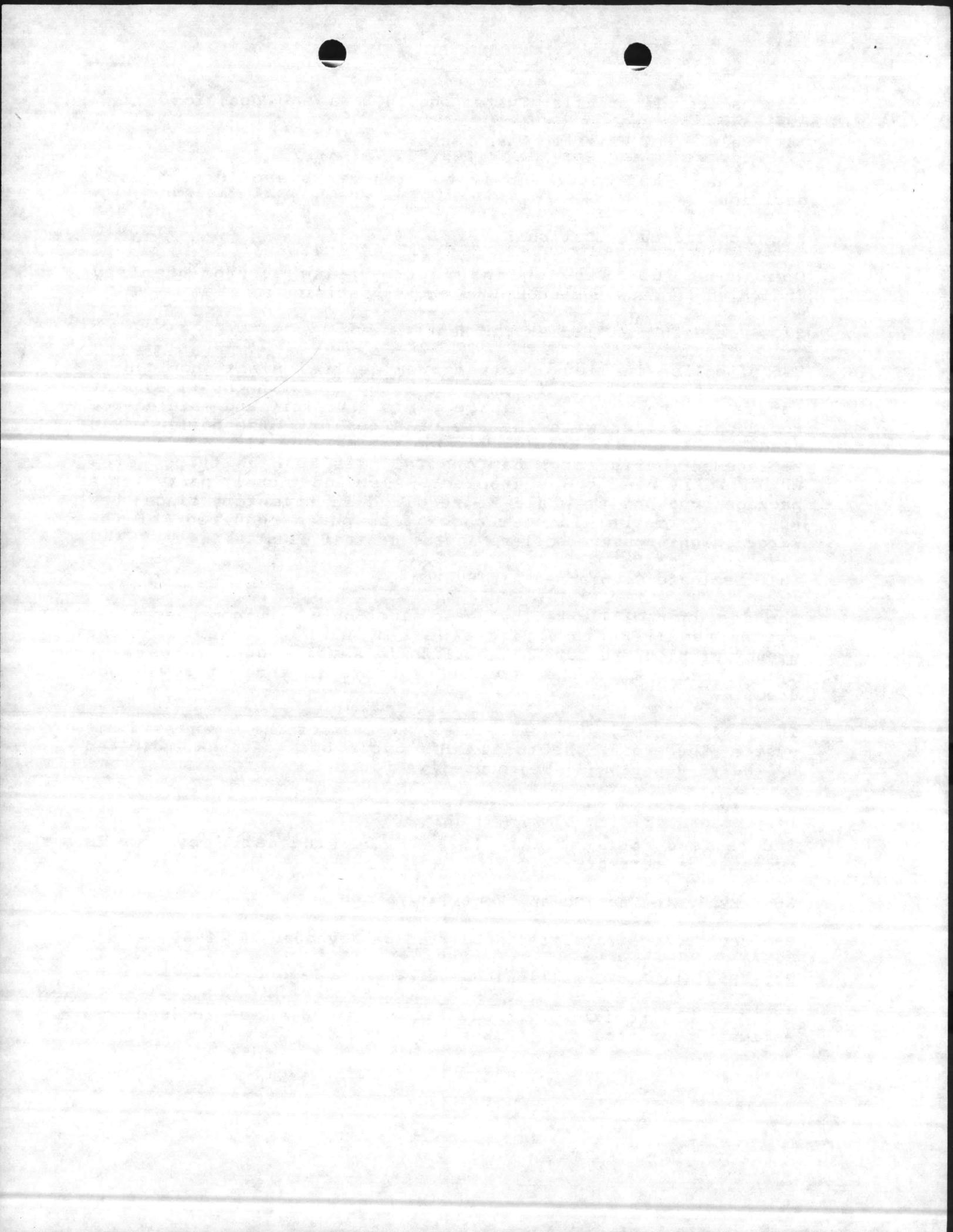
The revised cost estimate (\$29,920.00) indicated by the VE comments is correct.

36. Evaluate Heating and Ventilating System:

See revised cost estimate submitted on November 26, 1986.

