Building Assessment and Condition Survey

Prepared for:
Fairfax County Park Authority
12055 Government Center Parkway
Suite 421
Fairfax, Virginia 22035-5503

Site:
Defense Mapping Agency (DMA)/Turner Barn Site
Intersection of Springvale Road and Georgetown Pike
Great Falls, Virginia 22066

Prepared by:
Earth Tech, Inc.
1420 King Street, Suite 600
Alexandria, Virginia 22314

October 1999

ET Project No.: 34738

5.0 Demolition, Restoration, and Replacement Cost Estimate

The costs that have been calculated include demolition, renovation, and new construction.

The following definitions will be helpful in reading the table of costs:

Demolition. Costs for tearing down the buildings and hauling the debris to a dump site.

Renovation. Costs for removing damaged material and replacing it with new material; removing the inoperative mechanical and electrical systems; providing an accessible path into the buildings to bring the buildings into conformance with the accessibility codes; renovations required to bring the buildings into conformance with the local building and fire codes; and providing new finishes on the inside and outside of the buildings.

New Construction. Replacement costs of the existing buildings starting from the ground up.

These cost estimates are for "like kind" buildings only and do not include costs for any specialized types of spaces or equipment.

Table 3
Demolition and Restoration Costs

Building	Building Area	Demolition Costs[1]	Renovation Costs[2]	New Construction Costs[3]
Building #1 – Barracks	5,800 sq ft	$33,600	$390,000	$480,000
Building #2 – Bath House	700 sq ft	$4,000	$60,000[4]	$71,000[4]
Building #3 – Mess Hall	2,500 sq ft	$14,600	$190,000[5]	$233,000[5]
Building #4 – Administration Building	4,250 sq ft	$25,000	$285,000	$353,000
Building #7 – Radar Tower	500 sq ft	$37,400	$16,000	$40,000
Building #8 – Communications	625 sq ft	$3,700	$35,000	$45,000
Building #10 – Tractor and Implement Shed	800 sq ft	$4,700	$45,000	$58,000
Building #11 – Observatory Tower	340 sq ft	$7,000	$27,000[6]	$50,000[7]
Total All Buildings	**15,515 sq ft**	**$130,000**	**$1,048,000**	**$1,330,000**

Notes:

(1) Includes costs for hauling debris to a site within 5 miles from the construction site.
(2) Remodeling Costs based on $67 per square foot for finished space and $56 per square foot for unfinished space.
(3) New Construction Costs based on $83 per square foot for finished space and $72 per square foot for unfinished space.
(4) Includes costs for replacement fixtures and toilet compartments.
(5) Includes costs for kitchen equipment.
(6) Includes costs for rehabilitation of the dome.
(7) Includes costs for a new dome.

Executive Summary

This report has been prepared for the Fairfax County Park Authority (Park Authority), Fairfax, Virginia by Earth Tech, Inc. (Earth Tech) under FCPA Contract No. CP9951903-01; Project Number 475598; Project Detail 737, Earth Tech Project Number 34738.03. This work was completed in accordance with the Park Authority request for services dated June 4, 1999 and Earth Tech proposal dated June 28, 1999 and revised July 6, 1999.

The purpose of this report is to investigate the condition of various buildings on the Defense Mapping Agency (DMA) and Turner Farm Sites which consist of approximately 11.6 and 18.75 acres respectively near the intersection of Springvale Road (Route 674) and Georgetown Pike (Route 193) in Fairfax County.

The investigation includes the following tasks:

- Task 1 Inventory Existing Conditions
- Task 2 Opportunities and Constraints
- Task 3 Remedial Activities and Restorative Improvements
- Task 4 Demolition and Restoration Costs
- Task 5 Standing Structure Analysis of Turner Farm Barn and Milk Shed

The following summary highlights the condition of the major systems of the buildings located on the DMA Site:

- The structural systems appear to be in generally fair to good condition.
- The roof membranes appear to be in generally poor condition.
- The building exterior surfaces and interior finishes appear to be in generally fair to good condition with some areas in poor condition.
- The heating, ventilating, and cooling systems appear to be in generally poor condition.
- The electrical systems appears to be in generally poor condition.

A survey was performed to identify asbestos containing materials (ACM) and lead-in-paint, recommend response actions for materials identified and evaluate the costs of the various response actions. ACM was confirmed in six (6) buildings on the DMA site. ACM was not identified in two (2) buildings on the DMA site, the Turner Farm barn or the milk shed. The removal of the ACM should be designed by a Virginia-Licensed Asbestos Project Designer and include information regarding contractor responsibilities, work practices, air monitoring, project clearance and documentation. All ACM removal operations should be overseen by a Virginia-Licensed Asbestos Project Monitor.

Lead was detected in paint on all of the buildings with the exception of the Observatory Building. Federal, state and local regulations regarding the requirement to remove or remediate lead do not apply to these buildings since the plans for the buildings do not include residential housing use. For all of the buildings, with the exception of the Observation Building, renovation and/or demolition specifications should include language that informs contractors that lead is present within the paint. During construction, the contractor must compliance with the Lead-In-Construction Standard established by the U.S. Occupational Safety and Health Administration (OSHA), 29 CFR 1926.62 in protecting workers and the public.

The total estimated cost of demolition, renovation, new construction and removal of ACM for all of the buildings investigated on the DMA property are as follows:

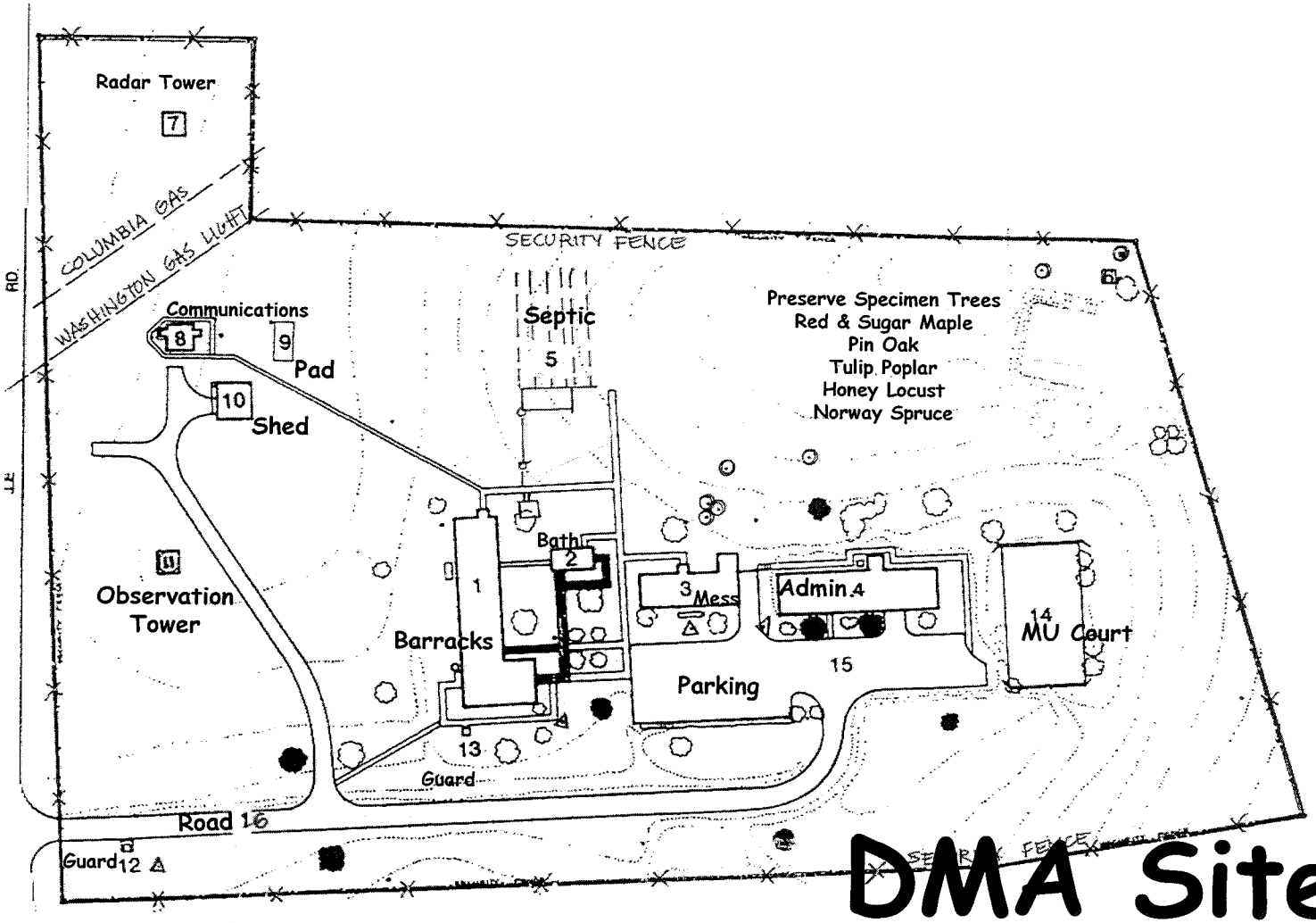
Total Building Area:	15,515 SF
Demolition Cost:[1]	$130,000
Renovation Cost:[1]	$1,048,000
New Construction Cost:	$1,330,000
Removal of ACM Cost:	$43,850

Notes: Not including cost for remediation of ACM.

