



DEPARTMENT OF THE NAVY

OFFICER IN CHARGE OF CONSTRUCTION
RESIDENT OFFICER IN CHARGE OF CONSTRUCTION
NAVAL FACILITIES ENGINEERING COMMAND CONTRACTS
CAMP LEJEUNE, NORTH CAROLINA 28542-5000

*File
@ inc. 300000
for 282*

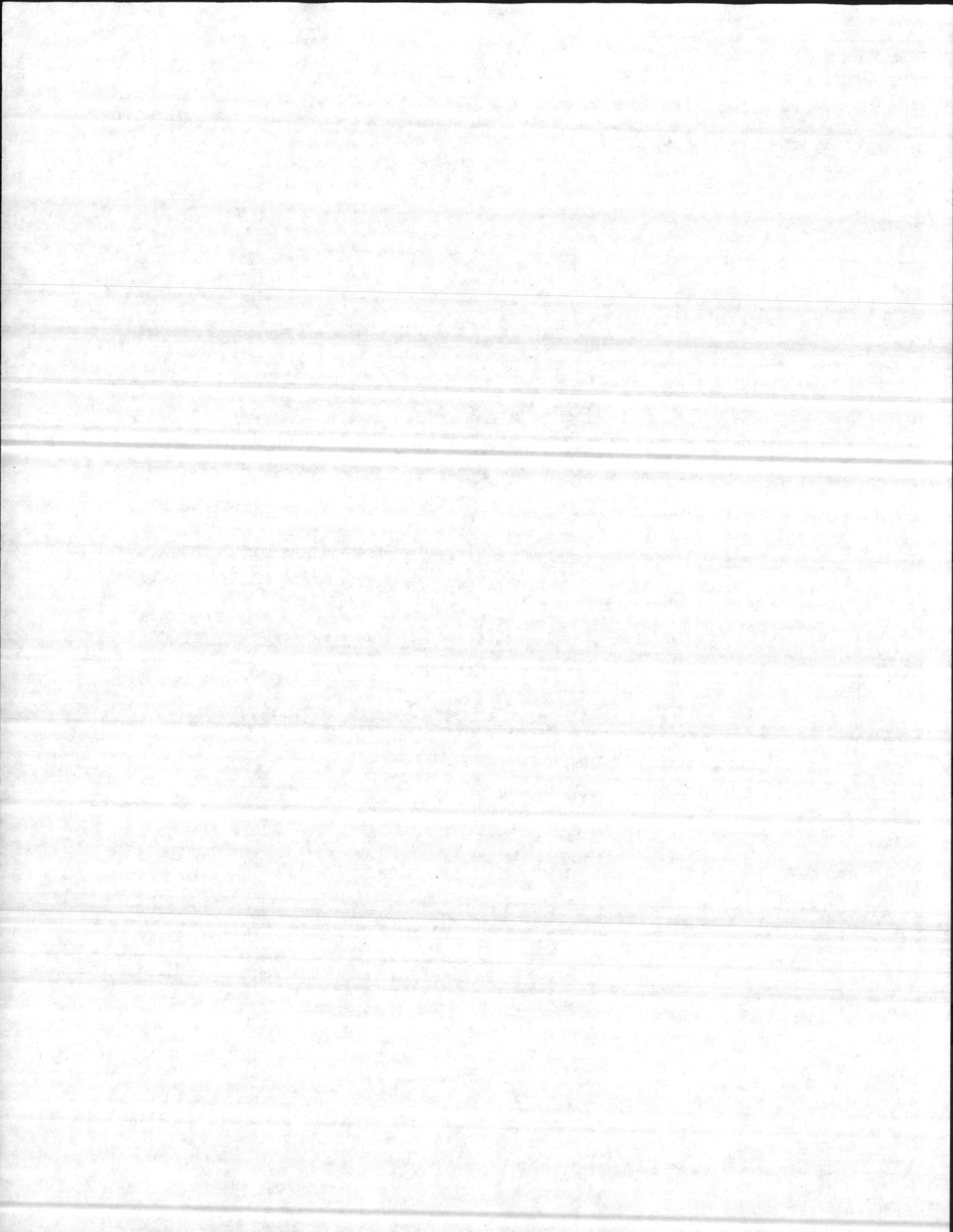
IN REPLY REFER TO:
N62470-82-C-2241
JAX/0099a/alk
10 December 1987

From: Resident Officer In Charge of Construction, Jacksonville, North Carolina Area
To: Commanding Officer, Marine Corps Air Station, New River, Jacksonville, North Carolina (Attn: S-4)
Subj: CONTRACT N62470-82-C-2241, ENLISTED DINING FACILITY ADDITION, MARINE CORPS AIR STATION, NEW RIVER, JACKSONVILLE, NORTH CAROLINA
Ref: (a) ROICC ltr N62470-82-C-2241 JAX/0070a/alk dtd 21 Oct 87

1. The reference forwarded the post-occupancy evaluation report and established milestones for completion of follow-on contracts. Funds in the amount of \$40,000.00 have been reserved at LANTDIV for completion of the work. However, all project funds have been pulled back by NAVFAC. Therefore, the timeframe for obtaining the funds will be more lengthy than anticipated. You will be notified immediately upon receipt of the funds and milestones will be re-established for completion of the work.

