

PLAN REVIEW PROGRAM AT EL TORO

Many construction contracts that were awarded have had many deficiencies concerning fire protection features. The purpose of the program is to review all the contracts from the design stages to award. To follow the construction process from awarding of the contract to government acceptance of the facility.

1. Program Procedures:

A. Facilities Management Operations Division has the responsibility for the submitting of DD Form 1391's to CMC of facilities that are programmed for future maintenance and repair projects. The fire prevention section has gotten FMD to initiate a program that allows this fire department the opportunity to review these type projects for input of fire safety features prior to submitting to CMC. Our fire prevention personnel also submit work request to correct fire deficiencies found during inspections of facilities and then follow-up on them to make sure that they are included in project submittals to higher headquarters.

B. Our fire prevention section frequently visits the Engineering Division to determine what projects are presently under design. These visitation allowed the fire department to establish a rapport with engineering so that now projects can be more easily reviewed by the fire department.

C. The facilities management engineering division now submits their scopes of work to the fire prevention branch for approval prior to engineering division negotiations with architectural/engineering firms.

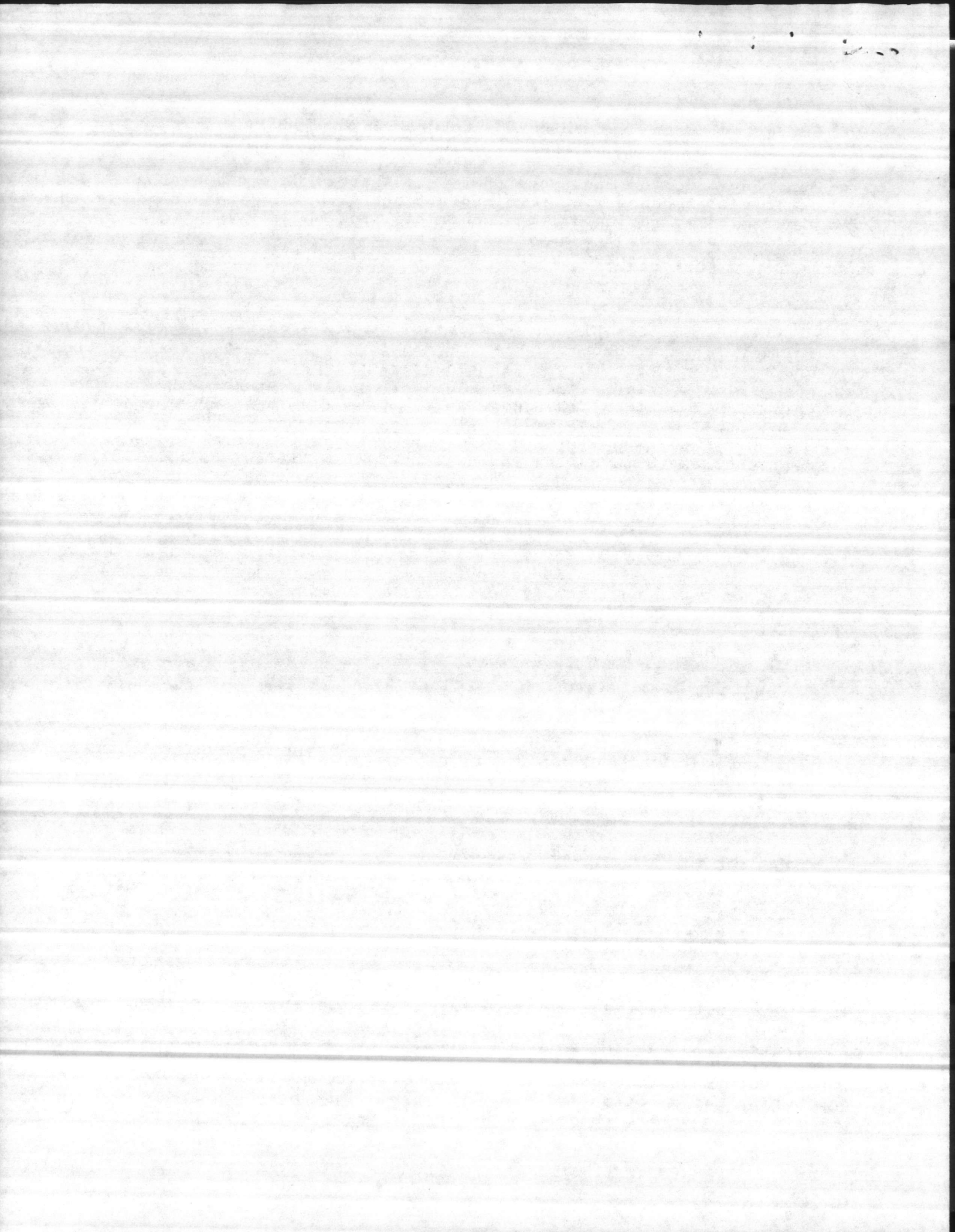
D. Projects are grouped into four categories, they are M-1, M-2, R-2 and MILCON. R-2 funding is for minor construction that includes new construction, alterations and improvements and is limited to \$135 K. M-1 and M-2 funding is for maintenance and repair of existing and is limited to \$3 million. Last is MILCON.

2. PLAN CHECKERS RESPONSIBILITY:

A. Reviews basis of design, plans, and specifications that are submitted in the various stages of the review process. Stages of contract review are Scope of Work, Basis of Design, 30%, 100% and Final.

B. Checks plans and specifications for proper fire protection features to include; fire compartmentation, adequacy of life safety features, addresses requirements for fire protection/detection systems, and other related fire protection features. (See enclosure 1)

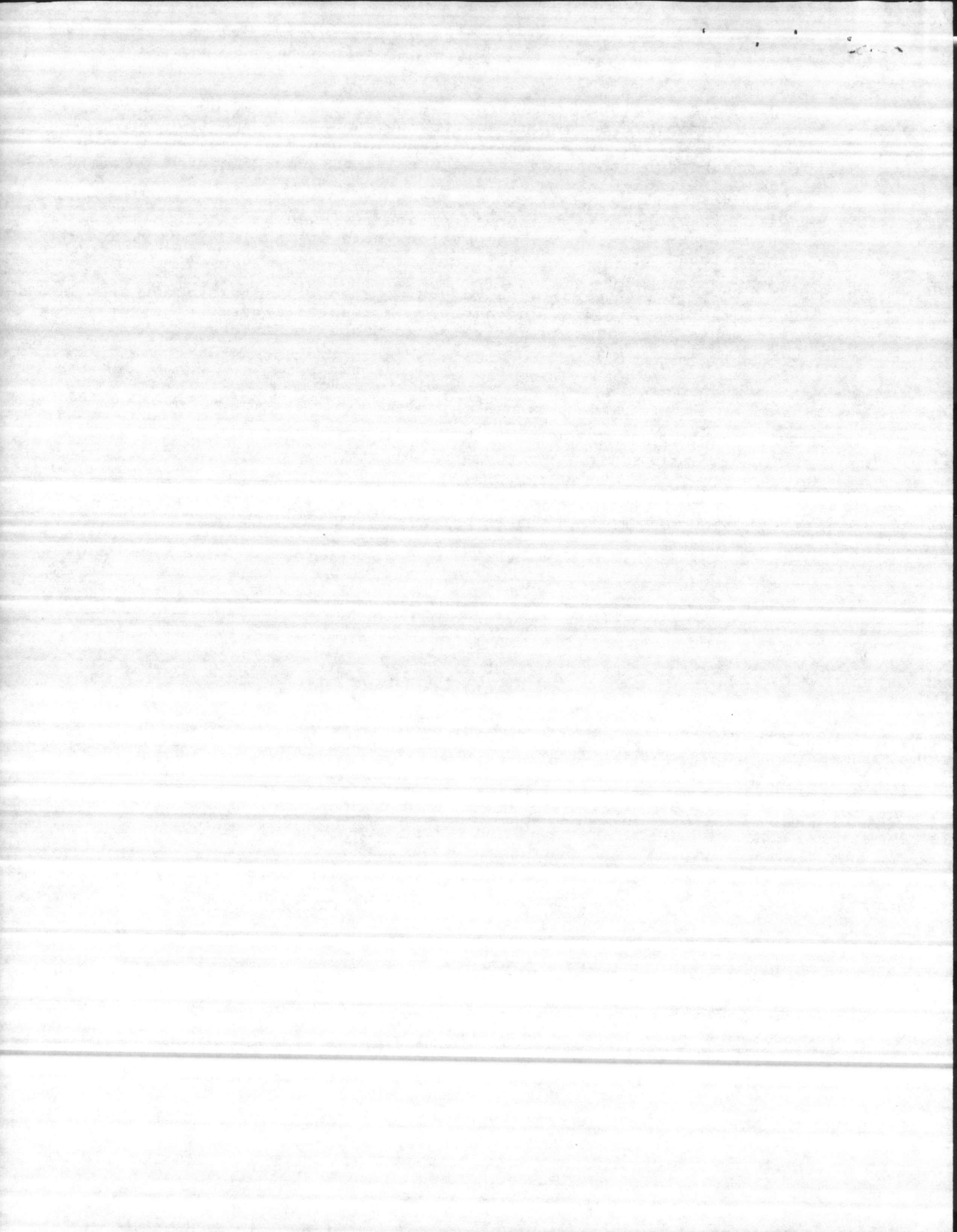
C. Submits reports of the review findings (11ND WESTDIV 11012/2b, Design Coordination and Review-Comments) to engineering division for inclusion in the contract (See enclosure 2).



D. Have developed a record keeping system of review folders for each project reviewed by contract number and title and then maintain the files and records for all construction contracts reviewed. The folders for each contract are segregated by year of contract number; ie, 84-C-XXXX, 85-C-XXXX, etc.

E. Make sure that the projects are reviewed at the final review to insure that all the recommendations made at the 100% review are incorporated into the contract.

F. Change specifications governing specific fire systems or other fire protection features to incorporate specialized equipment or requirements pertinent to our specific needs at El Toro.



UNITED STATES MARINE CORPS
Structural Fire Protection Division
Marine Corps Air Station
El Toro (Santa Ana), California 92709-5006

11320/6-1
1CH.P1

From: Assistant Fire Chief, Fire Prevention
To: MCAS El Toro Contractors

Ref: Military Handbook 1008A
MCO P11000.11A
StaO P11320.1G
National Fire Protection Association, Standard 241

FIRE PREVENTION AND FIRE SAFETY DURING CONSTRUCTION

PREFACE:

The requirements for fire safety and fire prevention during construction operations is vital to provide a fire free environment. This instruction will provide a basis to inform contractors of their requirements and responsibilities for fire safety, fire prevention and fire reporting procedures during construction aboard MCAS El Toro. This instruction shall be posted at each construction job site.