Therefore the estimated cost for the three possible options is $173,850 to demolish; $1,091,850 to renovate; and $1,503,850 to construct new. No cost have been specifically included for the removal of Lead-In-Paint since the facilities are not being considered for residential use; and therefore not regulated.

A condition survey and feasibility study was performed on the Turner Farm Barn and Milk Shed to determine the potential reuse, define the broad scope of work that would be required to rehabilitate the structure and develop an estimated cost. The barn was evaluated for full and limited development scenarios with the assumed potential use as a community center and an equestrian center, respectively. Limited development of the barn structure as an equestrian center is supported as a result of this assessment and condition survey with an estimated cost of $365,700. The Turner Farm milk shed is in good condition for its original intended use as a utilitarian structure. To convert the milk shed to a use other than utilitarian requires considerably work and cost. The expense of using the milk shed for anything other than storage is not justified. An additional factor in deciding not to use the milk shed in the development of the barn is that it apparently is not entirely within the parcel acquired by the Park Authority.

Existing Conditions



DMA Site

Map compliments of Defense Mapping Agency

Building Assessment and Condition Survey

Prepared for:
Fairfax County Park Authority
12055 Government Center Parkway
Suite 421
Fairfax, Virginia 22035-5503

Site:
Defense Mapping Agency (DMA)/Turner Barn Site
Intersection of Springvale Road and Georgetown Pike
Great Falls, Virginia 22066

Prepared by:
Earth Tech, Inc.
1420 King Street, Suite 600
Alexandria, Virginia 22314

October 1999

ET Project No.: 34738

Table of Contents

Section No. **Page No.**

Table of Contents

Continued

1.0 Introduction

This report covers the assessment and condition of structures on two parcels of land owned by the Fairfax County Park Authority (Park Authority), located near the intersection of Springvale Road and Georgetown Pike, in Fairfax County, Virginia. The parcels are located in an area of Fairfax County known as Great Falls and consist of low density, residential development. The two parcels of land are the Defense Mapping Agency (DMA) and Turner Barn sites. Descriptions of the sites as taken from the Park Authority's General Management Plan (GMP) approved May 12, 1999, are as follows:

- The Defense Mapping Agency site (DMA). An 11-acre, essentially flat parcel of land with several existing buildings, paved parking areas and entrance road. There are scattered trees and open fields on the rest of the site. The existing buildings are what remains from the Nike missile site that formally occupied the site.
- The Turner Farm. A 22.63-acre former dairy farm adjacent to the DMA site to the north. It is similar topographically to the DMA site and includes open areas and old fields, scattered trees, a farm pond, barn, and other outbuildings. Approximately 18.75 acres of the farm is owned by the Park Authority. The remaining-acreage remains in private ownership.

A third parcel consisting of 37 acres, called Lexington Estates Park, is identified in the GMP but is not addressed as part of this report. Referenced to the Park Authority GMP is made for a more detailed description and purpose of these parcels.

The primary objective of this investigation is to provide an understanding of the condition of the buildings. Finding problems, particularly those that would be consider major deficiencies are goals of this effort. A major deficiency would be defined as one costing approximately $500 or more to correct. Any building will have minor defects deserving attention and the repair and or maintenance of these minor defects are matters of personal need or preference most noticed by the owner or occupant. It is not the intent of this report to detail every minor defect that was found.

This report is founded on a visual examination of the major systems in the building; specifically, the architectural (building envelope and finishes), structural (support and framing systems), mechanical (HVAC, plumbing, and fire protection), and electrical systems (power distribution and lighting). The report constitutes Earth Tech's opinion regarding the condition of the property.

This report has been prepared from the perspective of what an owner of this property would benefit from knowing. Thus, it discusses many things beyond those which are of immediate concern. It is intended that the report be read in its entirety to understand fully all the information that has been obtained.

The following definitions of conditions will be helpful in reading the report:

Good: Component or system is sound and performing its function. Although it may show signs of normal wear and tear, some minor rehabilitation work may be required.

Fair: Component or system falls into one or more of the following categories: a) Evidence of previous repairs not in compliance with commonly accepted practice, b) Workmanship not in compliance with commonly accepted standards, c) Component or system is obsolete, or d) Component or system is approaching end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life.

Poor: Component or system has either failed or cannot be relied upon to continue performing its original function as a result of having exceeded its expected performance, excessive deferred maintenance, or state of disrepair. Present conditions could contribute or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

Sections 2.0, 3.0, and 5.0 of the report address the eight buildings and structures on the DMA site. Section 6.0 addresses the barn and milk shed on the Turner Farm Site. Section 4.0 provides the results for the asbestos and lead-in-paint inspection for both sites.

As Architects and Engineers, our responsibility is to evaluate observable evidence relevant to the architectural, structural, mechanical, and electrical systems. We are not responsible for conditions that could not be seen or were not within the scope of services performed at the time of the inspection.

This inspection report was limited to observations made from visual evidence of the reasonably accessible areas. No geologic, geotechnical, subterranean, destructive, or invasive testing was performed. The report is not to be considered a guarantee of condition and no warranty is implied.

2.0 Inventory of Existing Conditions

2.1 General

The building numbering and name used in this report is based on and consistent with the Park Authority's survey entitled Location of DMA Buildings dated 5/99 as follows and shown on Drawing S-1 at the end of this section. Photo's referenced in the report are contained in Appendix A:

Number	Building Name
1	Barracks
2	Bath House
3	Mess Hall
4	Administration Building
7	(Missile Tracking) Radar Tower
8	Communications
10	Tractor and Implement Shed
11	Observation Tower

1. Buildings #1, 2, 3, 4, 8, 10, and 11 are all constructed of concrete masonry walls, exterior and some interior. The masonry walls are painted and the paint is peeling throughout all of the buildings. The masonry appears to be in generally good condition with the finish in poor condition. The window sills are painted precast concrete and appear to be in generally good condition with the paint finish in poor condition. (See Photo #1)

2. The exposed portions of the base of the exterior walls give the impression that the buildings rest on concrete masonry unit foundation walls. What was observed appears to be in generally good condition.

3. The roof membranes on the buildings (other than Buildings #7 and #11) are built-up tar and gravel membranes over foam insulation. Based on observations at deteriorated portions of some of the roofs, it appears there is more than one membrane on each of the buildings. There are numerous areas of blisters and deterioration to the roof membranes. Overall, the roof membranes appear to be in poor to fair condition. (See Photos #2 and #3)

4. The edges of the building roofs consist of painted wood trim covered by a painted sheet metal fascia/gravel stop. There are many areas of deteriorated sheet metal and wood. The trim and fascia/gravel stops appear to be in generally poor to fair condition. The finish on the sheet metal has peeled and fallen off in many areas. (See Photo #4)

5. The roof structures for buildings #1 to #4 consist of wood joist framing, wood decking, wood columns, and masonry or wood stud bearing walls. The areas of framing and deck that were exposed to view appear to be in generally fair to good condition. There are ends of joists that have been exposed to the elements that have deteriorated and should be replaced.

6. The roof structures of buildings #8 and #10 consist of steel joist framing, steel deck, and masonry bearing walls. The areas of framing and deck that were exposed to view appear to be in generally good condition.

7. The roof structure of building #11 appears to be cast-in-place concrete.

8. Building #7 is an exposed steel framed structure without roof construction.

9. The ceilings are generally gypsum board with a painted finish. They appear to be in generally fair to good condition with some areas that appear to be in poor condition.