Sincerely,

VANN MARSHBURN, P. E.
By direction





DEPARTMENT OF THE NAVY
OFFICER IN CHARGE OF CONSTRUCTION
RESIDENT OFFICER IN CHARGE OF CONSTRUCTION
NAVAL FACILITIES ENGINEERING COMMAND CONTRACTS
CAMP LEJEUNE, NORTH CAROLINA 28542-5000

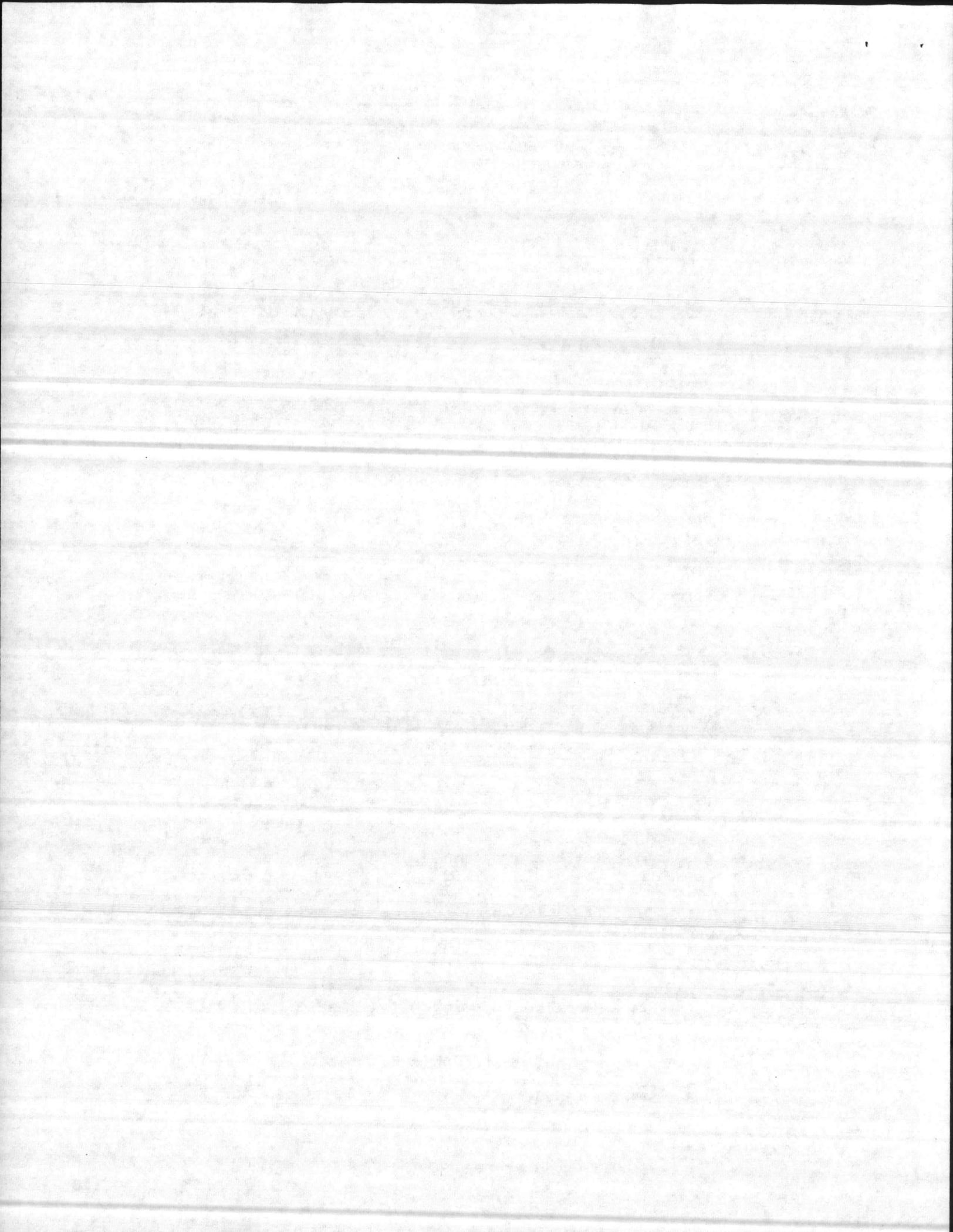
IN REPLY REFER TO:

N62470-82-C-2241
JAX/0070a/alk
21 October 1987

From: Resident Officer In Charge of Construction, Jacksonville, North Carolina Area
To: Commanding Officer, Marine Corps Air Station, New River, Jacksonville, North Carolina
Subj: POST-OCCUPANCY EVALUATION OF CONSTRUCTION; CONTRACT N62470-82-C-2241, ENLISTED DINING FACILITY ADDITION, MARINE CORPS AIR STATION, NEW RIVER, JACKSONVILLE, NORTH CAROLINA
Encl: (1) Evaluation Report dated 13 October 1987
Ref: (a) Meeting between LTCol Dryer, Mr. F. Acosta, Mr. V. Marshburn and Mr. J. Cotton on 15 October 1987

1. The post-occupancy evaluation report for Building AS-4012 is forwarded as enclosure (1). The following comments are provided for each of the items addressed in the report:

- a. Items 2(a), (b), (e), are self-explanatory and require no further action by the ROICC.
- b. Item 2(c), Site Grading, was discussed during reference (a) and it was agreed that a small purchase contract would be pursued to correct this problem. In addition, new sidewalks will be added to reflect actual traffic patterns.
- c. Item 2(d), Ventilation, was also discussed during the reference. It was agreed that the vegetable prep area has to have relief from the excessive high temperatures. A small purchase contract is being formulated to correct this problem. The repair/adjustment of the units over the scullery areas can be made by Base Maintenance personnel.
- d. Item 2 (f), Skylight Condensation - During the reference, it was agreed that a reflective shade would be desirable. This office is currently pursuing the available options and will report back to the S-4 for concurrence. Procurement and installation will be by contract.
- e. Item 3 (e), Cracks in Atrium Gypsum Board - These areas will be repaired and painted by contract.
- f. An additional concern not identified on the report is the continued maintenance problems with the pump in the grease pit. This pump will be replaced by contract.



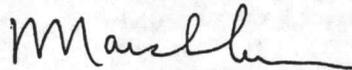
Subj: POST-OCCUPANCY EVALUATION OF CONSTRUCTION; CONTRACT N62470-82-C-2241,
ENLISTED DINING FACILITY ADDITION, MARINE CORPS AIR STATION, NEW RIVER,
JACKSONVILLE, NORTH CAROLINA

g. The remainder of the items identified in paragraph 3 of the report
require no additional action.