37. Evaluate Air Conditioning System:

One 7.5 ton rooftop unit will be provided. See revised cost estimate submitted on November 26, 1986.



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DESCRIPTION:

V/E RESPONSE

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E. Electrical

1. Reduce Billing Service To 120/208 Volts:

Drawings of similar projects were provided the designer as a guide. These drawings did indicate 480 V. receptacles and 480 V. service. If the 480 V. receptacles are deleted, we would definitely change to a 120/208 V. service would be in order, however, we believe the savings would be somewhat less than \$6,975 due to a larger secondary service and additional circuits required in remaining 120/208 V. panels.

3. Change Lighting System From Metal Halide To High Pressure Sodium:

Based on our experience and our interpretation of Illuminating Engineering Society lighting handbook recommendations, the design foot candle levels should not be reduced.

We had previously considered high-pressure sodium lamps, but had decided against them since work on vehicles could very well involve color coded wiring. Identification of different colors of wire would be very difficult under high-pressure sodium lights.

7. Eliminate 480 Volt Receptacles In Maintenance Shops:

If only use of these 480 V. receptacles is for welders, we concur with the VE Report.

8. Eliminate Roll-up Door Motor Receptacles:

The electrical designer was not aware that an earlier requirement for motorized doors has been deleted. If doors are not motorized, we heartedly agree with the elimination of the wiring.

10. Reconnect Fire Alarm And Exit Sign:

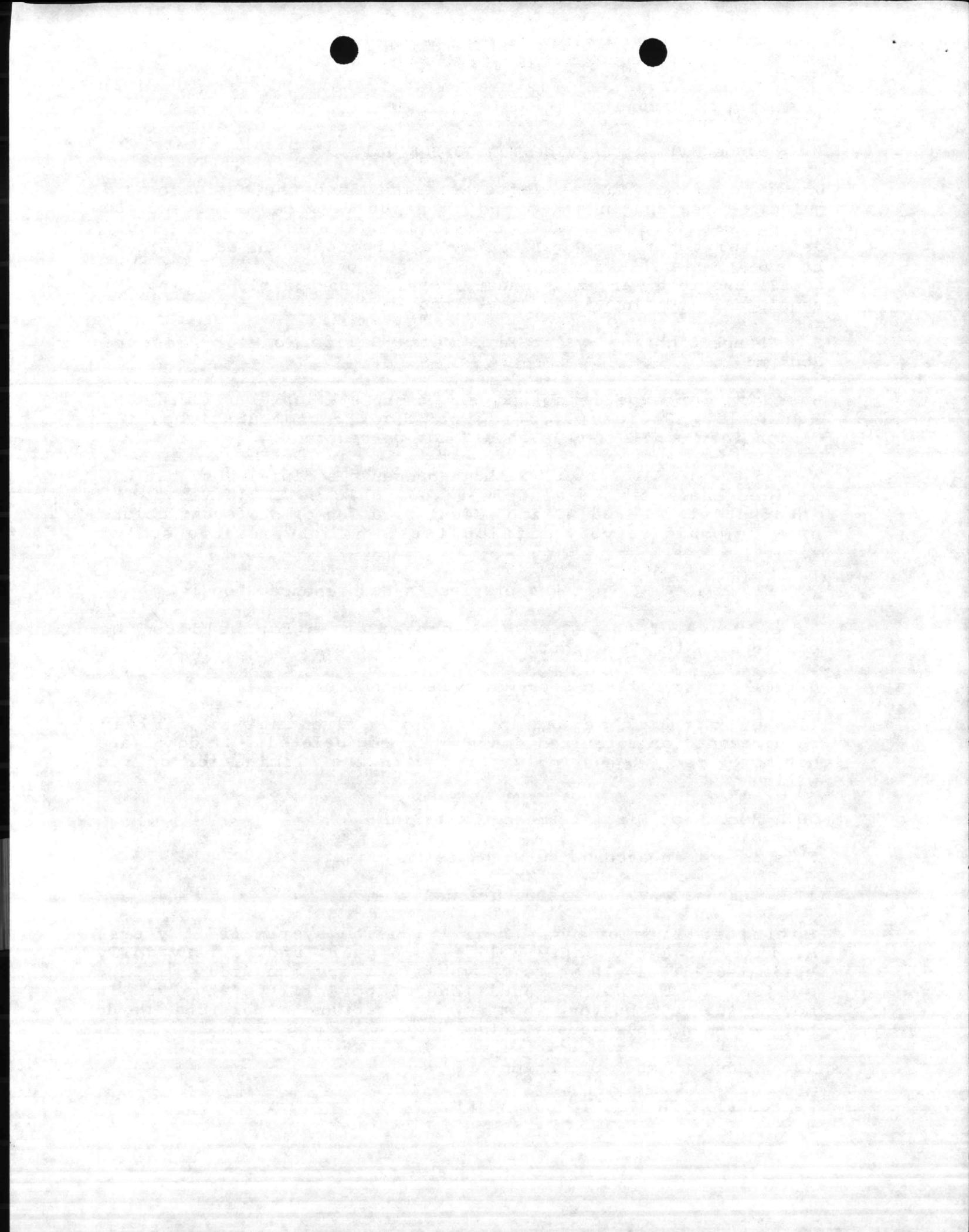
This is not in accordance with design criteria.