10. The interior finish on the exterior walls is gypsum board. There are transite panels in some of the buildings, on portions of some of the walls. The walls in Building #4 have been defaced with spray paint. The gypsum board and transite panels appear to be in generally fair to good condition, although there are numerous areas of holes in the panels. (See Photo #5)

11. The floor finish throughout the buildings is 9 inches by 9 inches tiles and appears to be in poor condition. There is vinyl base on the walls throughout the buildings that appears to be in poor condition.

12. There was no water, electricity, or telephone service to the site. Because of this these systems were not operational and could not be checked.

13. The majority of the electrical work throughout the buildings is surface mounted conduit and appears to be in generally fair to good condition. In Buildings #1 and #4, there are outlets for window air conditioning units next to some of the windows.

14. The light fixtures throughout the buildings are surface mounted fluorescent types with the conduit concealed above the ceilings.

15. Heating for most of the areas of Buildings #1 to #4 is via hot water fed fin tube radiation. Cabinet sizes vary and appear to be in good condition. Because of utility service not being available, the systems could not be checked. All of the piping for the fin tube radiators is exposed and painted. The piping appears to be in generally fair to good condition; however, the paint is peeling and appears to be in generally poor to fair condition.

2.2 Code Compliance

1. Local Building Code and Life Safety (NFPA 101): The Town of Herndon uses the National Building Code, with Virginia amendments, as published by BOCA International, Inc. Based on a cursory review of the general requirements of the building and life safety codes, it is our opinion that the buildings on the site (not including the Building #7), in their current layouts, would be in general conformance with the codes. A renovation, new layouts, or different uses of the buildings would require a thorough review of the code for full compliance. The Radar Tower would be considered a special use.

2. National Fire Protection Association (NFPA): Because of the condition of the existing electrical systems in most of the buildings, new electrical systems would have to be installed. They would have to be designed and installed in accordance with NFPA 70, the National Electric Code.

3. Accessibility: None of the buildings have been designed to be accessible to the disabled. There are steps at all of the doors and the toilets are not accessible. Although getting into the buildings does not include an accessible path, once inside the buildings (not including the Communications Building, Observatory, and Radar Tower), they appear to have been designed so that they are accessible.

2.3 Building #1 - Barracks

1. Over the north vestibule, the roof membrane appears to be in fair condition, the flashings appear to be in good condition, and the counterflashings appear to be in fair condition.

2. There is severe membrane deterioration in the southwest corner of the building where water appears to collect and has entered the building causing damage to the interior finishes. (See Photo #6)

3. There are 3 distinct roof areas on the building. (See Photo #7) The trim and flashing all appear to be in poor condition. There is an opening in the membrane where the roof pitch changes from an east-west direction to north-south, in the area above the main entrance to the building.

4. The wood trim on the roof overhang at the north door shows signs of deterioration and appears to be in poor condition.

5. There is a brick chimney for the boiler stack adjacent to the boiler room. The brick appears to be in generally good condition with minor areas of spalled brick. (See Photo #8)

6. The doors throughout the building are either wood with wood frames or hollow metal with hollow metal frames. The doors appear to be in generally fair condition.

7. There are transite panels over gypsum board on the ceiling in the North Vestibule. The paint is peeling and the panels appear to be in fair condition.

8. The lower portion of the interior finish of the exterior walls has transite panels over gypsum board over concrete masonry units.

9. The upper portion of the interior finish of the exterior walls has gypsum board over concrete masonry units.

10. The ceiling is gypsum board on wood roof framing and appears to be in generally good condition.

11. Some of the interior walls are gypsum board on wood studs. The gypsum board appears to be in fair to good condition with numerous small and large holes in the gypsum board.

12. The building is heated via hot water fin tube radiation below the windows. The boiler for the fin tube is located in the Boiler Room near the southwest corner of the building.

2.4 Building #2 – Bath House

1. The windows around the building are steel single pane awning windows. The windows appear to be in poor to fair condition with numerous broken glass panels.

2. There are transite panels over gypsum board on the south and west walls and on the ceiling in the Storage Room in the northeast corner of the building and in the Toilet Room in the southeast corner of the building. The panels appear to be in fair to good condition. The north and east walls of the Storage Room and the east and south walls of the Toilet Room are exposed concrete masonry units.

3. There are ceramic tiles on the walls of the Shower Areas. They appear to be in fair to poor condition.

4. There are gypsum board walls in the main toilet and shower areas. Other than peeling paint, the walls appear to be in good condition.

5. There are transite panels over gypsum board on the walls in the janitor's sink and shower areas that appear to be in good condition.

6. There are sheet metal toilet partitions that appear to be in good condition. (See Photo #9)

7. The plumbing fixtures include lavatories, full height urinals, floor mounted toilets, drinking fountain, and showers. The fixtures all appeared to be in generally poor to fair condition. (See Photos #10 and #11)

8. The building is heated via hot water fin tube radiation. The fin tube is fed from the boiler in Building #1.

2.5 Building #3 – Mess Hall

1. There is an area near the center of the roof that appears to have been previously repaired. The patch is not at the same level of the membrane as the rest of the roof.

2. The windows around the building are steel single pane awning windows. The windows appear to be in poor to fair condition with numerous broken glass panels. (See Photo #12)

3. There are transite ceiling panels on the east portion of the building and some areas of gypsum board patching. The ceiling on the west portion of the building is gypsum board. The ceilings appear to be in generally fair to good condition.

4. The light fixtures in the east portion of the building are fluorescent. The light fixtures in the west portion of the building are incandescent (all of the globes have been broken) and fluorescent. (See Photo #12)

2.6 Building #4 - Administration Building

1. The masonry throughout the building appears to be in generally good condition. There are expansion joints above and below the windows around the building. The joint sealant has failed and appears to be in generally poor to fair condition.

2. There is an expansion joint on the east wall of the building that is in poor condition.

3. There are trees around the building that are overhanging the roof and moss is growing on the membrane below the trees.

4. There is a brick chimney for the boiler stack adjacent to the boiler room. The brick appears to be in generally good condition with minor areas of spalled brick.

5. The northwest corner of the boiler room has experienced severe deterioration. The roof framing, trim, and masonry have been seriously damaged by water penetration into the roof and walls. When observing the roof condition it was found that there is a flat roof over the boiler room. This has most likely contributed to the deterioration of the roof and walls. (See Photos #13 and #14)

6. The walls on the interior have been defaced with spray paint and appear to be in generally fair condition. (See Photo #15)

7. The doors throughout the building are painted hollow metal doors with 10 inches by 10 inches glass panels on some of the exterior doors. The doors appear to be in generally poor to fair condition.

8. The windows around the building are wood double hung windows with insulated glass. The windows appear to be in poor to fair condition with numerous broken glass panels. (See Photo #15)

9. There are transite panels over gypsum board over concrete masonry on the exterior walls of the building that appear to be in generally fair to good condition.

10. There is water damage on the ceiling is various areas of the building.

11. The main electrical service to the building is 150A and the panel has space for 40 breakers. It appears to be in good condition. There is also a distribution panel in the boiler room that appears to be in poor condition. (See Photo #16)

12. The building is heated via hot water fin tube radiation below the windows. The boiler for the fin tube is located in the Boiler Room on the north side of the building near the center.

2.7 Building #7 – Radar Tower

1. The radar tower consists of a 16-foot square concrete platform supported by a concrete pedestal. The platform is surrounded by a steel bar grating walkway on all four sides. The tower is enclosed by painted corrugated metal panel siding on a painted steel frame that supports the siding and the walkway. The lower four feet is enclosed by chain link fencing. (See Photo #20)

2. There is a concrete slab-on-grade within the enclosure that has two isolation pads for equipment. The slab appears to be in good condition and the pads appear to be in poor condition.

3. The chain link fencing around the enclosure appears to be in good condition.

4. The metal panel siding appears to be in good condition while the paint is peeling and appears to be in poor condition.

5. The concrete pedestal and platform appear to be in good condition.

6. The steel frame supporting the siding and walkway appears to be in fair to good condition. There are areas of framing in the northwest corner (at the ladder) that are starting to delaminate and appear to be in poor condition. There is rusting throughout the framing and the finish appears to be in poor condition.

7. The walkway grating is rusting and appears to be in generally fair to good condition. (See Photo #21).

2.8 Building #8 - Communications

1. The walls in the building are generally gypsum board over concrete masonry units and appear to be in poor condition. There appears to have been a wall that has been removed that separated the south portion of the building.

2. The exterior doors and frames of the building are hollow metal and appear to be in poor condition.

3. The windows are double hung, single pane wood windows and appear to be in fair to good condition.

4. There is a sheet metal gutter and downspout on the south edge of the roof. The gutter and downspout appear to be in poor condition.