2. The milestones for the accomplishment of the above mentioned contracts are
as follows:

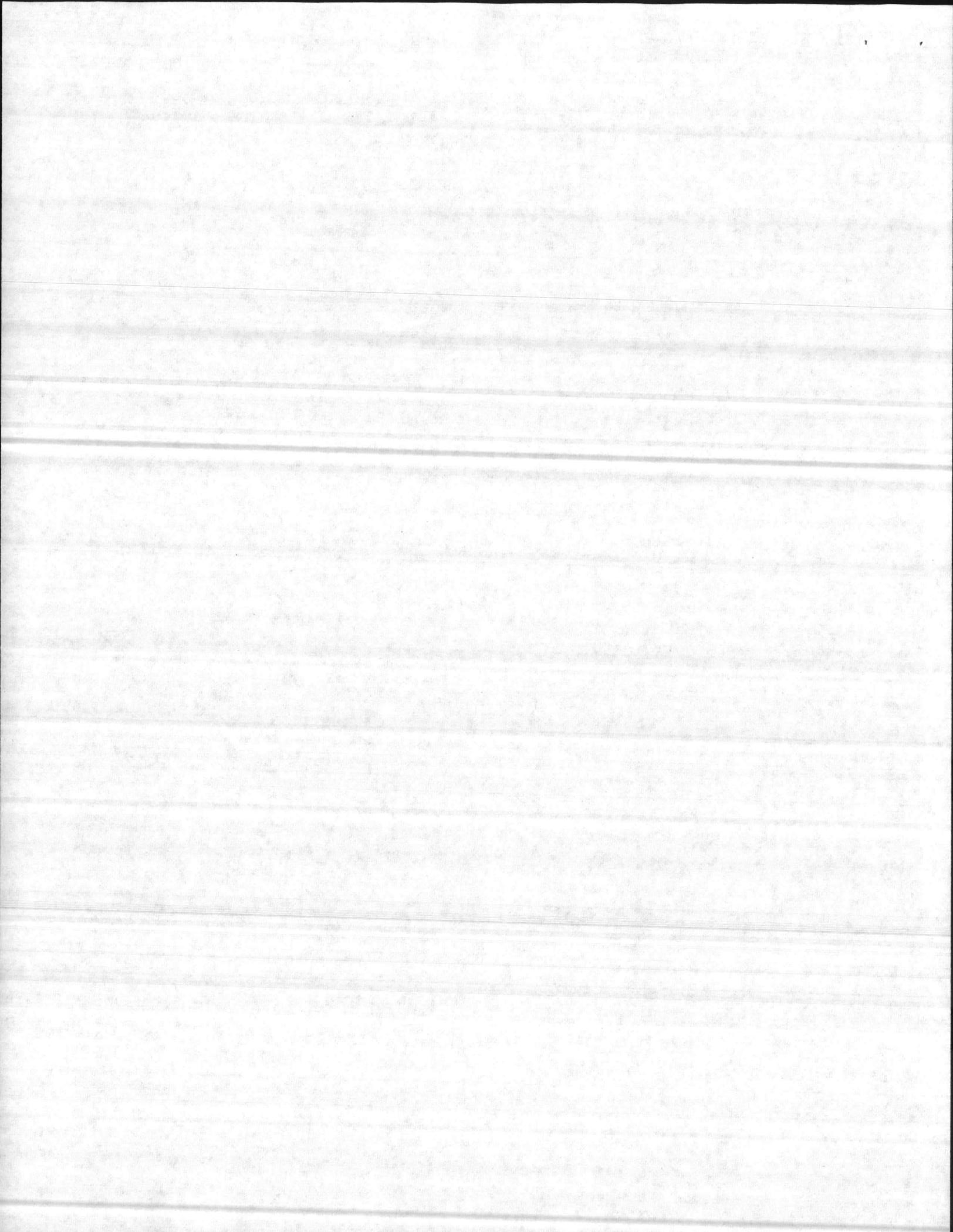
Scope Meeting with S-4:	1st week of November 1987
Design Completion:	27 November 1987
Award Contracts:	1 January 1987
Contract Completion:	1 April 1987

4. It is hoped that this schedule of events will meet with approval and that the
planned corrective measures will somewhat make up for the substandard quality
provided by the basic contract.



VANN MARSHBURN
By direction

Copy to:
LANTDIV Code 0525



65



DEPARTMENT OF THE NAVY

TELEPHONE NO.

ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511-6287

(804) 444-9864

IN REPLY REFER TO:

N62470-82-C-2241
0525

13 OCT 1987

From: Evaluation Team
 To: Resident Officer in Charge of Construction, Marine Corps Base,
 Camp Lejeune, North Carolina

Subj: POST-OCCUPANCY EVALUATION OF CONSTRUCTION CONTRACT N62470-82-C-2241,
 ENLISTED DINING FACILITY ADDITION, MARINE CORPS AIR STATION, NEW RIVER,
 JACKSONVILLE, NORTH CAROLINA

Ref: (a) ROICC Camp Lejeune Memo of 4 May 1987
 (b) TAB Report by Mr. Stan Parry (Fluid Services) of 2 Jun 1986
 (c) Mechanical Cooling Calculations, Page 14, of 19 Oct 1982

1. A post-occupancy evaluation of the subject facility was conducted between 5 and 6 August 1987 at the request of reference (a). The purpose of the evaluation was to review the overall design and construction of the facility with particular emphasis on known problem areas including floor materials, building cracks, and exterior fascia deflection.
2. After an opening meeting with the activity and preliminary examination of the facility, the team chose four major items on which to concentrate. Comments and recommendations are as follows:

a. Exterior Deflected Metal Soffit.