11. Change 24 V. DC Distribution System:

Estimated life of the DC distribution system is 25 years. Maximum published battery life is 5 years and battery dolly estimated life is 10 years. Movable battery and dolly will be subject to breakage. Additional labor will be involved in moving the rule battery to the work stations. Therefore, we do not recommend this substitution.

12. Reduce Number Of PA Amplifiers:

We concur with this recommendation.



13. Change Type 'E' Fixture To Strip Lamp Fixture Used In Storage And Mechanical Rooms:

We compare it with a recommendation in mechanical, electrical, and other little used rooms. Due to increased glare, we do not recommend strip fixtures in Parts Room and other frequently used rooms.

14. Use PVC Conduit In Lieu Of Rigid Galvanized Steel For Primary Service:

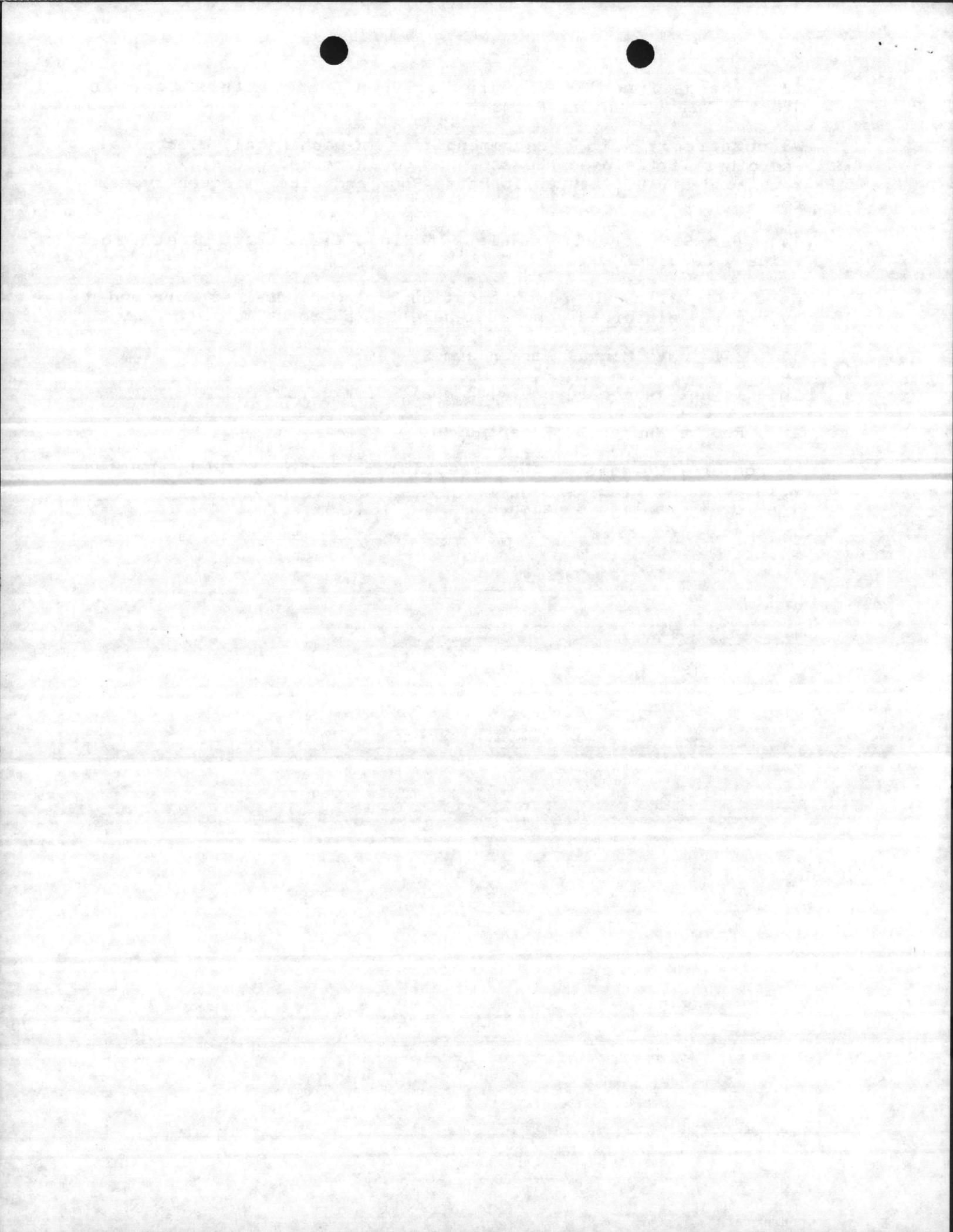
We concur with the recommendation if the conduit is surrounded by steel, reinforced concrete where tanks cross it.

17. Eliminate Manual Fire Alarm System:

This is not in accordance with design critiera.

18. Reduce Number Of Receptacles:

We concur that some of the receptacles mention could be deleted with no major negative impact. However, we question deleting the total quantity mentioned.



C. Civil/Site

1. Eliminate Landscaping:

Agree that this would be a cost-saving measure. The trees would, however, act as a buffer between the large paved areas and Sneads Ferry Road.

6. Reduce the amount of asphalt that concrete surface in the vehicle parking area and building access area:

The asphaltic surface was provided at the request of the user. This surface helps reduce dust during dry times and mud during wet times and helps control the possible environmental hazards created from oil and fuel leaks.