5. There is what appears to be an electrical main distribution panel in the northwest corner of the building. The panel contains eight 100A circuit breakers and has a 100A service panel for the building directly next to it. These panels appear to be in fair to good condition.

6. The main entry point for the site's telephone service appears to be in the northwest corner of the building. The panel and wiring appear to be in good condition.

2.9 Building #10 - Tractor and Implement Shed

1. The walls in the south portion of the building are painted concrete masonry units and appear to be in generally good condition. The walls in the north portion of the building are gypsum board and wood paneling over concrete masonry units and appear to be in poor condition.

2. There is an expansion joint on the exterior of the south wall that appears to be in generally fair condition.

3. The exterior doors and frames of the building are wood and appear to be in poor condition.

4. The windows are double hung, single pane wood windows and appear to be in fair condition.

5. The south portion of the building is heated by a wall mounted unit heater located on the south wall of the building. The north portion of the building is heated by a wall mounted radiant heater.

6. The ceiling in the south portion of the building is suspended fiberglass panels and appears to by in fair to poor condition. The ceiling in the north portion of the building is gypsum board and appears to be in poor condition. In the south portion of the building we observed a hole in the roof deck above the ceiling panels that has been covered over.

7. The floor slab is an exposed concrete slab with what appear to be isolation pads and trenches in the south portion of the building.

8. There is a transformer and high amperage electrical panels in the south portion of the building. It appears that this building once housed the facility's emergency generators. (See Photo #17)

2.10 Building #11 - Observation Tower

1. The walls of the building are painted concrete masonry units. On the upper eight feet of the east, south, and west exterior walls there are many areas of spalled concrete masonry units. There are minor settlement cracks on the south wall above the door and at the platform. The walls appear to be in generally fair to good condition. The paint on the exterior and interior of the walls shows signs of deterioration and water damage and is in poor condition. (See Photo #18)

2. We could not get access to observe the roof of the building around the dome. When reaching up from the window opening on the east side of the building, we could not feel any type of membrane, only a hard, concrete like surface.

3. The exterior door and frame is hollow metal. The door is laying on the floor and most of the frame has deteriorated and has been removed from the walls. There is a transom window above the door that appears to be in poor condition.

4. The window on the north wall is a single pane steel awning window and appears to be in poor condition. The windows on the east and west walls have been previously removed and are boarded up.

5. There is a ship's ladder for access to the platform that appears to be in generally fair condition.

6. The platform is concrete on metal deck supported by structural steel framing. The platform appears to be in generally good condition. The underside of the deck is painted and the paint appears to be in poor to fair condition.

7. There are two steel floor hatches on the platform. One of them is at the top of the ladder and the other is for hoisting equipment up and down from the platform. The equipment access hatch is sealed shut and it's operation could not be verified. The hatch for the ladder appear to be in fair to good condition.

8. There is a concrete pedestal for support of a telescope that is isolated from the rest of the structure. The pedestal appear to be in good condition.

9. The dome is a steel panel rotating dome with a retractable opening. Due to no electricity at the site, we could not check the operation of the dome. The dome appear to be in generally fair to good condition.

10. There is a transformer and electrical panels under the ladder that appear to be in poor condition. (See Photo #19)

8. There is a steel ladder with cage in the northwest corner for access to the walkway and platform above. The lower portion of the ladder has been cut off. The ladder and cage are rusting and appear to be in fair to poor condition. (See Photo #22)

9. There is a 30A breaker and seven duplex outlets at the platform level that appear to be in good condition.

2.11 Walkway Canopy

1. There is a wood framed walkway canopy connecting buildings #1 and #2. (See Photos #23 and #24)

2. The roof membrane is roll roofing with a smooth surface. The roofing appears to be in generally good condition.

3. The roof structure is painted wood and appears to be in generally fair condition with some missing and deteriorated members. The finish appears to be in fair condition.

3.0 Opportunities and Constraints

The Park Authority has, as part of the GMP for the site, developed a program of activities that it envisions for the site. Included in the program of considered activities and facilities are the observatory, athletic fields, picnic areas, playgrounds, gardens, exercise, equestrian use, and trails. The stated purpose of the of the development of the parcels into park facilities is to:

- Preserve and protect cultural and natural resources; and
- Provide a variety of passive and active recreational activities for all age groups.

In this section of the report, we will analyze the activities planned for the site and identify potential opportunities and constraints in which the existing buildings may be utilized to support those activities.

3.1 Building # 11 - Observation Tower

After renovation and installation of a telescope, the observatory could be used as an educational tool for residents in the community and the local school districts. Space in one of the other existing buildings could be set aside for remote operation of the telescope, as a museum dedicated to observatory activities, and as an astronomy teaching facility. Additionally, outdoor activity areas could be set aside for construction of astronomical activities.

In order to support these activities the dome operating equipment needs to be replaced; electrical, heating, air conditioning, and telephone service to the building needs to be restored; and the building brought into conformance with the local building codes as identified in the Inventory of Existing Conditions.

If the upper level of the observatory requires accessibility by those with disabilities, an elevator or personal lift would need to be installed. This could be accomplished by building an addition to the building of approximately the same size that would house both the elevator and a remote control room.

Contact with the original manufacturer of the dome was initiated. They researched their files for information on the original design and equipment, however no information was forwarded for this report.

The remaining activities have been analyzed based on the use of the observation tower in all concept plans developed under the General Management Plan.

3.2 Other Existing Buildings

Buildings #1, 3, and 4 can be converted into office, meeting, classroom, display, and storage spaces.

An area in one of the buildings can be dedicated to a display that describes the history of the Nike missile program and the role that the site played in the Cold War.

Some of the smaller buildings or a portion of one of the larger buildings could be converted into a concession stand and storage areas for field maintenance and sporting goods equipment.

The buildings on the site do not have accessible entrances; however, once inside Buildings #1, 3, and 4, they appeared to be generally accessible with only minor improvements such as the installation of lever handles and automatic door operators.

Toilet rooms should be installed in Buildings #1 and 3 so that staff and the public do not have to go outside during inclement weather. Building #4 already has a toilet room, although it needs to be renovated and a second toilet room added to separate the sexes. The Bath House building could be converted into gang men's and women's toilet rooms for public use.

Water service may need to be brought to the site to provide increased water flow for the additional toilet facilities. The septic fields should be evaluated to determine if they could be used or new wastewater facilities be developed. The availability or capacity of off site utilities was not part of this report.

3.3 Site Development

The GMP identifies a number of site facilities that may be considered for the development of the parcels. The following list identifies the site development and the how the renovation of the buildings may complement or detract from the development of the site feature:

Athletic Fields: With the combination of the DMA site, the Turner Farm site and the existing Lexington Estates Park, a combination of different types of athletic fields could be sited on the property, including softball, little league baseball, and soccer.

Picnic Areas: Picnic areas could be located throughout the site, possibly adjacent to playgrounds.

Playgrounds: Playgrounds could be located throughout the site.

Gardens: Garden areas could be located as buffers between the active/passive recreational activities and the surrounding residential areas. Water lines could be brought to the garden areas to provide water for the gardeners to use.

Exercise: A physical training course with exercise stations can be located throughout the site.

Equestrian Use: The Turner Farm site could be used for equestrian activities with a trail that traverses the entire park property and connects to other equestrian trails. The trails could be located in the buffer areas between the active recreation areas and the residential areas.

Trails: The entire site could include walking, biking, cross country skiing, and nature trails. These trails could also be located in the buffer areas between the active recreation areas and the residential areas.

4.0 Remedial Activities & Restorative Improvements

4.1 Introduction

This section of the report presents the findings of an asbestos and lead-in-paint survey performed at the DMA and Turner Farm Site. The survey was performed on the eight (8) buildings on the DMA site; and the barn and milking shed on the Turner Farm site. The survey was performed to identify asbestos containing materials and lead-in-paint, recommend response actions for materials identified and evaluate the costs of the various response actions. This survey was performed by Old Dominion Environmental Services, Inc. (ODES) for Earth Tech, Alexandria, Virginia.

The asbestos survey was performed to identify asbestos containing materials (ACM), quantify the amount of ACM, categorize the ACM and, if necessary, make recommendations for responses to the confirmed ACM in accordance with National Emissions Standards for Hazardous Air Pollutants (NESHAP). The Lead-In-Paint sampling was performed to determine whether construction activities at the site would result in a potential for lead exposure to workers. Given that plans for the site do not include residential housing, a complete, surface-by-surface, inspection for lead-based-paint was not performed nor warranted.