FIRE AND EMERGENCY REPORTING PROCEDURES

Contractor's telephones shall be connected to the station 9-1-1 system.

Emergency reporting procedures for fire, medical and police.

On-station telephones, dial 9-9-1-1.

Off-station telephones and pay telephones, dial 9-1-1.

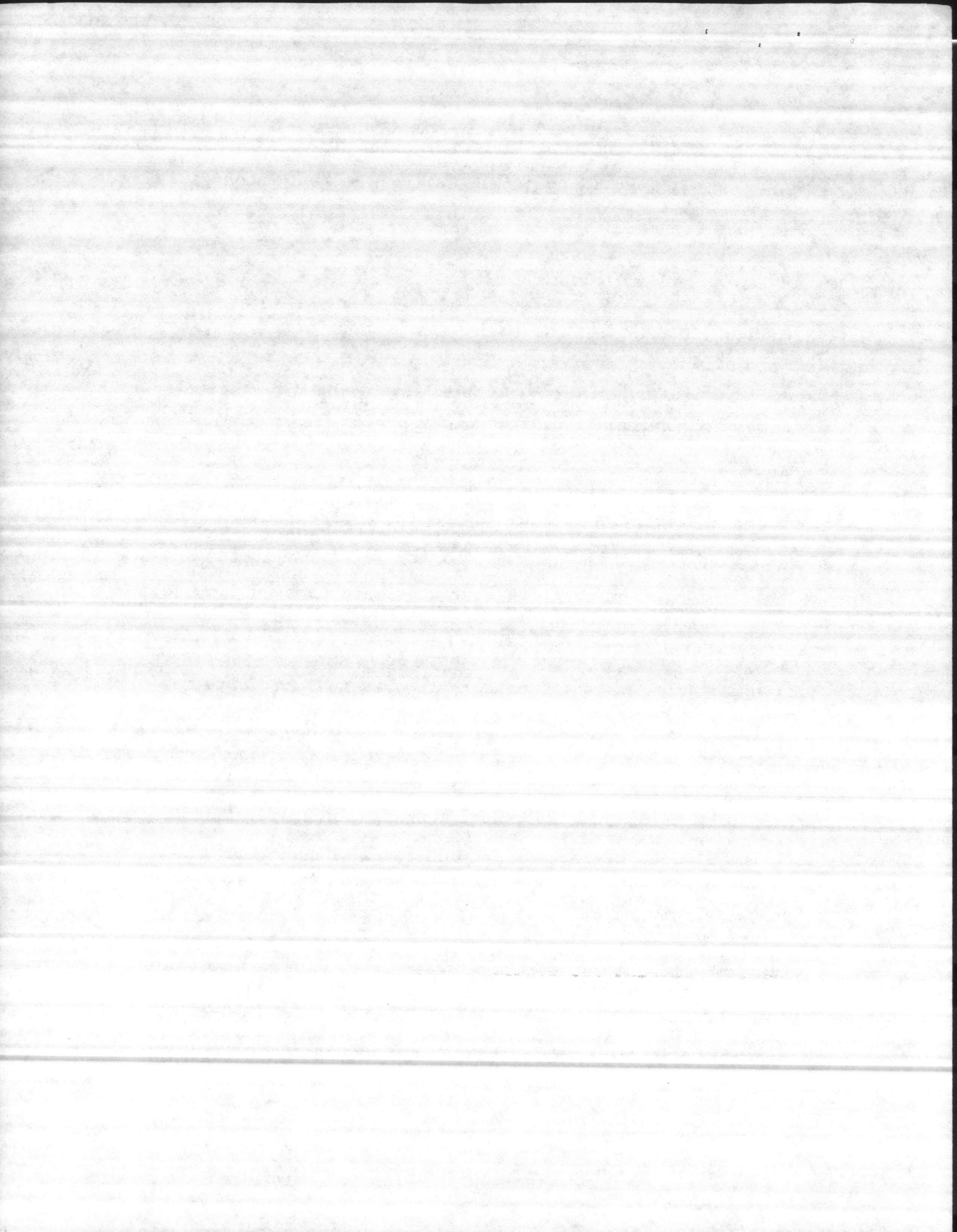
Give the El Toro Dispatcher your building number (all contractor's yards are numbered) or the nearest building number,

State what the emergency is. Stay on the telephone until released, if time permits.

Located throughout the air station are street fire alarm pull boxes. These fire reporting stations are mounted on poles, pedestals and on building surfaces. Contractor personnel will become familiar with the location of boxes around their job site.

After reporting the emergency, meet the responding personnel and direct them to the emergency.

Report all fires, regardless of size.



Demolition Operations:

During demolition operations, no area in or around job site shall be allowed to accumulate any amounts of combustible waste materials. All combustible waste shall be removed from the facility at the close of each work day. Large construction dumpsters shall not be located within 20 feet of any building, building overhang or structure without special permission of the fire department's fire prevention section.

Prior to commencement of demolition operations in facilities/buildings with fire protection/detection systems, the contractor will notify ROICC and the fire prevention section.

Temporary Government Facilities:

Temporary facilities for housing government personnel shall meet the requirements of Appendix A.

Contractor's Storage Yards:

Request for site locations shall be submitted through the ROICC office for approval. Storage sites shall meet the following minimum requirements.

Storage yards shall be kept clear of all excessive vegetation, debris and trash; including an area 20 feet outside the perimeter of the fence.

Construction trailers or fence lines shall not be closer than 50 feet to any building or structure.

Contractor's Equipment:

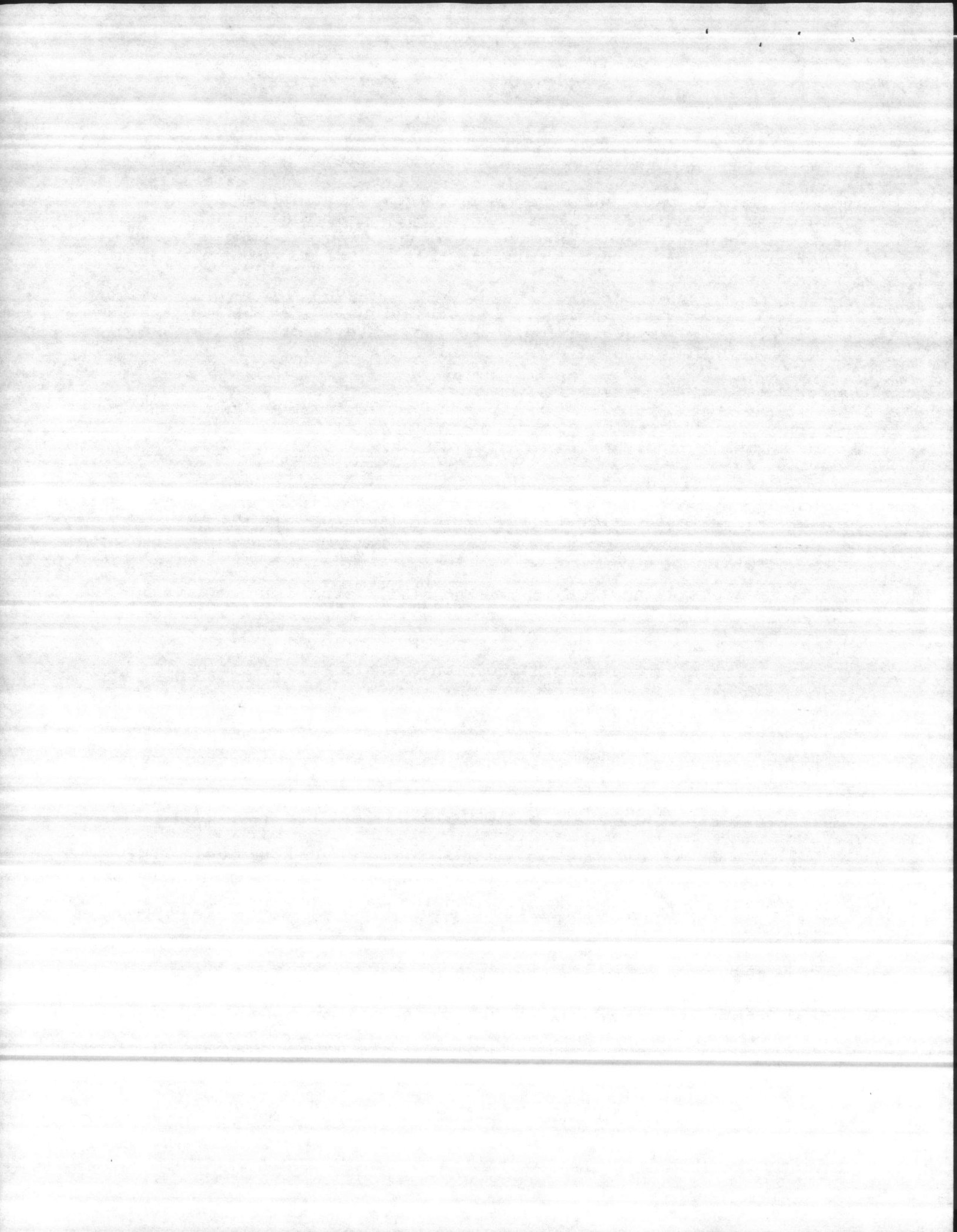
Contractors utilizing internal combustion engine-powered equipment shall comply with the following.

Exhaust discharge shall be away for combustible materials.

Refueling shall be accomplished with the engine shut-off and be allowed to cool prior to servicing with fuel.

The service area of this equipment shall not be within 50 feet of buildings.

Flammable/combustible liquids shall not be stored or dispensed within 50 feet of any structure. Gravity feeding is prohibited. Smoking shall not be permitted within 50 feet of storage facility.



Hazardous Operations:

Welding, cutting, open flame, etc. shall not be performed until a hot work permit has been requested and issued by the fire prevention section. A written request shall be submitted through the ROICC Office 5 days prior to the scheduled hazardous operation.

Open burning is prohibited.

The checklist that is provided shall be followed.

Thermite welding is prohibited.

Temporary Heating Equipment:

Temporary heating equipment shall be listed and approved by a nationally recognized test laboratory and installed per manufacture's recommendations.

Smoking Regulations:

Smoking shall be in designated areas and provided with proper disposal containers.

Smoking is not permitted in areas of hazardous operations.

Smoking in areas under demolition areas is prohibited.