7. Eliminate the concrete paving in the vehicle parking area:

Concrete paving was provided at the request of the user. This paving is used only in areas which will be subject to tank traffic or other track type vehicle traffic. The designer would not recommend compacted earth in areas subject to track type vehicles.

17. Situate the building on the site to eliminate borrow materials:

This would appear to be a reasonable request and will be studied in more detail after the final topographical survey and soil report has been complete.

22. Change size of water main from 8" to 6":

The designer agrees that this pipe size may be reduced.

23. Use overhead primary power line and pole-mounted transformers:

The designer agrees that a cost savings would be realized by substituting a pole-mounted transformer in lieu of the pad mounted transformer shown. The designer would, however, argue that the pole mounted transformers are unsightly and would adversely affect the aesthetics of the project.

24. Use 6' x 20 ft. gravel strip around the perimeter of the paved area to receive surface run off in lieu of catch basins and storm drainage collection system:

The total elimination of the catch basin/storm drain system would not be recommended. It was anticipated that some storm drainage would be channeled to the oil separator to eliminate possible environmental hazards from fuel and oil present at the site. In addition, the designer feels that a continuous gravel drainage strip along the perimeter of the site would require additional maintenance and possibly would restrict the development of the surrounding property due to the fact that water would be diverted to adjacent sites.