On August 5, 1999, a visual inspection was conducted of the ten buildings for suspect ACM. Previous inspection reports were provided as prepared by the U.S. Army as part of their Finding of Suitability to Transfer (FOST) for the site. Those reports were used, where appropriate, to assume that certain materials contain asbestos. The reports were not used to assume a negative (i.e., if previous testing did not indicate the presence of asbestos, confirmatory sampling was conducted). Materials that were not previously sampled by the Army were sampled. In conjunction with the asbestos survey, one paint sample was collected from each building for analysis of lead content.

The samples were submitted to and analyzed by EHS, Inc., Richmond, Virginia for asbestos using polarized light microscopy (PLM) and lead analysis using absorption spectrometry (AAS). The EPA and the Virginia Department of Professional and Occupational Regulation (DPOR) recognize ACM as material that contains more than 1% asbestos by weight and lead-based paint as paint that contains lead in excess of 0.5% by weight.

ACM was confirmed in Buildings #1, 2, 3, 4, 8 and 10. No ACM was identified in buildings #7, 11, the Turner Farm barn or the Turner Farm shed.

Lead was detected in paint on all of the buildings with the exception of Building #11. Recommendations are made in this report to include language in the project construction specifications notifying contractors as to the existence of lead and their responsibility to comply with the requirements of the Occupational Safety and Health Administration (OSHA) Lead-In-Construction Standard, 29 CFR 1926.62.

4.2 Survey Methodology

4.2.1 Asbestos

On August 5, 1999, the eight buildings were inspected at the DMA site, and the barn and milking shed at the Turner Farm Site for suspect ACM. Inspection reports previously prepared by the U.S. Army were used to assume that previously tested materials contained asbestos. For instance, if floor tiles and pipe insulation had been tested and found to contain asbestos, this information was used as a basis for an assumption. The Army reports were not as a basis for a negative assumption. Additionally, materials that were not previously identified and/or tested by the Army were sampled and analyzed for their asbestos content. The inspection was performed an EPA accredited and Virginia-licensed asbestos inspector. A copy of the inspector's current Virginia Asbestos Inspector license is included as Appendix D.

Once suspect ACM was identified, the ACM was divided into homogenous areas based on appearance (color, texture, etc.) and construction history. All homogenous areas were then sampled. During the sampling phase of the survey, the material was categorized in accordance with NESHAP. Copies of the sample logs are included as Table 1 and the laboratory report are attached as Appendix B.

Samples of suspect materials were collected in accordance with the USEPA's ***Guidance for Controlling Asbestos-Containing Materials in Buildings*, 1985 ("Purple Book") and *Asbestos-Containing Materials in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials*, 1985 ("Pink Book").** Samples were collected in a manner to prevent cross-contamination. Careful attention was paid to ensure that the material was sampled to the substrate and was representative of the entire homogenous area. Sampling locations were first selected based on those areas where damaged had already occurred and then randomly. Samples were placed in clear plastic bags and transported to the laboratory following standard chain-of-custody protocol.

The samples were hand delivered to Environmental Hazards Services, Inc. (EHS) in Richmond, Virginia for analysis using polarized light microscopy (PLM). EHS is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP), accredited by the American Industrial Hygiene Association (AIHA) and licensed by the Commonwealth of Virginia Department of Professional and Occupational Regulation for asbestos PLM analysis.

4.2.2 Lead-In-Paint

In conjunction with the asbestos inspection, a paint samples was collected from each of the buildings to evaluate the presence of lead in the paint. Sample locations were first selected based on those areas where peeling, cracking or flaking had occurred, then randomly. Careful attention was paid to ensure no cross contamination occurred. Samples were placed in clear plastic bags and transported to the laboratory following standard chain-of-custody protocol.

The samples were hand delivered to Environmental Hazards Services, Inc. (EHS) in Richmond, Virginia for analysis using atomic absorption spectrometry (AAS), method number EPA SW846 7420. EHS is accredited by the Environmental Lead Laboratory Accreditation Program (ELLAP), accredited by the American Industrial Hygiene Association (AIHA) and recognized by the EPA as capable of performing lead analysis. Table 2 presents the Lead-In-Paint sampling log and Appendix C presents the laboratory analysis report. Cost of lead paint removal is incidental to the cost of other items for demolition or rehabilitation of the buildings.

4.3 Findings and Recommendations

4.3.1 Asbestos

This section has been subdivided by building to provide an accurate, easy to interpret overview of the ACM found in each building.

Building #1 Barracks

The previous inspection report, prepared by the Army, identified asbestos containing pipe insulation and floor tile. During the site inspection, asbestos containing transite panels were identified over wallboard located on the perimeter walls and ceilings near entranceways. Wallboard (not covered with transite panels) on the interior walls was sampled (Sample No.'s B1-ACM-01A and B1-ACM-01B) and not found to contain asbestos. The following is a list of confirmed asbestos containing materials in Building #1.

Table 1
Asbestos Sample Log
DMA/Turner Farm Site – Fairfax County, Virginia

Sample No.	Location	Material Type	Condition	Amount	NESHAP Category	Asbestos (Y/N)
B1-ACM-01A B1-ACM-01B	Building #1, Interior Walls	Wallboard	Damaged	2,000 square feet	Friable	No
B3-ACM-01A B3-ACM-01B	Building #3, ceiling	Transite	Good	1,500 square feet	Category II non-friable	Yes (36-37% Chrysotile)
B4-ACM-01A B4-ACM-01B	Building #4, Interior Walls	Wallboard	Damaged	1,5000 square feet	Friable	No
B4-ACM-02A B4-ACM-02B	Building #4, Perimeter Walls	Transite	Good	1,500 square feet	Category II non-friable	Yes (40% Chrysotile)
B8-ACM-01A B8-ACM-01B	Building #8, Interior walls	Wallboard	Damaged	500 square feet	Friable	No
B8-ACM-02A B8-ACM-02B	Building #8, ceiling	Ceiling Tiles	Damaged	150 square feet	Friable	No
B10-ACM-01A B10-ACM-01B	Building #10, wallboard	Ceiling	Damaged	600 square feet	Friable	No

Notes: Friable: Means crushable by hand pressure when dry.

Table 2
Lead-In-Paint Sampling Log

Sample #	Location	Condition	% Lead By Wt.
B1-LBP-01	Building #1: Walkway Canopy	Poor	0.81
B2-LBP-02	Building #2: Interior Wall	Poor	1.90
B3-LBP-03	Building #3: Door	Poor	3.80
B4-LBP-04	Building #4: Wall	Poor	3.70
B7-LBP-01	Building #7: Metal Siding	Poor	9.9
B8-LBP-01	Building #8: Interior Wall	Poor	0.29
B10-LBP-01	Building #10: Window Sill	Poor	0.23
B11-LBP-01	Building #11: Exterior Block	Poor	<0.018
BARN-LBP-01	Turner Farm Site: Barn	Poor	0.18
SHED-LBP-01	Turner Farm Site: Milk Shed	Poor	0.45

1. Approximately 1,000 ft^2 of non-friable floor tile and associated mastic located throughout the building. This material is classified by NESHAP as Category I non-friable ACM and could remain in the structure if demolition (other than by intentional burning) is the chosen course of action. If renovation of this building is chosen and the material will be rendered non-friable and/or subjected to sanding, grinding, cutting or abrading, removal is required. Approximate cost of removal, $2,000.

2. Approximately 200 linear feet of asbestos containing pipe insulation and boiler breaching located off the main entrance and in the boiler room (confirmed by the Army). This material is friable and must be removed prior to planned disturbance as part of a renovation or demolition of the building. Approximate cost of removal, $1,000.

3. Approximately 2,000 square feet of transite panels over wallboard on perimeter walls and ceilings near entranceways. This material is classified by NESHAP as Category II non-friable ACM and must be removed prior to planned disturbance as part of a renovation or demolition of the building. Approximate cost of removal, $10,000.

Building # 2 Bath House

The previous inspection report, prepared by the Army, identified asbestos containing pipe insulation, floor tile and transite panels. No additional suspect materials were identified and no sampling was conducted. The following is a list of asbestos containing materials in Building #2.

1. Approximately 550 ft^2 of non-friable floor tile and associated mastic located throughout the building. This material is classified by NESHAP as Category I non-friable ACM and could remain in the structure if demolition (other than by intentional burning) is the chosen course of action. If renovation of this building is chosen and the material will be rendered non-friable and/or subjected to sanding, grinding, cutting or abrading, removal is required. Approximate cost of removal, $1,000.