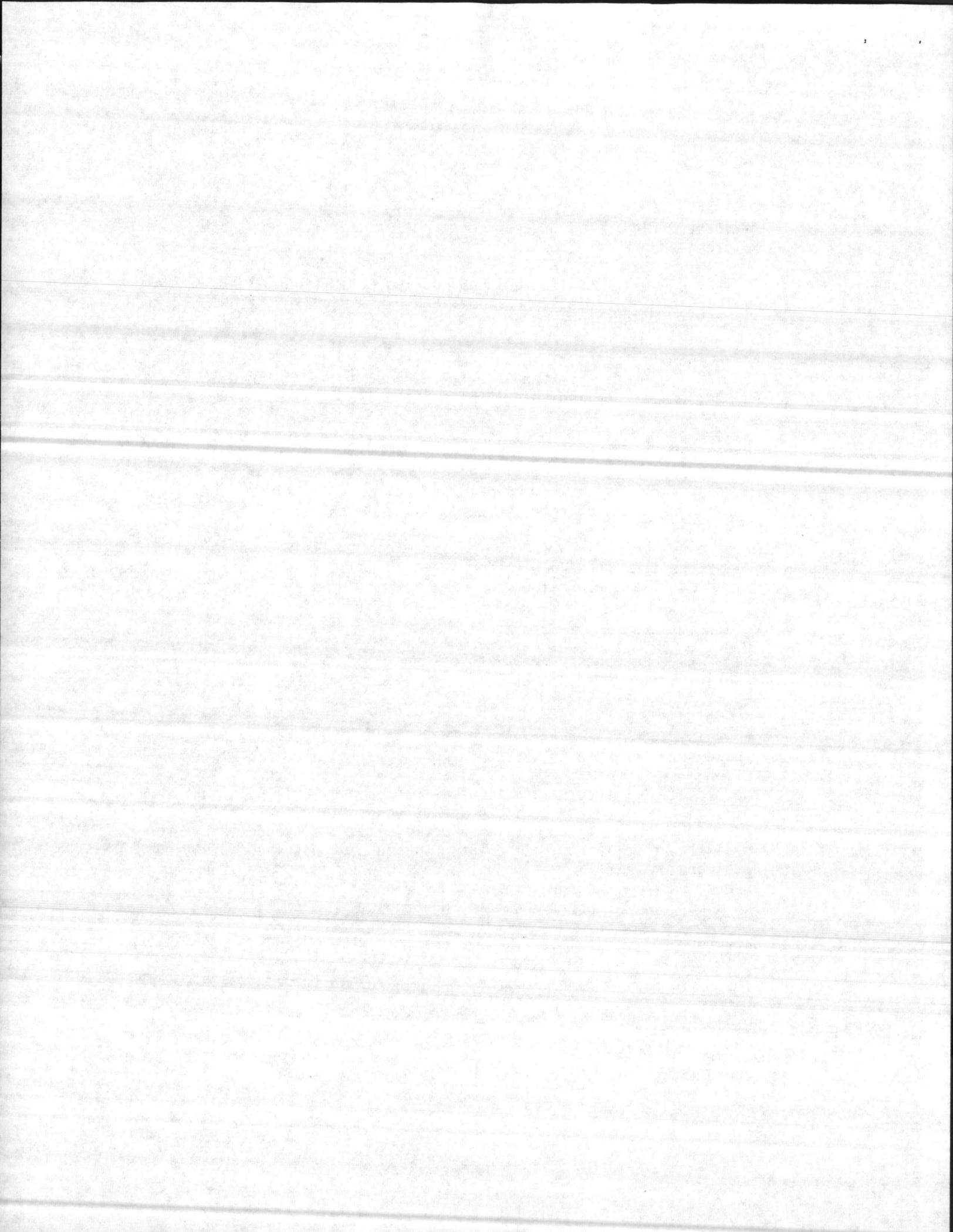
There was some concern about puckers and dimples in the building metal fascia material. It was felt that there might be some structural failure.

The design drawings, specifications, and shop drawings were reviewed after a visual inspection of the site. There were a few obvious dimples in the fascia. However, there was no structural problem.

The project architect tried to use a more economical building material to provide an interesting and pleasing appearance to the facility. He selected a prefinished metal siding, normally run vertically, and turned it 90 degrees to provide a strong horizontal statement. The concept was innovative and the design detailing was good. The product supplied was from one of the better manufacturers, and the shop drawing review was excellent, picking up and correcting a potential support and jointing problem.

Unfortunately, this material is a thin sheet metal and susceptible to construction abuse and installation warpage. Natural daylight is very unforgiving in picking out any imperfections in the installed surface.

Recommendation: Leave the fascia system as is. The additional rivets added during the construction were not really necessary, but since they have been installed, to maintain the watertight integrity of the joints, they should be replaced as required subject to annual maintenance surveys.



Subj: POST-OCCUPANCY EVALUATION OF CONSTRUCTION CONTRACT N62470-82-C-2241,
ENLISTED DINING FACILITIES ADDITION, MARINE CORPS AIR STATION, NEW RIVER,
JACKSONVILLE, NORTH CAROLINA

b. Quarry Tile Floor.