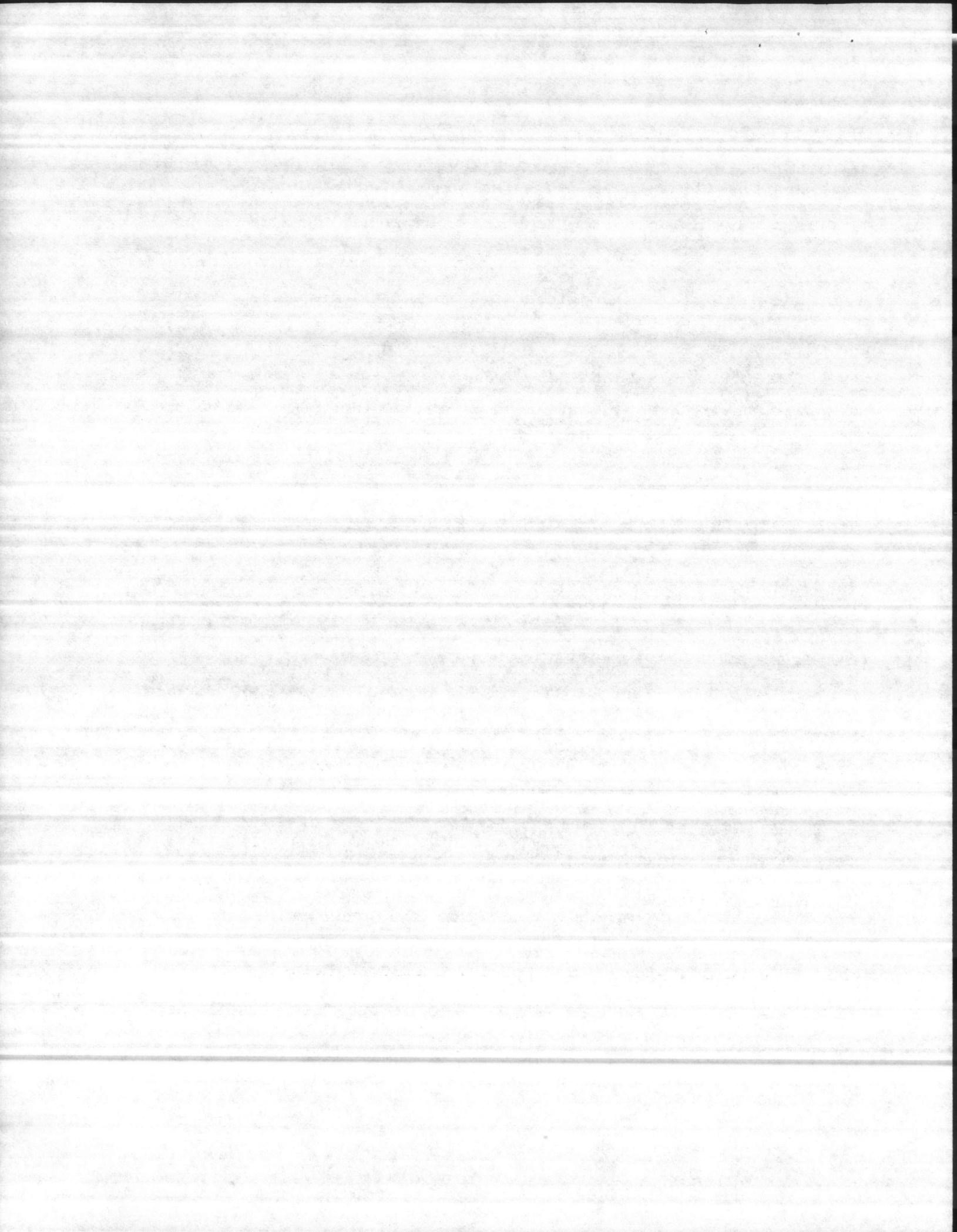
Flammable/Combustible Liquids and Gases:

Storage of Class I and II liquids shall be limited to 60 gallons, except under special circumstances and approved by the fire department and Facilities Environmental, by written request.

Storage containers shall be marked as to the contents and labeled --- "Flammable-No Smoking or Open Flame Within 50-feet".

Each storage area shall be provided with a fire extinguisher having a rating of not less than 20-B and shall be located not closer than 10 feet nor more than 50 feet from the site.

The removal of underground flammable/combustible liquid storage tanks shall comply with the requirements of Appendix B.



Electrical:

All temporary electrical wiring\installations shall conform to the requirements of the National Electrical Code.

All temporary lighting fixtures shall be provided with guards to prevent accidental contact with the bulb. They shall be installed to preclude contact with combustible materials. The lights shall be suspended by their electrical cord.

Wiring for temporary lighting shall be provided with a heavy duty covering. All connections and insulation shall be maintained in safe condition

Roofing Operations:

Asphalt and tar kettles shall be located at a safe distance (15-foot minimum) from buildings or on non-combustible roofing systems away from combustibles. Kettles will be provided with lids that close by means of gravity.

Used roofing mops and rags shall be stored away from building and combustible materials. Disposal of mops and rags shall be done safely and in accordance with EPA requirements.

Kettles shall be constantly monitored at all times when in use.

Torch applied roofing systems require that a hot work permit be issued by the fire prevention section.

Fire extinguishers are to be provided in accordance with the following.

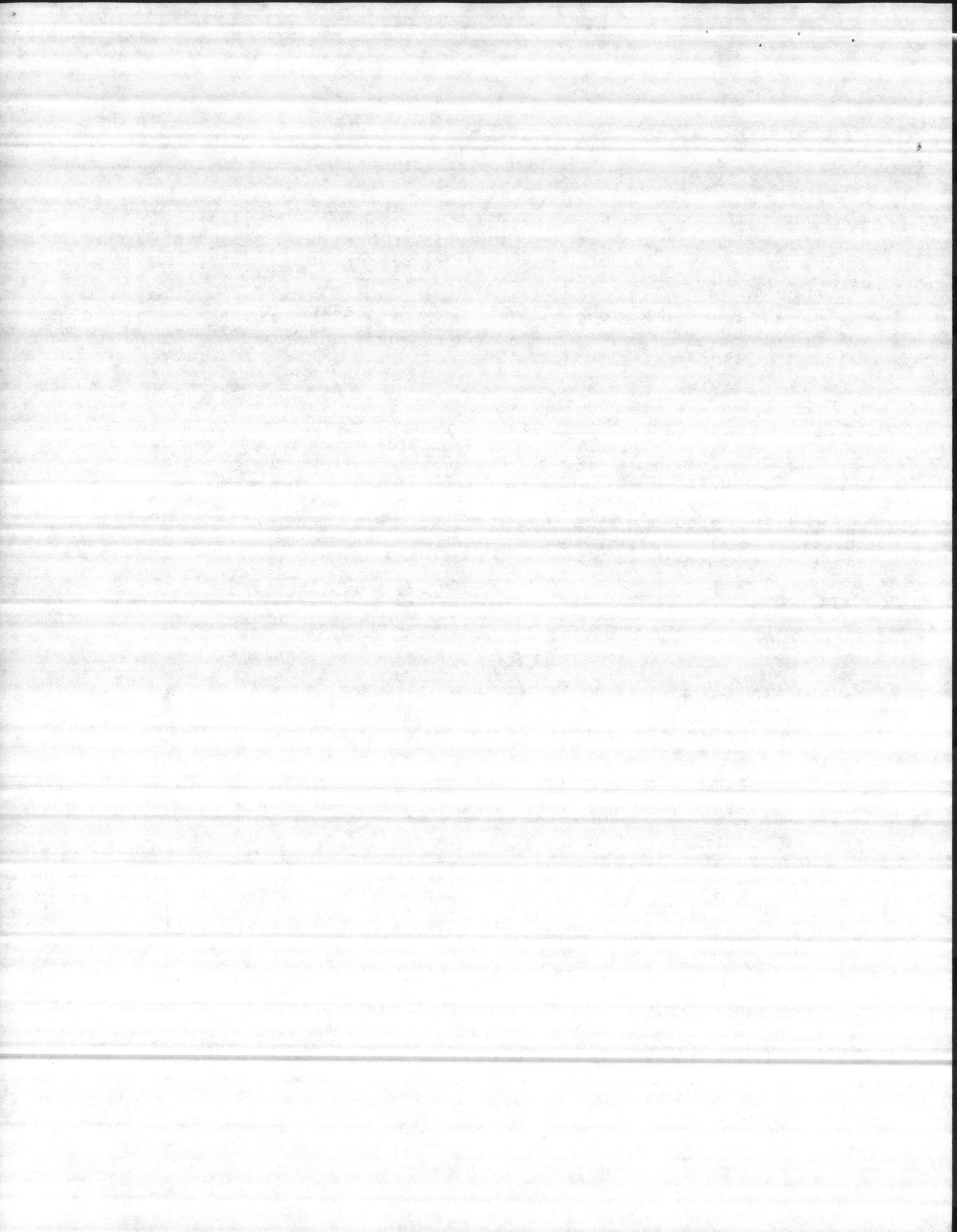
One 20-B rated extinguisher within 30 feet horizontal travel distance of kettle in operation.

One multipurpose 2-A:20-B:C on roof where application is done.

One multipurpose 2-A:20-B:C within 30 feet horizontal travel distance for torch applied roofing equipment.

Streets and Roads:

A written request shall be submitted to the Provost Marshal and Fire Department through the ROICC Office for approval for streets, roads and building accesses to be blocked, closed or obstructed. The request must indicate the dates of closure/obstruction, the location and the length of time it will be closed/obstructed. The request shall be submitted within 5-days, or per contract requirements, prior to the blockage. A drawing of the affected area shall be attached to the request.



Fire Prevention Program Manager:

The prime contractor shall designate a responsible person as the Fire Prevention Program Manager at the job site. The contractor shall furnish a copy of this designation and the pre-fire plan to the fire prevention section. The responsibilities shall include but not be limited to the following.

Insure that all permits are current and complied with.

Training of construction personnel in proper fire fighting and
Insure the proper number of fire extinguishers are in place and properly maintained.

Develop a pre-fire plan that covers duties and responsibilities of all employees concerning fire fighting, fire prevention and fire reporting procedures.

Establish a suitable location for the emergency command center. Provide plans, emergency information, keys and equipment as needed.

Report to the command center whenever an emergency occurs.

FIRE PROTECTION REQUIREMENTS

Fire Cutoffs:

In buildings or structures where fire walls and exit stairways are required, they shall be given priority for installation. Fire doors shall be provided as soon as practical and after being installed shall not be obstructed from closing.

Access for Fire Fighting:

The station fire department may require that keys be provided for secured areas to have immediate access for life saving or fire fighting purposes.