2. Approximately 100 linear feet of asbestos containing pipe insulation located throughout the building. This material is friable and must be removed prior to planned disturbance as part of a renovation or demolition of the building. Approximate cost of removal, $500.

3. Approximately 700 square feet of transite panels over wallboard on perimeter walls. This material is classified by NESHAP as Category II non-friable ACM and must be removed prior to planned disturbance as part of a renovation or demolition of the building. Approximate cost of removal, $3,500.

Building #3 Mess Hall

The previous inspection report, prepared by the Army, identified asbestos containing pipe insulation, floor tile and transite panels. For confirmation purposes, two samples of the transite panels were collected (Sample No.'s B3-ACM-01A and B3-ACM-01B) and the material was found to contain 37% and 36% Chrysotile asbestos, respectively. The following is a list of asbestos containing materials in Building #3.

1. Approximately 600 ft^2 of non-friable floor tile and associated mastic located throughout the building. This material is classified by NESHAP as Category I non-friable ACM and could remain in the structure if demolition (other than by intentional burning) is the chosen course of action. If renovation of this building is chosen and the material will be rendered non-friable and/or subjected to sanding, grinding, cutting or abrading, removal is required. Approximate cost of removal, $1,200.

2. Approximately 40 linear feet of asbestos containing pipe insulation located near the center of the building. This material is friable and must be removed prior to planned disturbance as part of a renovation or demolition of the building. Approximate cost of removal, $250.

3. Approximately 1,500 square feet of transite panels on the ceiling. This material is classified by NESHAP as Category II non-friable ACM and must be removed prior to planned disturbance as part of a renovation or demolition of the building. Approximate cost of removal, $7,500.

Building #4 Administration Building

The previous inspection report, prepared by the Army, identified asbestos containing pipe insulation, boiler flue insulation and floor tile. During the site inspection, transite panels over wallboard were identified containing asbestos located on the perimeter walls and ceiling in the boiler room. Wallboard (not covered with transite panels) on the interior walls was sampled (Sample No.'s B4-ACM-01A and B4-ACM-01B) and not found to contain asbestos. The following is a list of confirmed asbestos containing materials in Building #4.

1. Approximately 3,600 ft^2 of non-friable floor tile and associated mastic located throughout the building. This material is classified by NESHAP as Category I non-friable ACM and could remain in the structure if demolition (other than by intentional burning) is the chosen course of action. If renovation of this building is chosen and the material will be rendered non-friable and/or subjected to sanding, grinding, cutting or abrading, removal is required. Approximate cost of removal, $7,500.

2. Approximately 150 linear feet of asbestos containing pipe insulation located in the boiler room and main part of the building. This material is friable and must be removed prior to planned disturbance as part of a renovation or demolition of the building. Approximate cost of removal, $750.

3. Approximately 1,500 square feet of transite panels on interior walls and the ceiling in the boiler room. This material is classified by NESHAP as Category II non-friable ACM and must be removed prior to planned disturbance as part of a renovation or demolition of the building. Approximate cost of removal, $7,500.

Building #7 Radar Tower

No suspect ACM was identified within this building. The Army's report also did not identify ACM in this building.

Building #8 Communications

The previous inspection report, prepared by the Army, identified asbestos containing floor tile. Two samples of wallboard (Sample No.'s B8-ACM-01A and B8-ACM-01B) and ceiling tile (Sample No.'s B8-ACM-02A and B8-ACM-02B) were collected. Neither the wallboard nor the ceiling tile was found to contain asbestos. The following is a list of asbestos containing materials in Building #8.

1. Approximately 450 ft^2 of non-friable floor tile and associated mastic located throughout the building. This material is classified by NESHAP as Category I non-friable ACM and could remain in the structure if demolition (other than by intentional burning) is the chosen course of action. If renovation of this building is chosen and the material will be rendered non-friable and/or subjected to sanding, grinding, cutting or abrading, removal is required. Approximate cost of removal, $900.

Building #10 Tractor and Implement Shed

The previous inspection report, prepared by the Army, identified asbestos containing floor tile. Two samples of wallboard (Sample No.'s B10-ACM-01A and B8-ACM-01B) were collected and no asbestos was found. The following is a list of asbestos containing materials in Building #10.

1. Approximately 125 ft^2 of non-friable floor tile and associated mastic located throughout the building. This material is classified by NESHAP as Category I non-friable ACM and could remain in the structure if demolition (other than by intentional burning) is the chosen course of action. If renovation of this building is chosen and the material will be rendered non-friable and/or subjected to sanding, grinding, cutting or abrading, removal is required. Approximate cost of removal, $250.

Building #11 Observation Tower

No suspect ACM was identified within this building. The Army's report also did not identify ACM in this building.

Turner Farm Site Barn

No suspect ACM was identified by and no samples were collected.

Turner Farm Site Milk Shed

No suspect ACM was identified and no samples were collected.

General Asbestos Recommendations

Prior to initiation of any above recommended asbestos removal activities, an asbestos project design should be prepared by a Virginia-Licensed Asbestos Project Designer. The design should include information regarding contractor responsibilities, work practices, air monitoring, project clearance and documentation. During the asbestos removal operations, all work should be overseen by a Virginia-Licensed Asbestos Project Monitor. The Asbestos Project Monitor's duties should include; ensuring compliance with all applicable regulations and the project design, air monitoring and work area clearance.

The total estimated cost of removal and disposal of ACM for all buildings is $48,850.

4.3.2 Lead-In-Paint

Lead was detected in all of the paint samples collected with the exception of Building #11 (Observation Tower). Table 2 presents a list of the samples collected and the results of laboratory analysis.

For all of the buildings, with the exception of Building #11, renovation and/or demolition specifications should include language that informs contractors that lead is present within the paint and that they must comply with the requirements of the Lead-In-Construction Standard established by the U.S. Occupational Safety and Health Administration (OSHA), 29 CFR 1926.62. Given that the plans for the buildings do not include residential housing, federal, state and local regulations regarding lead in residential housing do not apply to this project. It is concluded that the removal of the lead-in-paint is not warranted since it is not regulated given the planned use of the facilities. The estimated cost of lead-in-paint removal is not included in the estimates.

6.0 Turner Farm Barn and Milk Shed

6.1 Introduction

This section presents the results of a feasibility study conducted to determine the potential for reuse of the Turner Farm Barn and Milk Shed as part of the Turner Farm Site which has been acquired by the Park Authority. This condition survey and feasibility report was performed by John Milner Associates, Inc., (JMA) for Earth Tech, Alexandria, Virginia.

In preparation for the on-site condition assessment, a team from JMA took measurements and created field drawings of the buildings for use in determining the extent of work required and to provide the basis for work by the cost estimator. A survey of existing conditions of the structural frame, and the exterior and interior building materials was conducted in late August of 1999 by JMA and McMullan Associates, Structural Engineers. The survey was conducted from the ground with binoculars and from within the building. The primary purpose of the survey was to define the broad scope of work that would be required to rehabilitate the building for use by the Park Authority.

Utilizing the information acquired from the condition survey, a list of recommended work was developed, a code analysis was performed, loading calculations were developed, field drawings were further refined, and the cost estimator calculated the estimated cost of rehabilitating the buildings.

The cost estimate was developed as described herein and was based on quantities of labor and materials for an assumed use, but without a design scheme. Prior to finalizing any decision on the use of the building for a specific use, and for comparison with the cost of new construction, a schematic design should be developed and more detailed investigations should be made relative to the specifics of that design. With this information the cost estimate included herein should then be revised.

6.2 The Turner Farm

The barn and milk shed are located on the Turner Dairy Farm on Georgetown Pike (Rt. 193) in Fairfax County, Virginia, just east of the intersection with Springvale Road. The barn appears to have been designed and built as a dairy barn with a gambrel roof, a hay loft, and a poured concrete floor on the main level. Although difficult to date with any certainty, the barn was constructed with milled lumber and includes metal structural components suggesting a late nineteenth or early twentieth century date. The structural design resembles published barn plans from the early twentieth century and appears to retain much of its original integrity. Masonry silos such as the one that stands at the barn's southwest corner date as early as World War I.