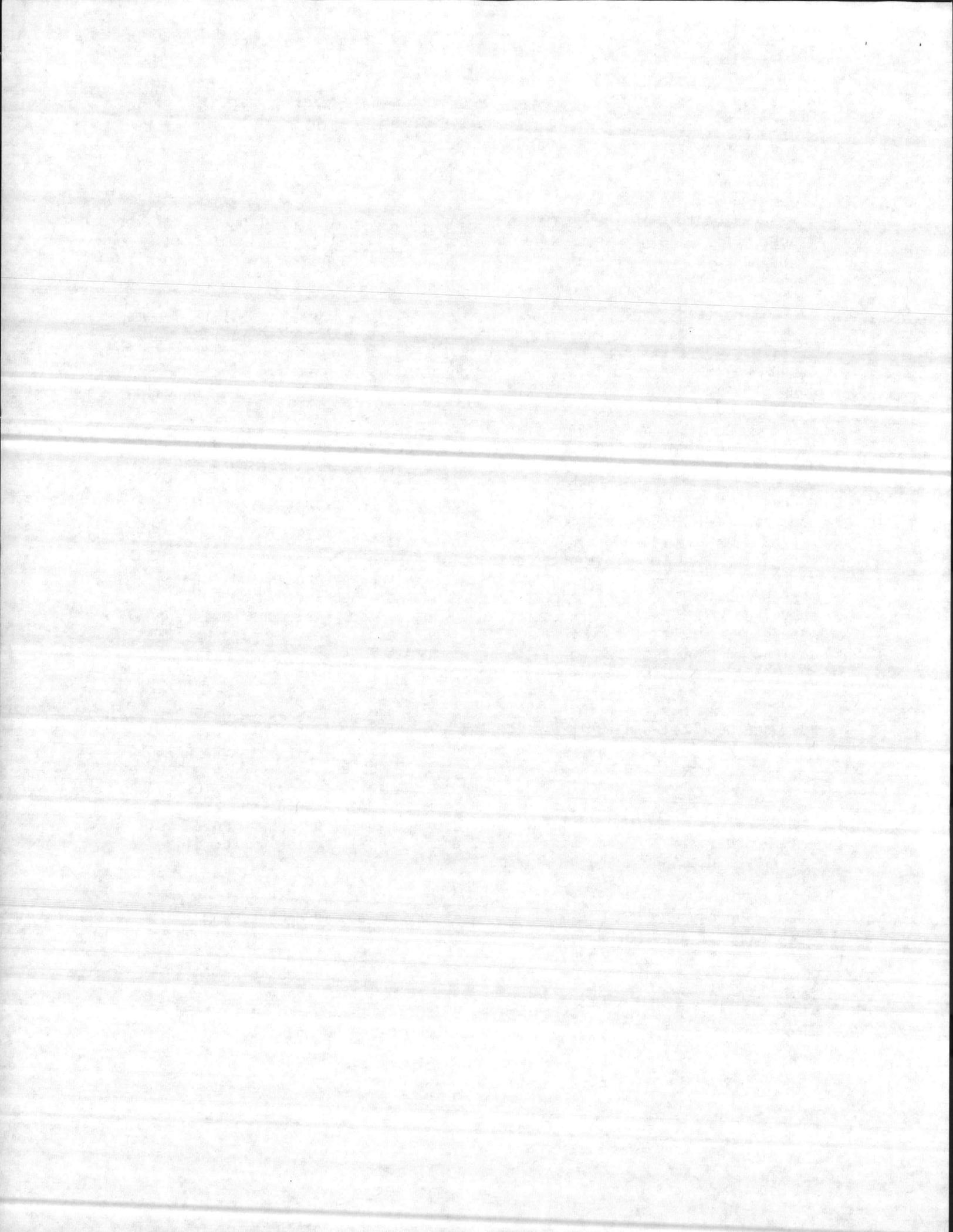
Problems with the quarry tile floor included tiles which were not level, cracked tiles, joints which were too deep and discolored joint material. Poor craftsmanship and a lack of quality control were the primary contributors to these problems.

The tile level problem had substantially been corrected by replacement of tiles. A few tiles remained out of level, but were considered a minor problem. A crack approximately 20 inches long was seen in the tile in the atrium hall. The crack was a reflection of stress relief from the underlying concrete slab. The period of stress relief is over and no further cracking is anticipated.

Specification Section 09310.7.5, through reference specification ANSI 108.6-76, required joints to be filled flush with tile edges with a contoured depression no greater than 1/16 inch. The actual depths of the joint depressions varied from 1/16 to 3/16 inches, with the majority of the joints in compliance with the specification. However, most of the deeper joints had been patched. This created an additional problem when the color of the joint material failed to maintain the same color as the patching material. The color differences may be attributed to variances in the mix proportions of the mortar/epoxy grout. The beige colored grout absorbed the fluids used to clean the floor and turned a dark color, while the patches were more resistant and retained their beige color. The activity expressed great displeasure with the sanitation problems created by the joint depressions and an aesthetic unpleasantness with the differing colors.

Recommendation: The joint depressions are not deep enough to permit an adequate bond between additional filler and original joint material. It would be cost prohibitive to sawcut and regROUT all the joints. However, selected joints, such as those with discolored patches, could be replaced to improve the joint depth situation and to gain a consistent joint coloring. A lesson was learned for future construction in that beige colored grout should not be specified for a dining facility. A dark grey, black, or brown grout would be more appropriate. Quarry tile remains an appropriate material for dining facilities due to its tough, wearing, easily cleanable surface.

c. Site Grading. The team witnessed water being discharged from roof drains on the south side of the facility without an accommodating drainage system. The water was ponding between the building and the sidewalk. Review of Sheet C-4 of the contract plans indicates site drainage was required. Drainage was to be accomplished by grading the site away from the building into a ditch beside the street. However, the new sidewalk had been constructed at a grade higher than the building, which is in conflict with the design drainage elevations, thereby preventing the water from reaching the ditch.



Subj: POST-OCCUPANCY EVALUATION OF CONSTRUCTION CONTRACT N62470-82-C-2241,
ENLISTED DINING FACILITIES ADDITION, MARINE CORPS AIR STATION, NEW RIVER,
JACKSONVILLE, NORTH CAROLINA

Recommendation: Install a drainage system to remove the ponding water. This could be accomplished by installing a catch basin and channeling the water through an underground pipe to the ditch. Some additional site fill and grading near the building would also be helpful. Since pedestrians are using a path under the building soffit as the natural thoroughfare, perhaps a concrete sidewalk should be installed in that path.