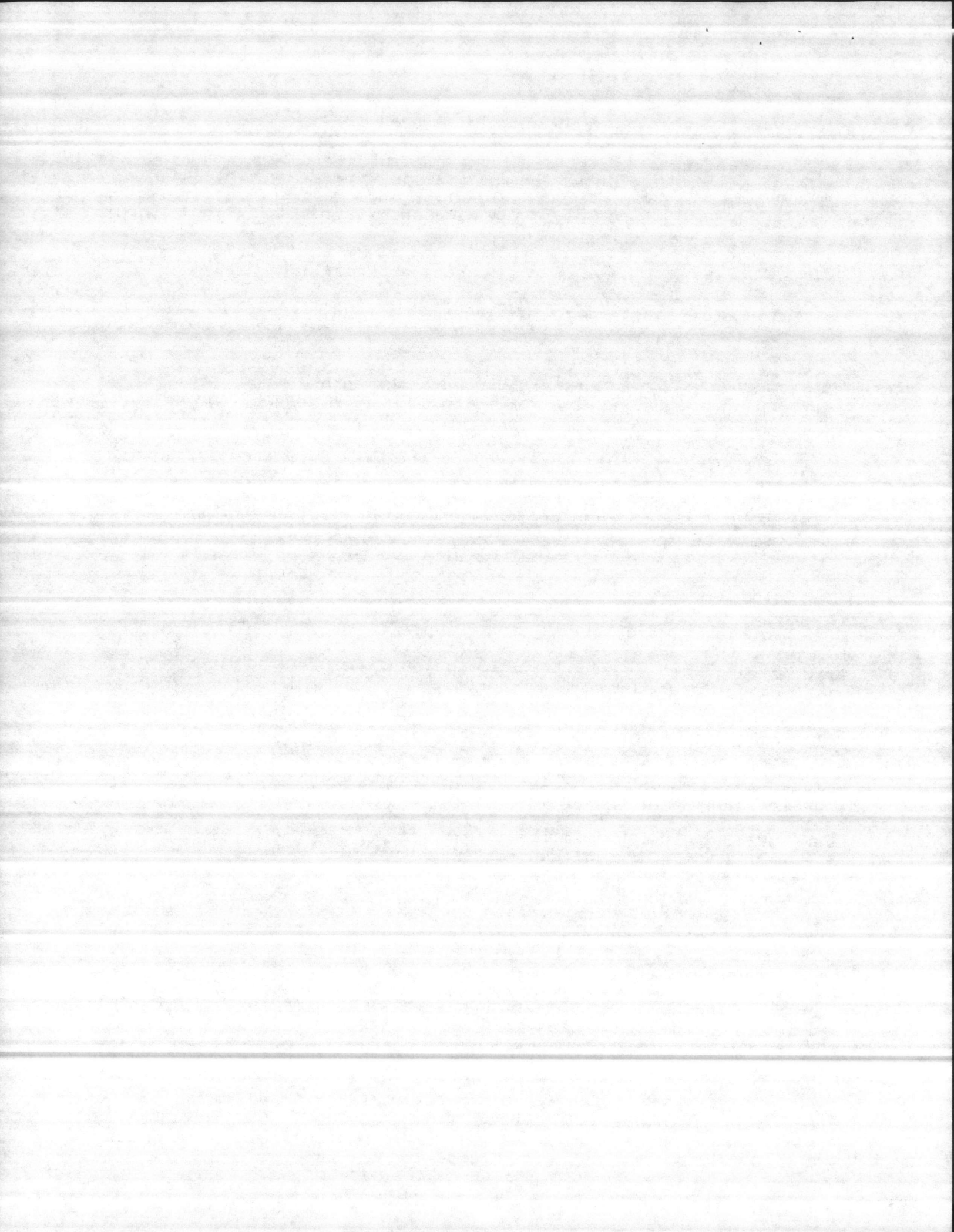
Every building shall be accessible by fire department apparatus via all-weather driving surfaces not less than 20-feet wide and unobstructed.

At the beginning of construction projects and until the completion, an access shall be provided and maintained to the immediate job site.

Unobstructed access to fire hydrants, fire protection equipment, fire fighting appliances, sprinkler, whether permanent or temporary, shall be provided and maintained at all times.

Fire Extinguishers:

The contractor shall provide his/her own fire extinguishers for protection of the building under construction and for any storage facility or temporary building at the site.



Fire Protection/Detection Systems:

The contractor shall submit through the ROICC Office a written request to Facilities Management and the fire department for interruption of fire systems (sprinkler and fire alarms) seven (7) days, or contract requirement, prior to the scheduled date of interruption. Facilities Management Department is responsible for shutting down systems.

All fire systems shall be given priority for placing in service. Existing fire systems shall be kept in service during construction operations, when possible. Contractors shall be held responsible for restoring systems that they inadvertently put out of service.

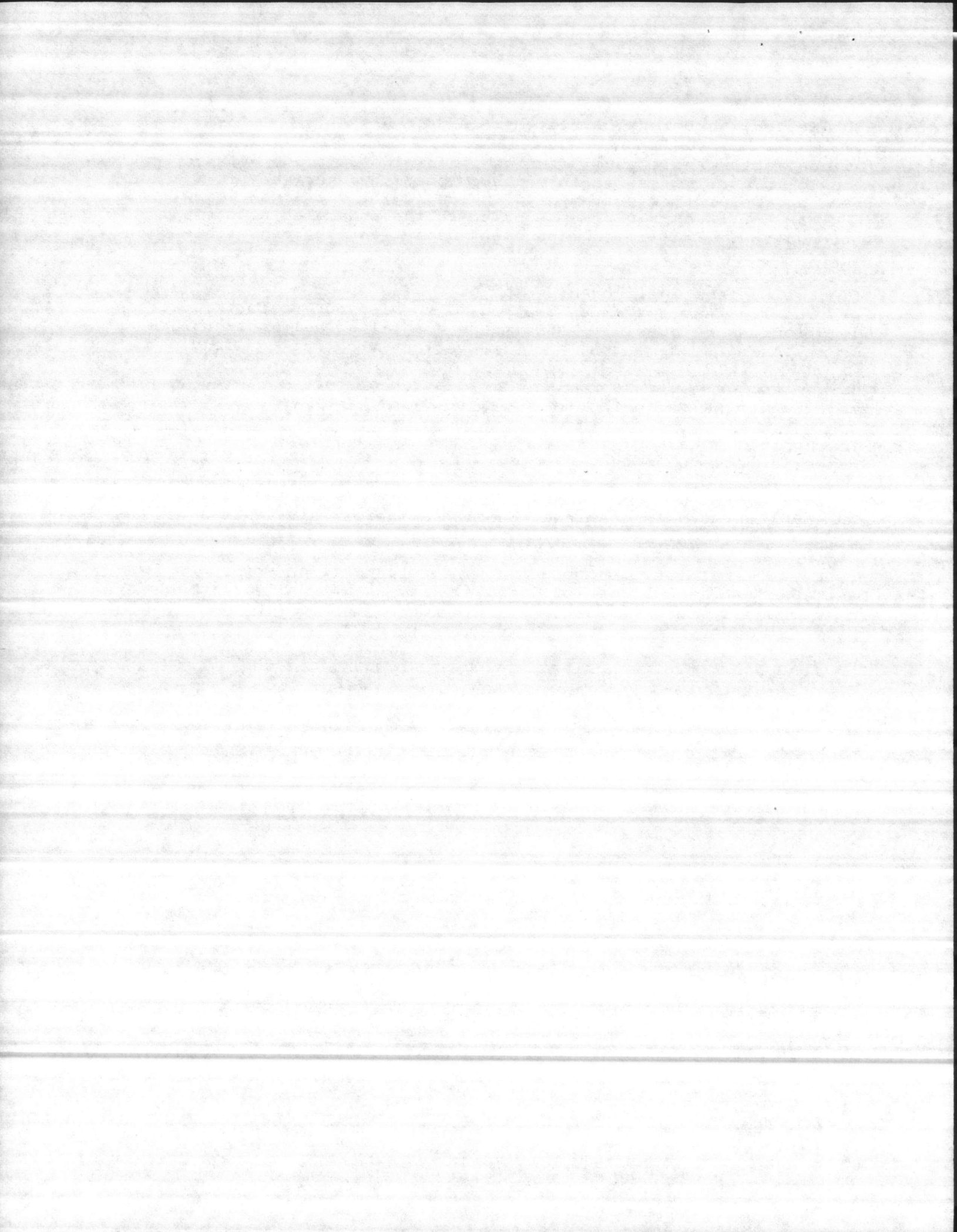
The contractor shall schedule an inspection of fire sprinkler system installation prior to the installation of ceiling systems.

Fire protection system installation requires two(2) acceptance inspections/tests to be performed.

1st - Pre-test to determine if the system is operating properly and complies with the contract specifications. This test is performed by the local fire department.

2nd - Final test is conducted by fire protection engineers from Naval Facilities Engineering Command. This test shall be scheduled so that the system has been on line a minimum of ten(10) days after the first test.

The fire department's business telephone number is 726-3919.



APPENDIX A

REQUIREMENTS FOR TEMPORARY STRUCTURES (TRAILERS)

Ref: (a). Military Handbook 1008A
(b). MCO P11000.11A

1. Reference (a) and (b) establishes construction and spacing criteria for all structures, both permanent and temporary, aboard MCAS El Toro.

2. This addendum shall serve to outline construction and spacing requirements for these temporary structures.

a. Interior finish materials. Interior finish materials is defined as the material of walls, ceiling, waincoting, and other interior surfaces of a building, and other interior surfacing materials applied to the walls, moveable partitions and ceilings. Exposed insulation and acoustical material are considered in the category of interior finish.