6.3 Barn Description

The barn is a wood framed, gambrel roofed structure with wood siding supported on shallow concrete foundation walls and containing approximately 5,880 gross square feet on its two floors. See Figures 1 and 2 on the adjoining page. The roof is constructed with gambrel framing and covered with a standing seam sheet metal roof supported on 1-inch thick wood lathing which averages 6 inches in width, spaced approximately 11 inches on center. The 2-inch × 6-inch rafters are spliced at the inflection point of the roof slope. The splice location is stabilized by the addition of struts fastened to the underside of the two rafters. The lower roof rafters are supported by cantilevered ends of the 2-inch × 6-inch wall studs and an additional strut. The member spacing varies between 22 inches and 26 inches on center. Beveled wood siding, ½-inch × 6 inches, covers the lower walls which are punctuated with a series of wood windows along the long dimension. A unitized precast concrete silo is located at the southwest corner and connected to the barn with a makeshift passage which was not original to the structure. An attached one-story shed contains the well which serves the farm.

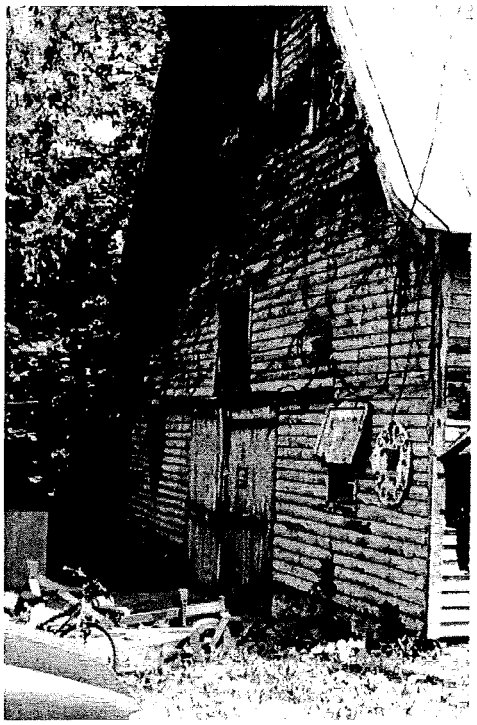


Figure 1: North End of the Turner Barn

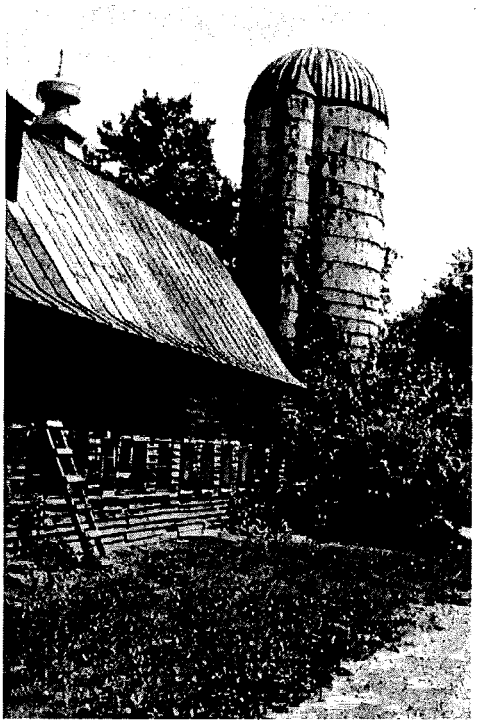


Figure 2: West Side and Silo of the Turner Barn

At grade level the main floor is of reinforced concrete and was the area where the milking operation was conducted. The concrete floor was poured with trenches and troughs along the lone dimension designed to aid in washing out the milking area. The interior side of the exterior wood studs is covered with board siding. Sliding doors are located at either end. The upper floor consists of a high section at the south end and a larger lower section at the north end which is approximately two-thirds of the total floor area. The floor-to-ceiling dimension between the main floor and the lower upper floor is quite shallow, measuring only 7 feet 9 inches. Drawings EX-1 through EX-4 which are field measured drawings of the barn's current configuration are contained herein.

At the high upper floor, the framing consists of 1⅝-inch wide × 9½-inch deep floor joists spaced at 24 inches on center, spanning between four (4) 1¾-inch × 5½-inch deep beams. The two beam spans are 12 feet and 14 feet, 1-inch respectively. The joists spans are 10 feet 6 inches, 12 feet and 10 feet 6 inches. Steel pipe columns 4-inch in diameter support the beams.

At the low upper floor, the framing consists of 2-inch wide × 12-inch deep joists spaced at 24 inches supported by beams consisting of (3)2-inch wide × 12-inch deep members. The span of the beams varies between 10 feet-2 inches and 10-feet-8 inches. 5-inch diameter steel pipe columns support the beams.

At both levels of the upper floor, the joists are covered with 1-inch × 3¼-inch tongue and grooved wood flooring. Walls and ceiling are unfinished, with the 2 × 6 wood studs exposed at the wall with the backside of the exterior wood siding visible and the roof lathing exposed at the ceiling. A large window, approximately 4 feet wide and 7 feet high is located at the south end. At the south end an opening is located at floor level with a pair of hinged doors above and windows located on either side of the upper doors.

6.4 Milk Shed Description

The milk shed which is immediately adjacent to the barn is a one-story concrete block building supported on a concrete slab on grade and having a wood framed pitched roof covered with corrugated metal roofing. The south end is located on Park Authority property with the north end remaining in private ownership. The interior is divided into three spaces, each with its own exterior door. The two larger rooms have plaster interior surfaces on the concrete block walls with suspended plaster ceilings. The small room at the north end contains a chimney and apparently served as a mechanical room. See Drawing EX-2.

6.5 Design Floor Load Assessment

Calculations were performed to determine the live load capacity of the upper floor level in the barn for the purpose of determining what limitations there might be on future uses.

At the front (north) portion, that which has the lower upper floor, the calculated live load capacity is 95 PSF. The capacity is limited by the flexural strength of the existing three 2-inch by 12-inch beams which span between the pipe columns. These calculations are based on the assumption that all of the structural repairs listed in the condition assessment have taken place.

At the south elevated end, the calculated live load capacity is only 3 PSF. The floor capacity in this area is limited by the four 1¾-inch by 5½-inch beams which span between the steel pipe columns.

6.6 Barn Condition Assessment

The following exterior items were identified as requiring repair or replacement if the building is to remain in use. Because of the extreme amount of undergrowth and vegetation which encroaches on the east side of the barn, this side was not capable of being inspected. It is assumed that the general condition of the east side is similar to that of the west side.

1. Remove all vegetation which is encroaching on the barn including tree limbs which overhang any portion of the roof. Remove the tree growing out of the silo foundation.

2. Numerous areas of rot and insect damage at the wood sills supporting the wood studs of the exterior walls. Approximately 25% of the existing sills require replacement.

3. The bottom two feet of the existing wood wall siding is generally in poor to fair condition. It also appears that some deterioration has occurred at the bottom of the existing wall studs. It is recommended that the bottom two feet of wall siding be removed around the perimeter of the barn to allow for a visual inspection of the wall studs. It is estimated that 10% of the existing siding will require replacement and that 25% of the existing 2-inch x 6-inch wall studs will require strengthening by adding an additional stud to the face of the existing stud. All wood corner boards require replacement.

4. There are random areas of siding deterioration throughout the barn. Approximately 10% of the total sheathing requires replacement in order to keep the barn somewhat watertight.

5. At two localized spots, spalled concrete in the foundation wall is compromising the bearing condition of the existing wood sill plate. Concrete repair is required at these two locations.

6. The parging on the surface of the existing concrete has deteriorated and requires replacement.

7. A broken rafter at the south side requires replacement.

8. The existing sheet metal roof has reached the end of its useful life and should be replaced with a standing seam of similar construction. Terne coated stainless steel or lead coated copper roofing material is recommended. At the time of replacement the missing roof ventilator which is stored on the site should be rebuilt and reinstalled.

9. All exterior doors, both upper and lower, require replacement along with the track for those which are sliding doors. Upper windows also require repair and, in the case of the large opening on the south end, total replacement.

10. Windows require either major repair or total replacement. Replacement in kind will be more economical and will allow the use of insulated glass if desired. All window trim, both interior and exterior, requires repair and/or replacement.

Major interior items requiring repair or replacement include the following:

1. The existing main floor concrete slab will require removal and replacement if the barn is to be considered for uses other than a barn operation. In conjunction with the change in level at those locations where the existing floor is higher, it will require finishing of the interior side of the exterior wall and a change in the level of door sills, etc.

2. The column bases at three of the existing 5-inch diameter pipe columns have rusted through the wall of the column. A new steel pipe sleeve is needed to reinforce the base of the column at these locations.