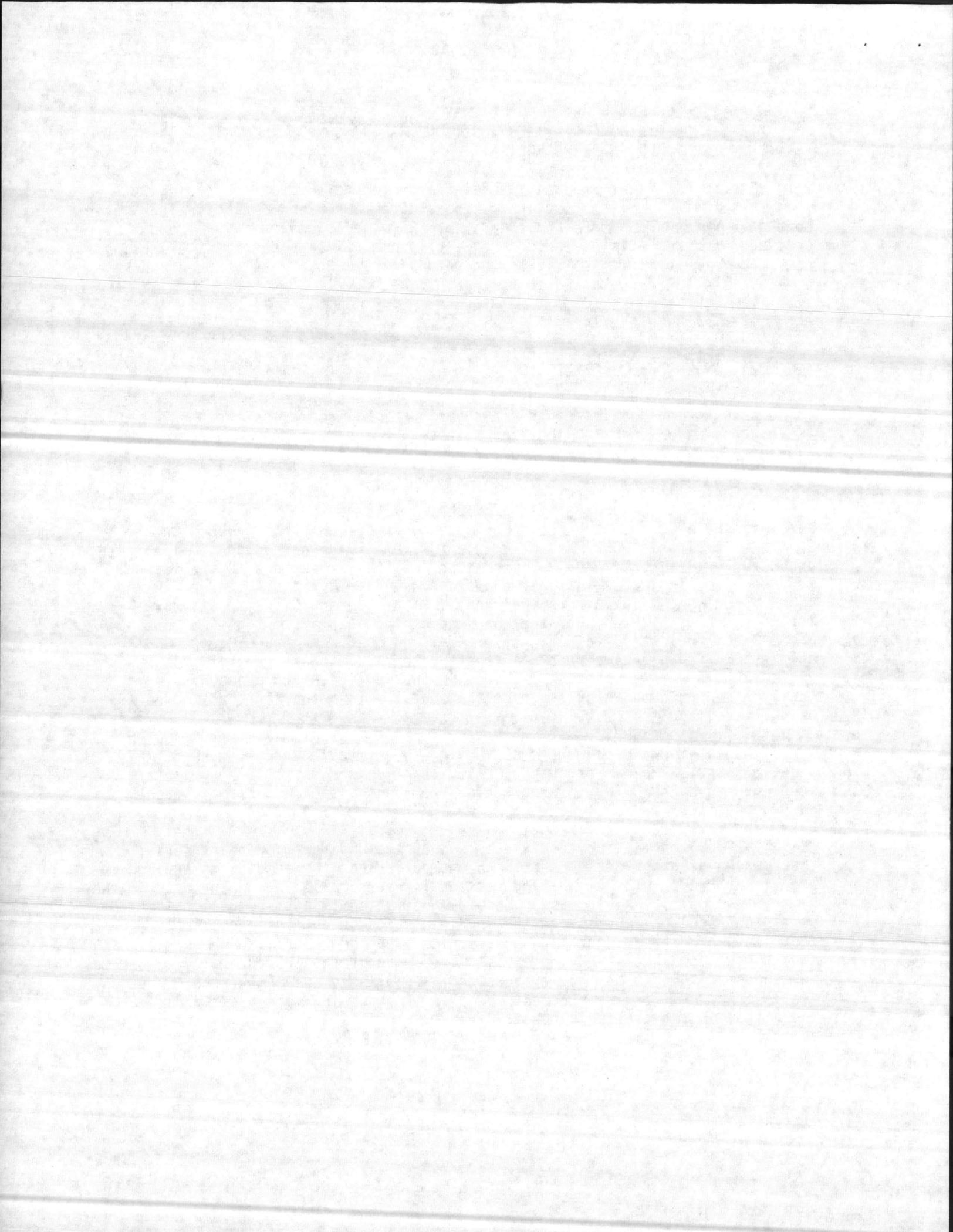
d. Ventilation.

Ventilation in the west scullery (room R-9) was imbalanced causing infiltration of hot moisture-laden air from the scullery into the air conditioned dining area. The exhaust fan on the dishwasher was inoperative and is, consequently, considered the cause of the imbalance. The east scullery (R-7) ventilation was also imbalanced (not to the same extent as the west scullery) but the outside make-up air fan and the dishwasher exhaust were functional.

Note that the exhaust fans for the sculleries (E-2 for R-9 and E-3 for R-7) are shown on sheets M-7 and M-8 to exhaust 600 CFM from the dishwasher. Sheet M-7 indicates 600 CFM make-up air to the make-up air units (MU-1 for R-9 and MU-2 for R-7) but sheet M-7 indicates 400 CFM. This is a contradiction. Reference (b) indicates that air flows exhausted by E-2 and E-3 were 710 and 735 CFM, while outside air to MU-1 and MU-2 was 700 and 615 respectively. Reference (b) indicates that the required design quantity of 600 CFM for E-2 and E-3 and the outside air flows for MU-1 and MU-2 were 600 CFM; 400 CFM shown on sheet M-7 should have been utilized for the make-up air quantity for MU-1 and MU-2 to ensure a negative pressure in the sculleries to preclude infiltration of hot, moist air from the scullery into the air conditioned area of the facility.

High temperatures were observed in the vegetable prep room, R-22. Sheet M-7 shows 225 CFM exhaust by E-1. This is inadequate to properly ventilate this area with internal gains from personnel and a 6 foot reach-in refrigerator.

Galley ventilation appears to be adequate and functioning properly; there was a negative pressure between the galley and the adjoining serving line area, as there should be. Galley personnel were complaining of the heat in the galley and that it should be air conditioned (which is not unusual). Air conditioning of galleys is not the usual practice because of excessively high installation cost and operating costs. The question was raised whether air conditioned air that was being exhausted (due to fresh air requirements) could be exhausted through the galley for partial cooling. Currently, the exhausted air is being utilized by the rest rooms and the serving line hoods and, therefore, is not available for galley use. This is a traditional/acceptable practice.



Subj: POST-OCCUPANCY EVALUATION OF CONSTRUCTION CONTRACT N62470-82-C-2241,
ENLISTED DINING FACILITIES ADDITION, MARINE CORPS AIR STATION, NEW RIVER,
JACKSONVILLE, NORTH CAROLINA

Recommendation: Repair/replace disfunctioning exhaust E-2. Rebalance R-7 and R-9 exhaust air to 600 CFM and outside air to make-up units to 400 CFM in order to ensure a negative pressure in the scullery. Increase ventilation in the existing vegetable prep room by installing a larger fan and duct.

e. Inadequate Hot Water.

Complaints were received of inadequate hot water. It was discovered that pot washing was being performed concurrently with dish washing and other hot water using activities. The activity was advised to disallow pot washing during dish washing activities (two machines, 6 gpm each) in that the pot washing machine uses a minimum of 10 gpm and in excess of 20 gpm for maximum use. The hot water system provided by the design appears to be adequate. However, the provided quantity of hot water is not adequate for operation of these three pieces of equipment at the same time.