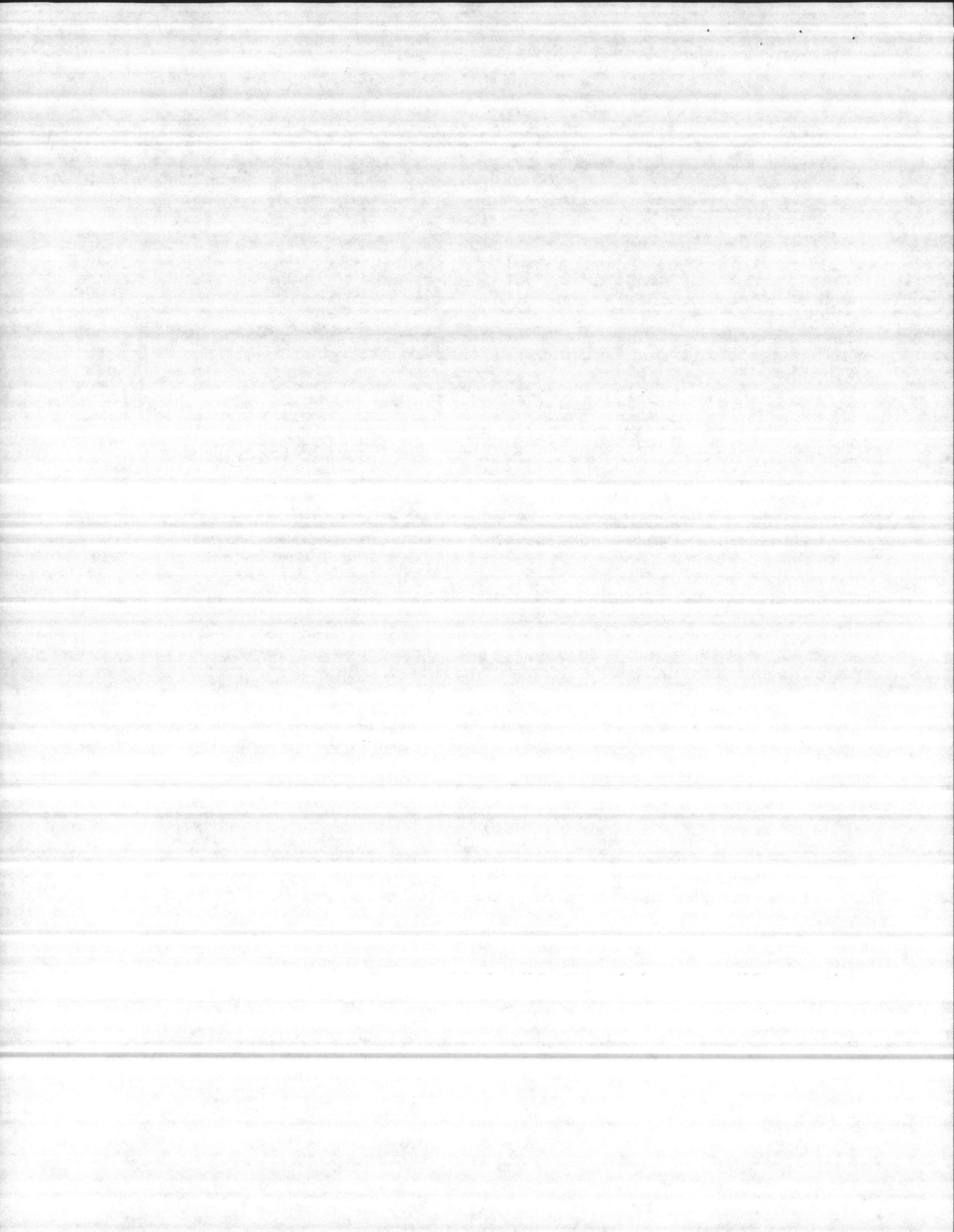
(1). In accordance with reference (a) and (b), interior finish materials shall be Class "A" or "B" fire rated materials with a flame spread rating not exceeding 75 and a smoke development rating not exceeding 100, as rated by ASTM E-84 test procedures. Gypboard is recommended.

b. Insulation. In general, thermal and acoustical insulation shall have the same flame spread and smoke development as Class "B" interior finish materials.

c. Wiring. Wiring shall be installed in accordance with the National Electrical Code. The use of rigid or flexible conduit is required.

d. Reference (a) establishes spacing requirements for temporary structures.

3. These guidelines are basic in nature and are applicable in all cases, but there may be certain circumstances which could change these requirements, that may require additional fire protection requirements due to site and location. It is recommended that each case be coordinated with the Fire Division.



APPENDIX B

GENERAL GUIDELINES FOR UNDERGROUND TANK REMOVAL AND INSTALLATION

UNDERGROUND TANK REMOVALS

The following procedures should be used prior to the removal of any underground tank that previously contained flammable/combustible liquids. In addition, the procedures outlined below must be followed to ensure that the entire preparation and removal operation is conducted in a safe manner and the possibility of an explosive/fire incident is minimized.

1. Plan Review and Schedule of Removal. The following sequences are required to ensure prompt and successful inspection and removal.

a. Upon receipt of the approved plans from Environmental Health, forward one set to the El Toro Fire Department.

b. At least five(5) working days prior to removal of underground tank/s, contact the Fire Prevention Office in writing to request an inspection compatible with the Fire Department and Environmental Health Department schedules.

2. On-site Procedures for Tank Removal.

a. The contractor shall ensure that all flammable liquids and/or materials have been removed from the tank/s by means of an approved vacuum truck prior to excavation.

b. Under no circumstances shall spark producing equipment or equipment that acts as an ignition source shall be located within 50 feet of any tank to be inerted.

c. Underground tank/s that previously contained Class I or II flammable liquid shall be inerted prior to removal.

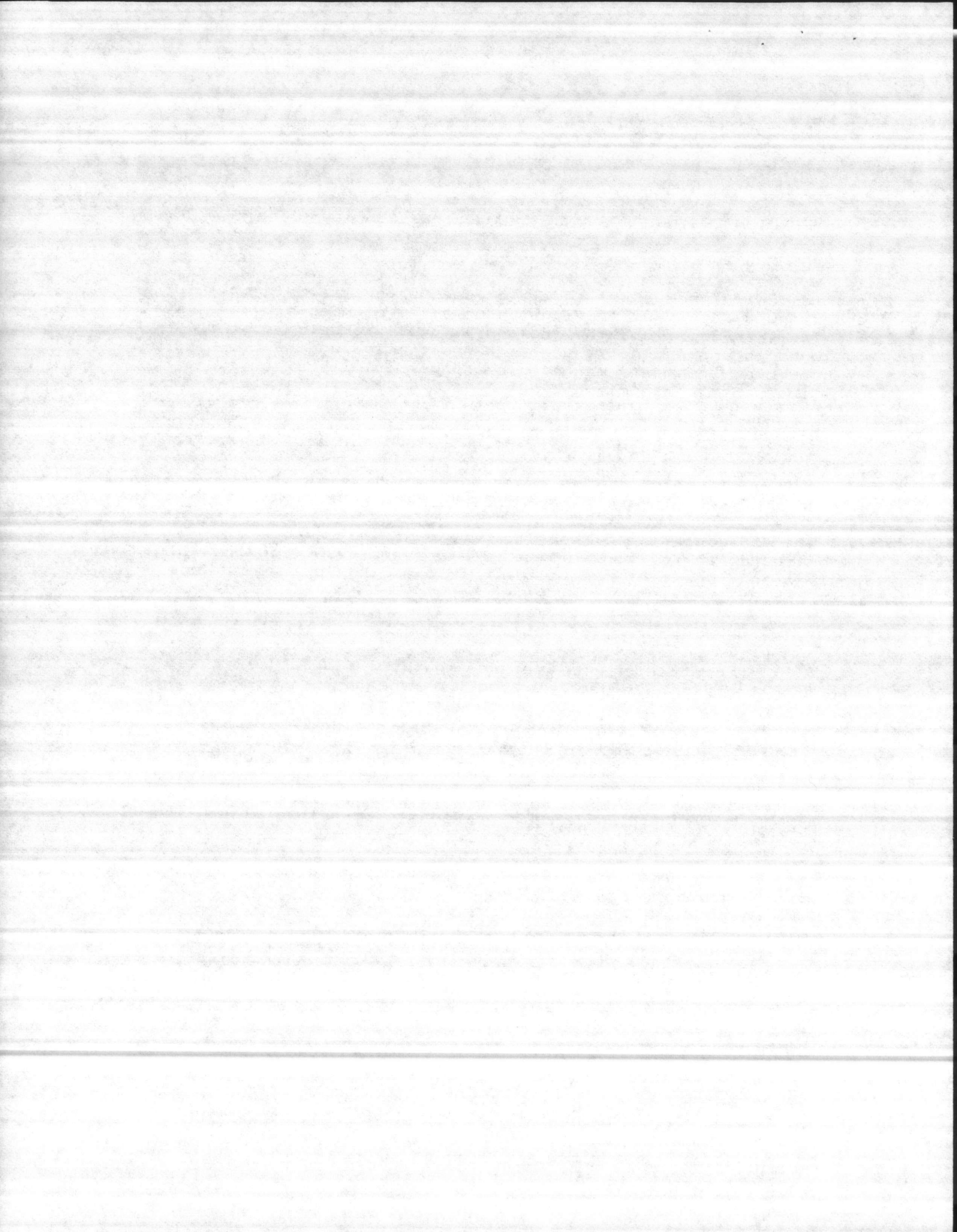
d. The top of the tank/s shall be exposed to provide access to all the tank/s openings.

e. Any piping containing product shall be carefully disconnected and the contents disposed of in an approved manner. All piping associated with the underground tank/s shall be removed and disposed of properly.

f. All remaining piping and drop tube may be disconnected and removed from the tank/s.

g. Two openings at opposite ends of the tank/s shall be used for the inerting procedures; all other openings shall be sealed.

h. A flammable vapor detection device, that has been calibrated within the last six months, shall be on the site prior to removal.



i. All tanks shall be purged in accordance with NFPA guidelines. It shall be the contractor's responsibility to demonstrate to the fire inspector, upon arrival, that the vapor concentration inside the tank/s is not more than 10% of the lower explosive limit (L.E.L.) of the product in the tank/s. Tank shall be checked at the top and bottom of the tank/s. An oxygen measuring device may also be present at the site to demonstrate that the tank/s have been inerted. O₂ levels when test shall be below 13%.

j. Each tank will be allotted a maximum of 1-hour for removal and loading for transport.

k. Tank/s are to be lifted using proper equipment. The fire inspector may stop any tank/s removal operations deemed unsafe. Tank/s will not be dragged.

l. Immediately transport tank from site.

m. Underground waste oil tank/s may be opened on-site to be triple-rinsed provided the vapor concentration is below 10% of the L.E.L.

n. All liquid is to be disposed of under manifest as hazardous waste.

o. It shall be the contractor's responsibility to ensure that the excavation site is secured at all times.

3. Orange County Environmental Health's Responsibility

a. Inspect the tank/s after its removal from the excavation for evidence of leaks or corrosion.

b. Inspect the excavation for preliminary evaluation of product release or soil contamination.

c. Direct the collection of soil samples from the excavation.

d. Initiate any required clean-up action.