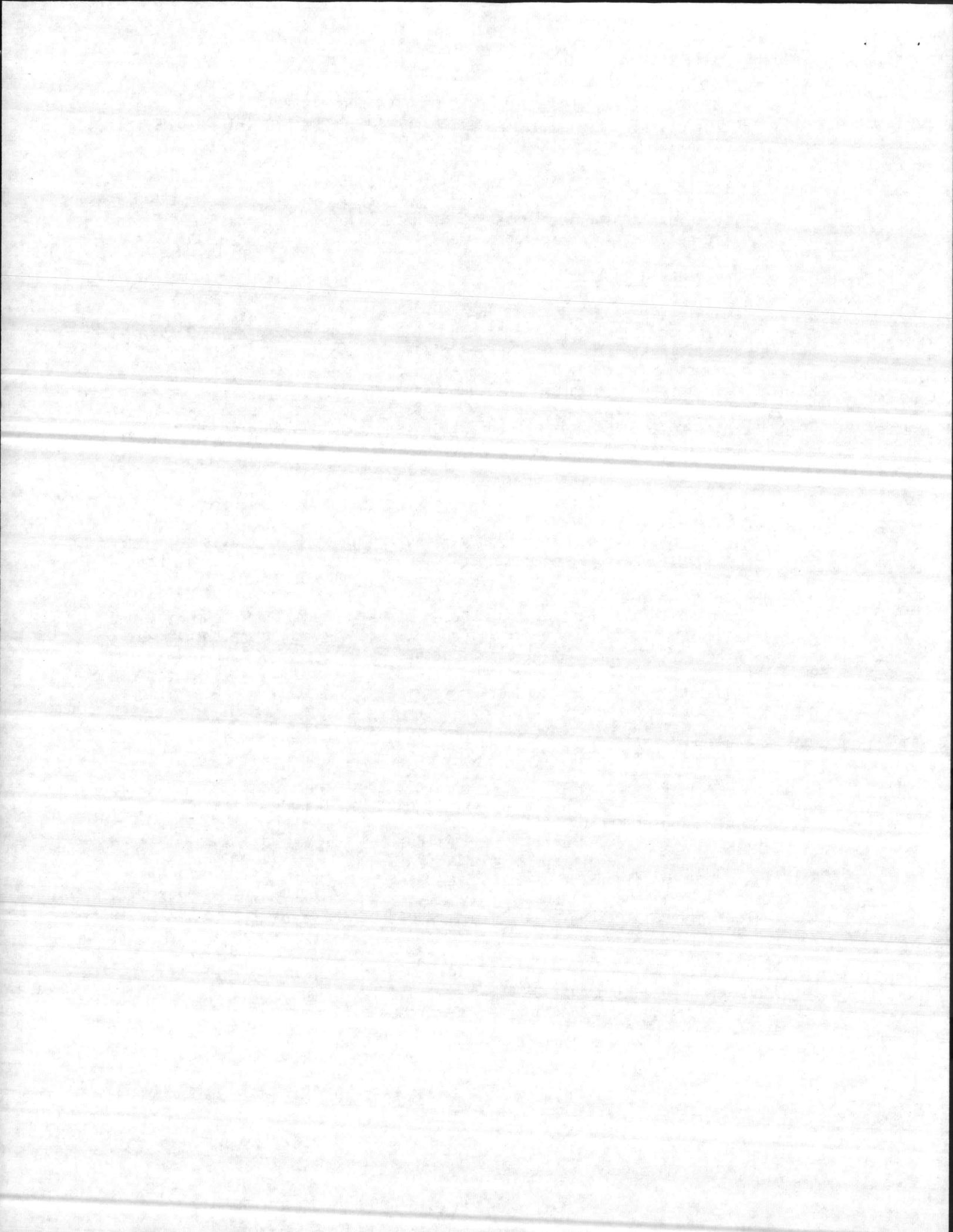
It was noticed that the existing 1,000 gallon hot water tank had been modified with the installation of a thermometer well and a well for the bulb of a thermostatically controlled steam valve. The modifications were made, according to the activity, after turnover, by Public Works forces. This tank is an ASME vessel pressure; it is imperative that proper design considerations, installation methods and a certified welder were utilized.

Recommendation: Certify that proper means, methods and documentations were utilized in modifying the hot water tank. Certify that the hot water tank was hydrostatically tested after modifications were made with appropriate documentation. If the above does not meet ASME requirements, it is recommended that the hot water tank be taken out-of-service until it can be recertified or replaced.

f. Skylight Condensation.

Complaints were received of excessive heat in corridor R-2 over which 770 sq ft of skylight were installed. Reference (c) indicates that this skylight contributes approximately 7 tons of cooling load to the facility. Apparent excessive heat in corridor R-2 is due to reflected (from the walls of corridor R-2) and incident direct solar radiation and not due to an excessive interior dry bulb temperature. It is the opinion of the team that the A/E used excessive glass in the ceiling (approximately 27% gross wall area). Although these areas may be pleasing to architectural taste, they are counter to practical (economical) energy utilization considerations.

Condensation was observed forming on the outside of the skylight in corridor R-2 due to high outside relative humidity. This condition is considered normal during the high temperatures and the humid summer season. Condensation was observed (in some areas) on the metal diffuser surfaces



Subj: POST-OCCUPANCY EVALUATION OF CONSTRUCTION CONTRACT N62470-82-C-2241,
ENLISTED DINING FACILITIES ADDITION, MARINE CORPS AIR STATION, NEW RIVER,
JACKSONVILLE, NORTH CAROLINA

adjacent to the sculleries and in a few areas on the perimeter diffusers in the dining areas. It appears that excessive moisture from the sculleries (causing a higher than designed interior relative humidity) is the cause of this problem and condensation will be reduced or disappear with proper balance of the sculleries.

Recommendation: Substantially reduce the effective transmittance of the skylight by the application of a solar reflective film; installation of reflective shades and/or the substantial reduction of the skylight area.

3. Some other items noted follow with comments:

a. The architectural coordination of exterior brick was not good. The existing brick is oversized (2 3/4 inches) while the new brick is regular sized (2 1/4 inches).

b. The activity did not like the architectural relief joint around the perimeter of the interior gypsum board ceiling.

c. Recommend joints in the atrium gypsum board area be refinished.

d. An alleged leak in the north wall of the east dining area appears to be a grease stain.

e. A crack in the north brick wall of the west dining area was caused by shrinkage and could have been negated by a design control joint at that location. However, it is not a source of concern and should not deteriorate any further.