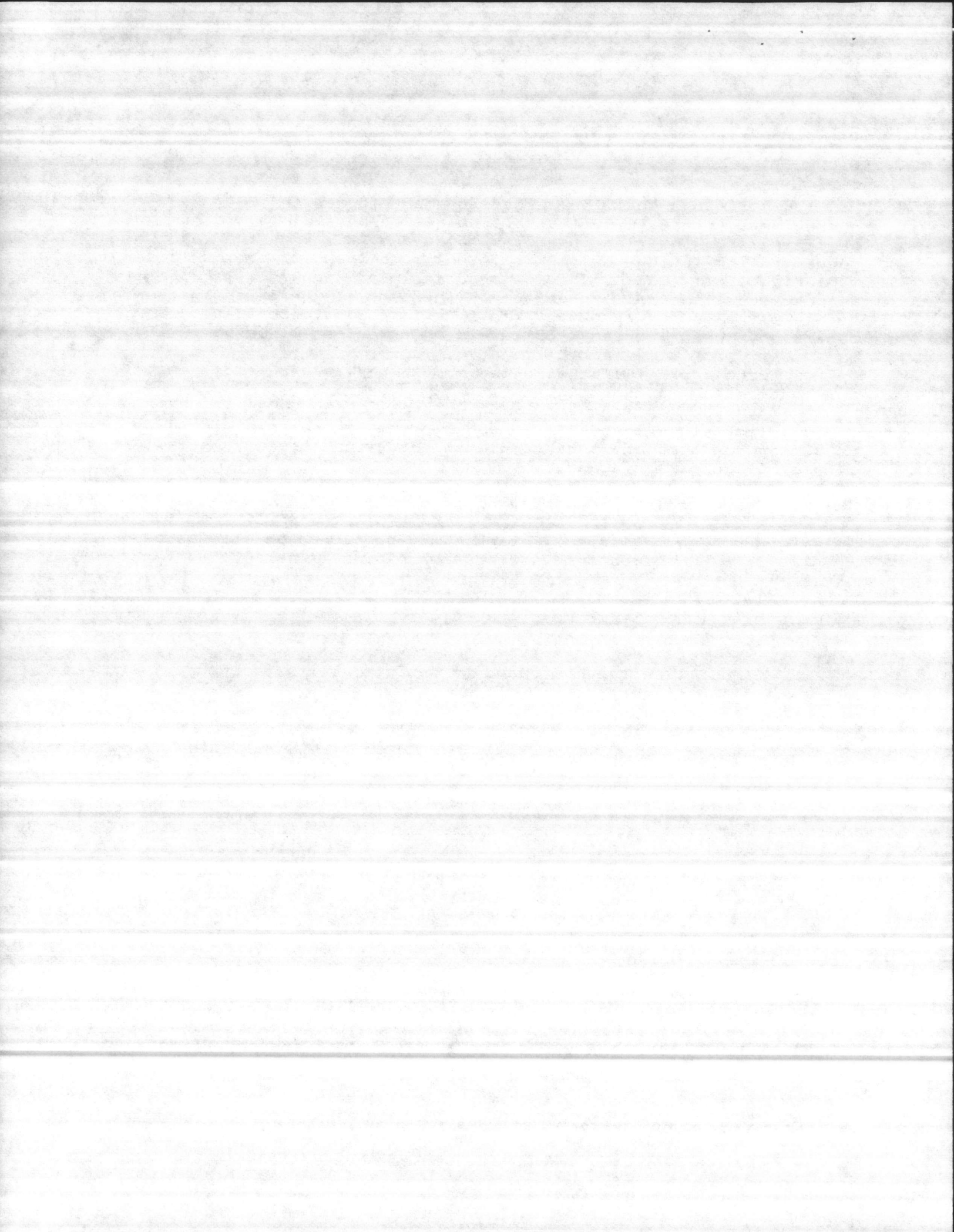
TANK INSTALLATION.

1. El Toro Fire Department shall inspect,

a. Dispenser installation, shear valves, fire extinguisher installation, emergency shut-off switch location and operation, vent lines, swing joints, location of tank openings and appropriate cover.

2. Orange County Environmental Health shall,

a. Witness holiday test of fiberglass coated tanks prior to

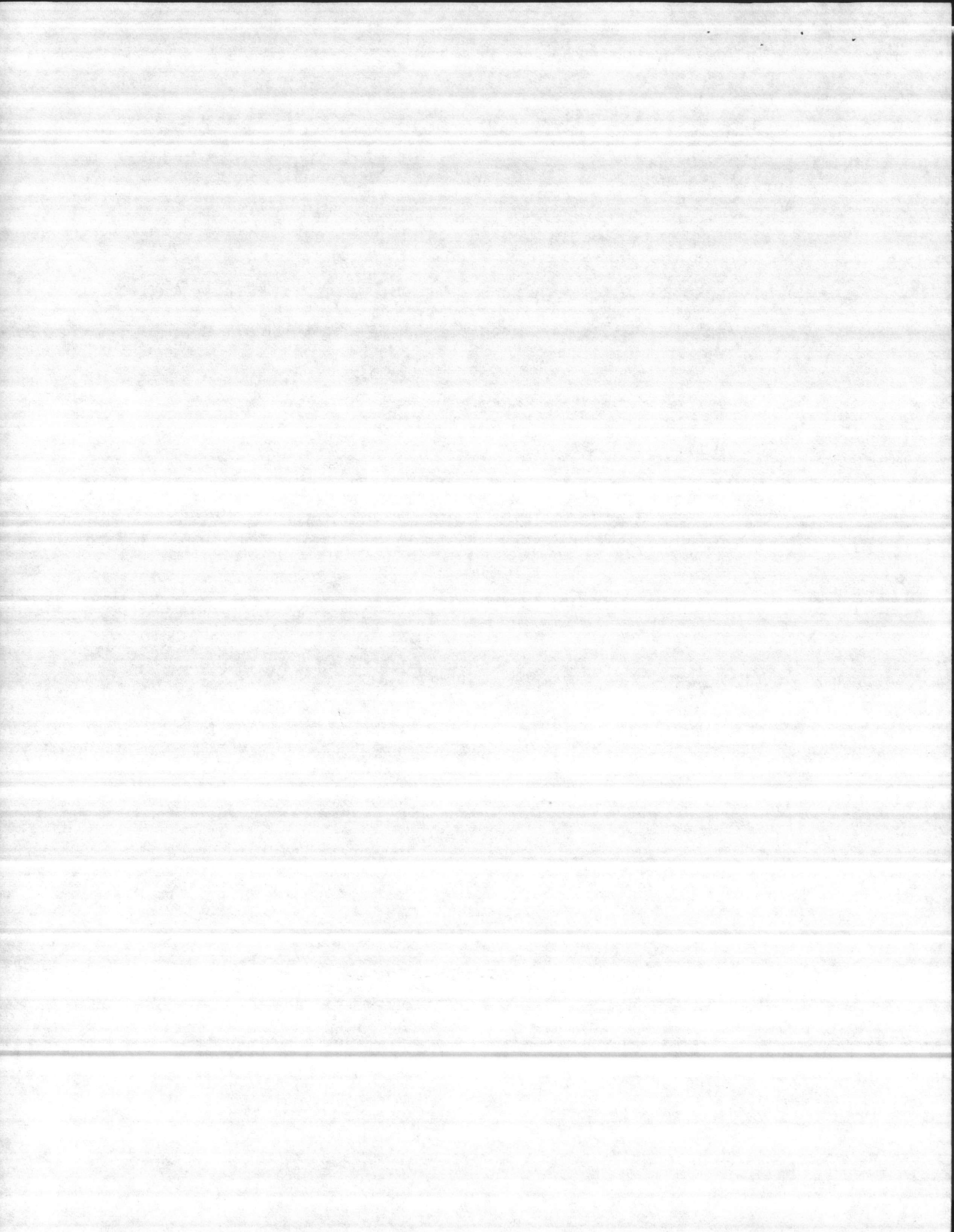


placement in the excavation and document test results on the job-site card.

b. Witness the pressure test of lines and tanks and document test results on the job-site card.

c. Inspect the monitoring and leak detection system.

d. Review the results of precision test.



Contract Number: _____ Title: _____

Contractor: _____ Date: _____

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Underground:

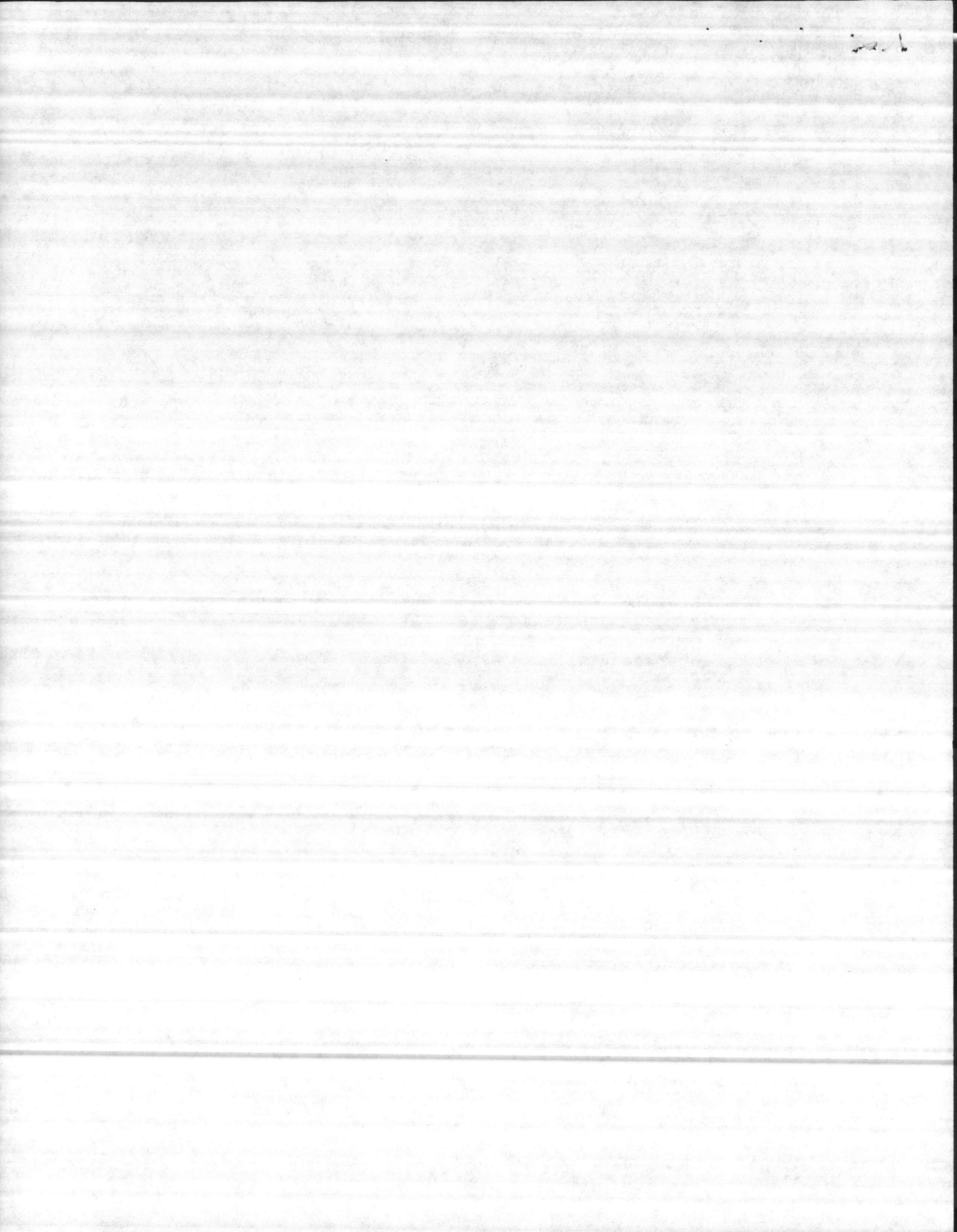
1. _____ FDC & water gong location.
2. _____ FDC check valve location.
3. _____ No pipe under building.
4. _____ Underground pipe size. _____
5. _____ Valve locations.
6. _____ Valve locations: _____
7. _____ Fire Hydrants. Minimum size 6"
Minimum 25' from building.
Minimum 7' from paved surface.
Guard post.
8. _____ Back-flow preventer.
9. _____ Type of system.
10. _____ Occupancy Classification.
11. _____ Materials made in America.
12. _____ Riser Detail.
13. _____ Pipe schedule system or calculated.
14. _____ Provisions for flushing.
15. _____ Inspector's test valve provided.
Most upper story.
Most remote branch line.
For each system.
Equal discharge of single head.
Valve - Maximum 7' above grade.
16. _____ Sprinkler heads above & below.
17. _____ Protection of outside piping.
18. _____ Drains - Provided.
19. _____ Sprinkler heads - minimum rating 212 degrees.
20. _____ Sprinkler heads properly spaced.

21. _____ Sprinkler piping earthquake braced. _____

22. _____ Proper hangars provide and properly spaced.

23. _____ Catalog cuts submitted for all sprinkler equipment.

24. Other Comments:



PLAN CHECKING
FIRE PROTECTION REQUIREMENTS

CIVIL DRAWINGS <C>

Check locations of fire hydrants and water mains. Hydrants require 4-inch pumper connections and two (2) 2 1/2-inch hose outlets and be of California wet-barrel design. Minimum size of mains is six (6) inches. Hydrant spacing in accordance with Mil-Hdbk 1008A, para 5.8.

Check for locations of fire alarm loop, underground and/or overhead, to insure that the project does not interfere with them, also for connection of building fire alarm systems.

ARCHITECTURAL DRAWINGS <A>

All egress corridors shall be of one-hour construction for facilities with an occupant load of 30 persons. NFPA 101.

All mechanical rooms, equipment rooms and boiler rooms require one-hour fire separation. Also some occupancies require that janitor/supply rooms be of one-hour construction. NFPA 101.

Those areas requiring fire rating shall indicate that rating on the drawings.

Make sure there are an adequate number of exits and of adequate width to handle the occupant load. NFPA 101.

Insure proper layout of rooms to provide adequate ways of egress. Cannot exit through storage rooms, hazardous areas or more than one additional rooms to reach a means of egress. NFPA 101.

Check for dead-end corridors. Check travel distance to reach the exit, normally 150 feet unless sprinklered.

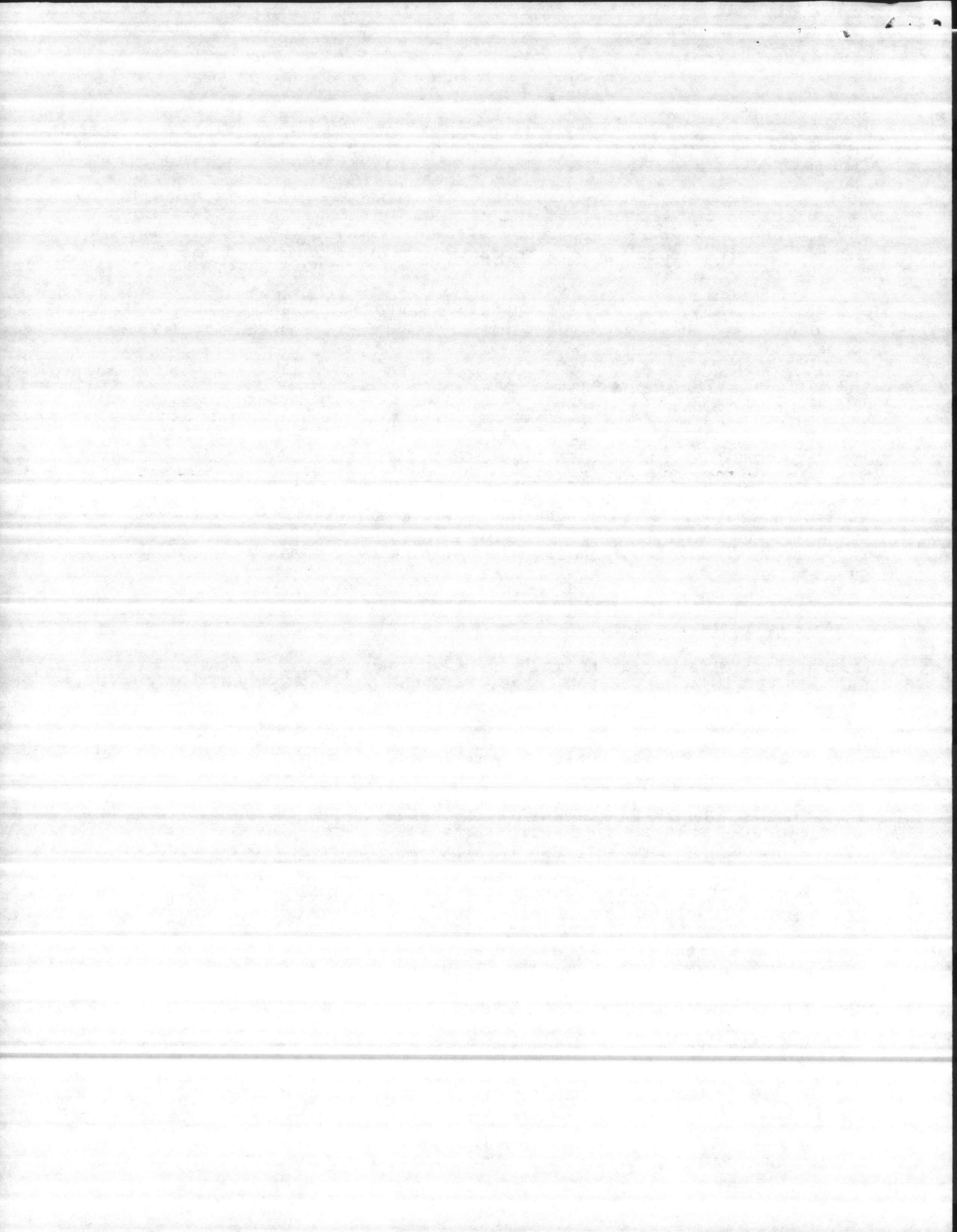
Door and window schedules shall indicate the fire rating of doors and windows. Doors are classified by rating (A, B or C) or by hourly rating (20min, 3/4, hour, 1 1/2, etc). Fire windows are 1/4-inch tempered wire-glass not to exceed specific size. NFPA 80.

Check the finish schedule for proper interior finish materials. Mil-Hdbk-1008A, para 2.6. Always indicate the U.B.C. classification, Type II is Class B and Type I is Class A. Insulation shall be of the same classification as Class A or B. Check the smoke generation rating, not to exceed 150.

Provide extinguisher cabinets.

Provide Lock Boxes.

Buildings exceeding one-story, shall be provided with ladders to the roof.



STRUCTURAL DRAWINGS <S>

Check for fire blocking.

MECHANICAL DRAWINGS <M>

Check to insure that fire wall/partition penetrations are provided with fire dampers.

Corridors cannot be used as return air plenums.

PLUMBING DRAWINGS <P>

Shall show P.O.C. of fire sprinkler system to distribution system, to include the back-flow preventor.

Shall show location of riser at building.

Shall show locations of fire dept. connection and water motor gong.

Shall show the underground piping to sprinkler riser, minimum size is the size of the riser, but never less than 4-inches.

ELECTRICAL DRAWINGS <E>

Shall show location of master box. May be pedestal mounted or mounted on exterior of building, but only if it is easily accessible.

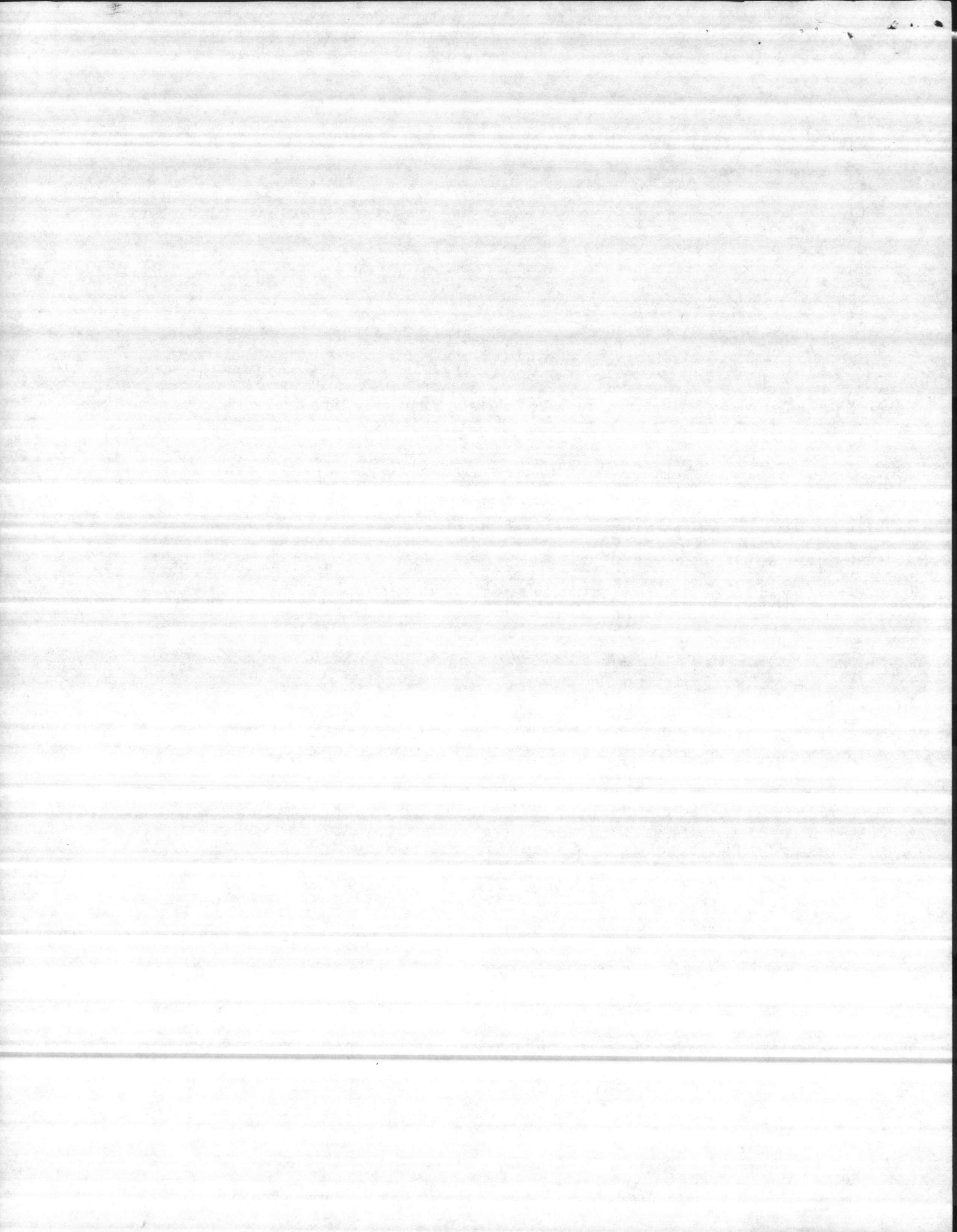
Shall show location of fire alarm control panel. Panel shall be located for easy access.