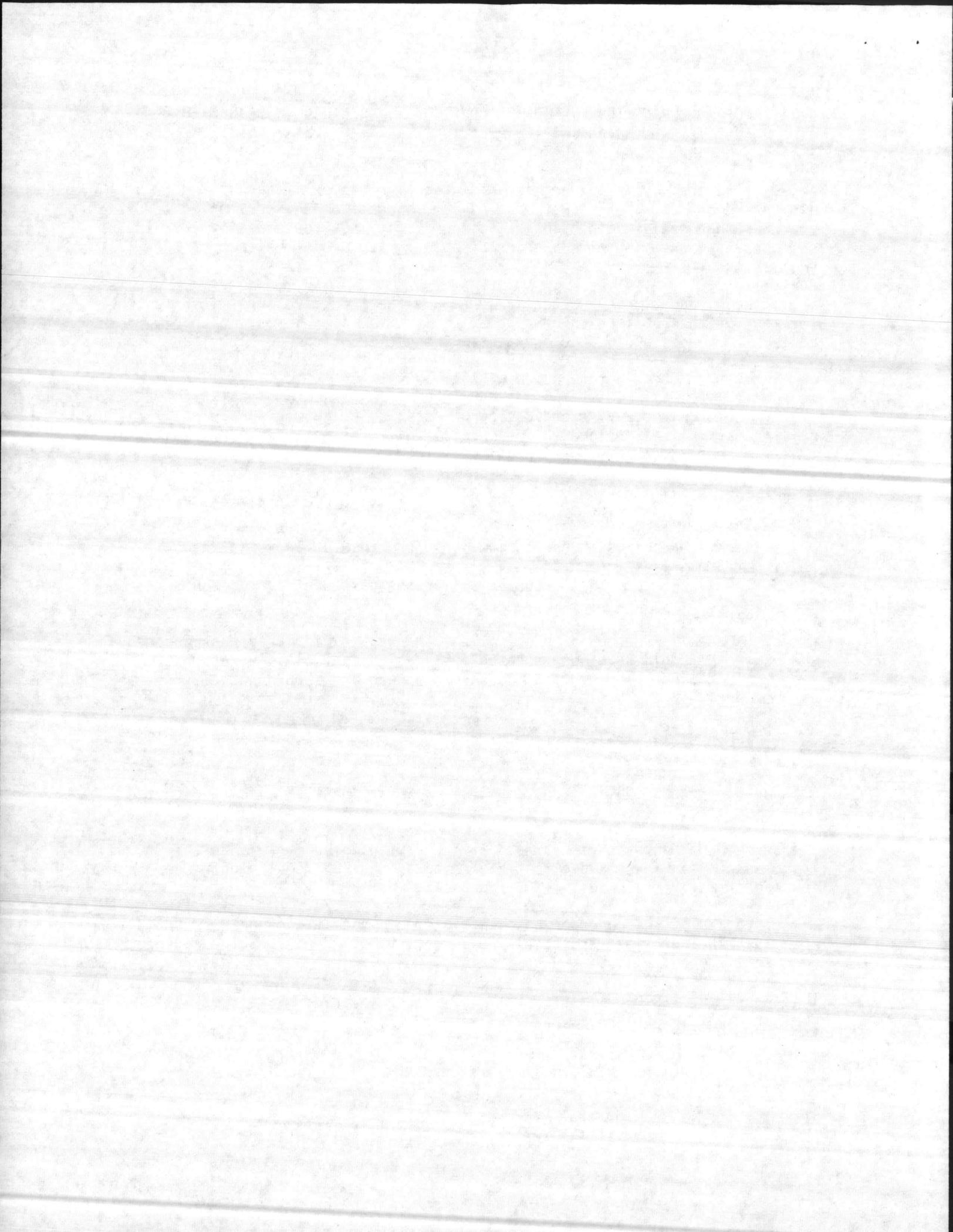
f. The addition was approximately 2 inches out of square (poor quality control).

4. The Contractor Quality Control (CQC) organization was reviewed with the following findings:

a. The contractor's vice-president was reviewing submittals as the CQC representative. This is a direct violation of the CQC requirements segregating contractor management and the CQC representative.

b. Copies of the contract documents had been submitted (and approved by the Architect/Engineer) as structural steel submittals. Copies of the contract documents are not allowed as submittals.

These deficiencies certainly contributed to the inferior quality of construction.

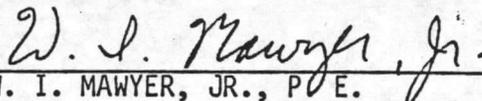


Subj: POST-OCCUPANCY EVALUATION OF CONSTRUCTION CONTRACT N62470-82-C-2241,
ENLISTED DINING FACILITIES ADDITION; MARINE CORPS AIR STATION, NEW RIVER,
JACKSONVILLE, NORTH CAROLINA

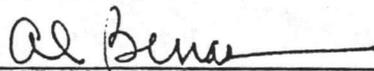
5. The team met with and reported our findings to the New River Commanding Officer, COL Waddell, and his staff on 6 August 1987. We expressed our desire to better satisfy the needs of the customer and to transfer the lessons learned on this project into improved quality on future facilities. COL Waddell was pleased with our attention to this project.

6. In summary, the facility had a well organized floor plan with pleasing aesthetics despite the poor construction quality. Lessons were learned concerning light colored floor grout, unsanitary joint depressions, and thin metal fascia installed in a horizontal direction. These lessons will be applied at this Command and will also be passed on to our dining facility experts at Naval Facilities Engineering Command.

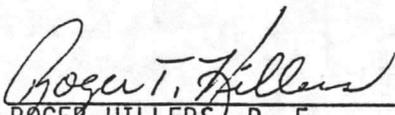
7. Special thanks to Mr. Vann Marshburn for the extra hours and outstanding coordination of the review.



W. I. MAWYER, JR., P. E.
Area Manager
Construction Division



AL BENAS, P. E.
Quality Control Engineer
Design Division



ROGER HILLERS, P. E.
Construction Engineering
Construction Division