Shall show locations of pull stations, horns, sprinkler flow switches and hood systems. Audible devices shall also be for the hearing impaired.

The single line diagram shall show the fire alarm control panel wired ahead of the main service disconnect, through a fused safety disconnect switch and a 1.5 KVA isolating transformer.

Emergency light to be provided as required by NFPA 101.

Where exit lights are provided also directional arrows are required. Low-level self-illuminating exit signs shall be provided where exit light are provided.



PLAN CHECKING
FIRE PROTECTION REQUIREMENTS

CIVIL DRAWINGS <C>

Check locations of fire hydrants and water mains. Hydrants require 4-inch pumper connections and two (2) 2 1/2-inch hose outlets and be of California wet-barrel design. Minimum size of mains is six (6) inches. Hydrant spacing in accordance with Mil-Hdbk 1008A, para 5.8.

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Make sure there are an adequate number of exits and of adequate width to handle the occupant load. NFPA 101.

Insure proper layout of rooms to provide adequate ways of egress. Cannot exit through storage rooms, hazardous areas or more than one additional rooms to reach a means of egress. NFPA 101.

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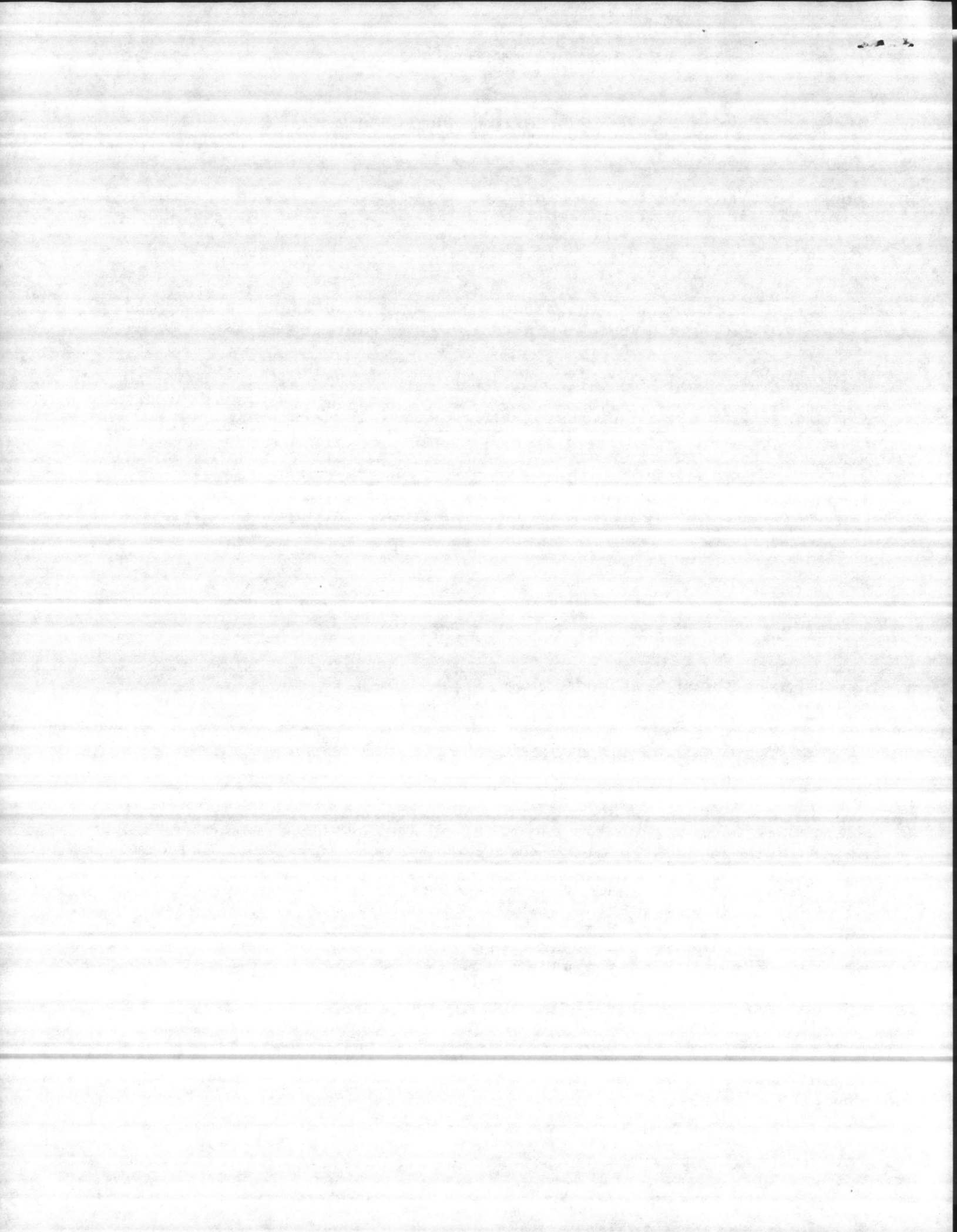
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Corridors cannot be used as return air plenums.

PLUMBING DRAWINGS <P>

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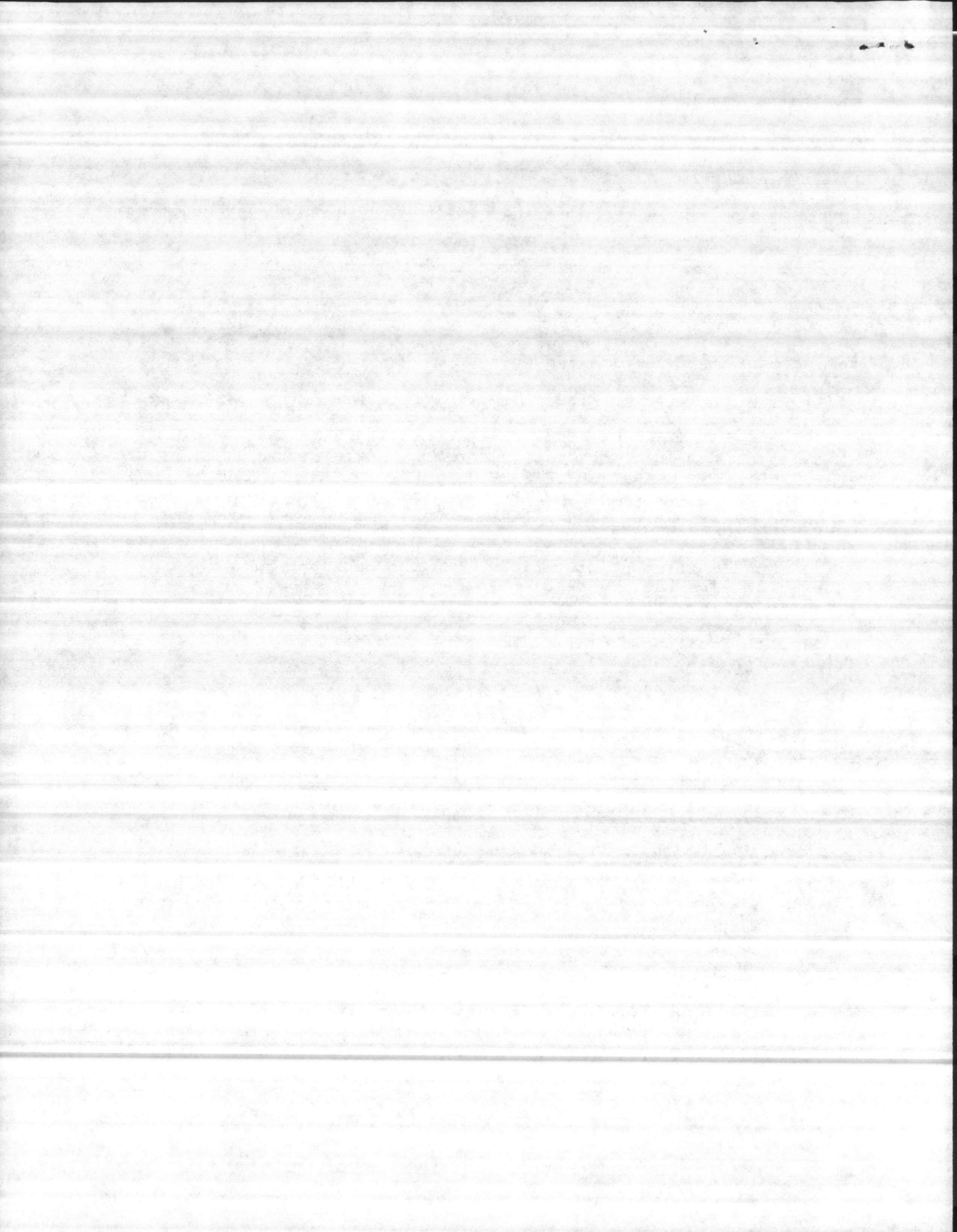
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Contractor: _____ Date: _____

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Underground:

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2. _____ FDC check valve location.
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4. _____ Underground pipe size. _____
5. _____ Valve locations.
6. _____ Valve locations: _____
7. _____ Fire Hydrants. Minimum size 6"
 Minimum 25' from building.
 Minimum 7' from paved surface.
 Guard post.
8. _____ Back-flow preventer.
9. _____ Type of system.
10. _____ Occupancy Classification.
11. _____ Materials made in America.
12. _____ Riser Detail.
13. _____ Pipe schedule system or calculated.
14. _____ Provisions for flushing.
15. _____ Inspector's test valve provided.
 Most upper story.
 Most remote branch line.
 For each system.
 Equal discharge of single head.
 Valve - Maximum 7' above grade.
16. _____ Sprinkler heads above & below.
17. _____ Protection of outside piping.
18. _____ Drains - Provided.
19. _____ Sprinkler heads - minimum rating 212 degrees.
20. _____ Sprinkler heads properly spaced.

21. _____ Sprinkler piping earthquake braced. _____

22. _____ Proper hangars provide and properly spaced.

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