3. There are three locations where the existing 5-inch diameter pipe columns are missing from beneath the floor beams. These columns require replacement.

4. Rotted floorboards in the upper floor at various locations require replacement. The total area is approximately 25%.

5. Limited wood siding and trim repair totaling approximately 5% of the overall amount.

6. The current electrical system does not meet code nor does it meet the criteria for any use of the barn except for storage.

In general, the list of items requiring repair and/or replacement is extensive due to the massiveness of the structure and lack of maintenance, the barn is in good condition for a structure of its type.

6.7 Milk Shed Condition Assessment

The north side of the building at the mechanical room is severely overgrown with vegetation. The assessment is made with the assumption that those areas which could not be accessed are in the same general condition as those that could be accessed. The following items require attention:

1. Some damage has occurred to the exterior CMU walls. Assume 20 linear feet of crack repair.

2. Damage to three existing rafter tails on the west side of the building requires strengthening due to water/insect damage.

3. Sheet metal roofing and the construction in the end gables requires replacement.

4. Limited amounts of plaster repair are required on the interior.

5. The current electrical system does not meet code and should be removed and replaced.

In summary, the building is in good condition for its original intended use and design as a utilitarian structure. To convert the milk shed to a use other than utilitarian will require considerably more work than that noted above.

6.8 Barn Code Analysis

The building is classified as Combustible, Type 5B Unprotected according to the BOCA National Building Code as it currently exists. With an area of approximately 5,880 square feet, this classification generally limits its use to that of light storage or certain types of business operations, unless the upper story is sealed off and not used. As shown below, however, even the light storage use cannot be accommodated because of structural limitations. However, with the installation of an automatic fire sprinkler system, the allowable height and area can be increased to such that the allowable uses include most types for which the barn would conceivably be considered including A-3 Assembly, B Business, E Educational, and R-1 and R-2 Residential.

From the standpoint of allowable structural loading, the 95-100 PSF live load capacity of the lower portion of the upper floor is acceptable for assembly, office, classroom and residential use. It is not acceptable for storage uses. The 3 PSF live loading at the high portion of the upper floor will not allow any use without strengthening of the structural support system. The existing floor joists at the high portion of the upper level floor have a capacity in excess of 100 PSF concluding that if the beams supporting the floor joists are strengthened with steel or laminated veneer lumber, the floor capacity can be significantly increased. It is recommended that the high portion of the upper floor be lowered to the same level as the remainder of the floor

should strengthening the beams is performed. Making the lower and the upper portion at the same level will eliminate the need for stairs and an additional stop for an elevator. Any use of the upper floor will require the installation of approved accessible means of egress including two protected stairways serving the upper floor which exit directly to the exterior at the ground level.

An approved means shall be provided for reaching the upper level in order to meet the accessibility criteria of current codes. If the high portion of the upper floor is strengthened to allow use, and is left at its existing level, then the elevator will require stops at both levels of the upper floor. Depending on the use of the building this can be a limited use elevator (LULA) or, in certain instances, a wheelchair lift. In addition, all features within the building including entrances, restrooms, etc., need to meet current ADA requirements.

In summary, the barn can be brought into compliance with the code for a variety of uses. The primary limiting factors are the live loading of the upper part of the upper floor, the lack of an automatic sprinkler system, and the need to install protected stairs and an accessible elevator. All of these items can be provided without major demolition and reconstruction of the building footprint. In addition, all non-protected access between floor levels, such as the existing access panels will need to be sealed. See Drawings A-1 and A-2 which illustrate concepts for construction that will meet the exiting and accessibility requirements.

6.9 Feasibility Study

In order to create a basis for cost comparison with new construction, an assumed reasonable use was assumed for the barn. Because of the extensive amount of work required to convert the barn to most contemporary uses, and to provide heating and cooling as expected, two uses were considered, one requiring limited development and the other requiring a higher level of development. Some work is common to both assumed uses including all exterior improvements such as roofing, siding repair, new windows, etc. On the interior, the exit and accessibility requirements including new stairways and elevator are also included in both assumed uses.

The cost of site work and site improvements beyond required clearing and grubbing and removals is beyond the scope of this assessment. However, site cost will be the similar regardless of whether the barn is converted for use or a new building is constructed for the same use. For comparison's sake the site work costs are not included.

The work required to accomplish the conversion to the two assumed potential uses is outlined in Appendix E and, together with the drawings, is the information used to develop estimates for each of the potential uses.

For the limited development it was assumed that the barn usage would be generally confined to periods when it can be used without cooling and when adequate heating can be provided with basic ceiling or wall hung unit heaters. Conversations with Park Authority staff members indicated an interest in using the building for equestrian uses. As a result, the limited development use was directed towards the conversion of the building as an equestrian center or club. This envisions the use of the lower floor as an area where horse tie stalls will be located with club activities taking place on the upper floor. In order to limit the cost of construction, the high portion of the upper floor which is restricted by lack of structural loading capacity will be sealed off with a non-accessible partition. The development does not include the cost of construction for restrooms which may be provided elsewhere within the park development.

For the higher level of development, the assumption of work and the cost estimate is based on the building being converted to a community center with both floors fully finished and useable. This includes reconstruction of the high portion of the upper floor to overcome the lack of structural capacity in the existing. In this case, the building would be fully heated and cooled requiring insulation in exterior walls and in the roof which in turn, requires installation of gypsum wallboard on the interior side of the exterior wood studs. Restrooms with the number of fixtures suitable for A-3 Assembly use are included. Spaces are finished with carpet, ceramic tile, etc., as appropriate.

The cost of using the milk shed is not justified for anything other than storage considering the two assumed barn uses. For the limited development, the only possible use other than storage would be as outdoor unheated restrooms. However, the cost of converting this building to restroom facilities use is not suggested as the cost of providing wastewater disposal, plumbing, electrical would approach new construction. For the higher level of development, restrooms should be included within the barn and the use of this outbuilding is not thought to be required. The availability or capacity of off site utilities was not part of this report. An additional factor in deciding not to use the milk shed in the development of the barn is that it apparently is not entirely within the parcel acquired by the Park Authority.

6.10 Cost Comparison

The estimated costs (Table 4) as shown in break-out form in Appendix D are as follows:

Table 4
Turner Barn Estimated Cost

Development	Potential Use	Estimated Cost
Limited	Equestrian Center	$ 365,700
Full	Community Center	$ 812,700

In both instances the cost of converting the barn is somewhat higher than the cost of comparable new construction. The limited development (Equestrian Center)cost has some potential for savings, depending on the actual manner in which the building would be used. In the case of the full development (Community Center) cost. However, there is considerable room for cost savings, especially with the development of a design for the actual facility. These savings can be explored during the design development phase of the barn design.

In addition to comparing the cost of construction for conversion to the cost of construction of a comparable new facility, the usability of facility should be considered in the converted mode versus new construction. In the case of the equestrian center, the building is very well suited to such a use because it is much like the use and purpose for which it was originally built for. In the case of the community center, the low head room on the main floor (7 feet 9 inches to the underside of the ceiling above) is a significant limiting factor. It eliminates space for air conditioning ductwork, makes the installation of an automatic fire protection system more difficult, and creates rooms with unnaturally low ceilings.

6.11 Conclusion

If the cost of each of the two schemes can be reduced during the design development and construction phase, it is still not expected that the renovation costs will be lower than the cost of new construction. That being the case, the most significant factor will be the importance of retaining the barn as a symbol of the former agricultural nature of that portion of the County and, more specifically the area.

When the cost comparison, the usability factor, and the importance of the barn as a symbol to the area are considered, it is believed that the use of the barn through limited development is a positive and viable choice and, one which is economically feasible. As with the adaptive reuse of many structures, the degree to which the new use can reflect the purpose for which it was originally built is an important factor. Limited development of the barn structure is supported as a result of this assessment and condition survey.

Full development cannot be supported due to not only the high cost, but also, the low head room at the lower level, inhibiting and limiting use. This is not to say that there is no justification for full development of the barn. However, the desire to retain the barn must overcome the added expense and limited usability. As with all conceptual schemes, numerous assumptions have been made which may result unnecessary in a more fully

developed design. If a preliminary decision is made to retain the barn and to convert it for a new use, it is strongly recommended that additional design and study work be accomplished so that the number of assumptions can be reduced and the cost estimate be updated accordingly before a decision is made to proceed with the more extensive renovation design.

Appendix A
Photos

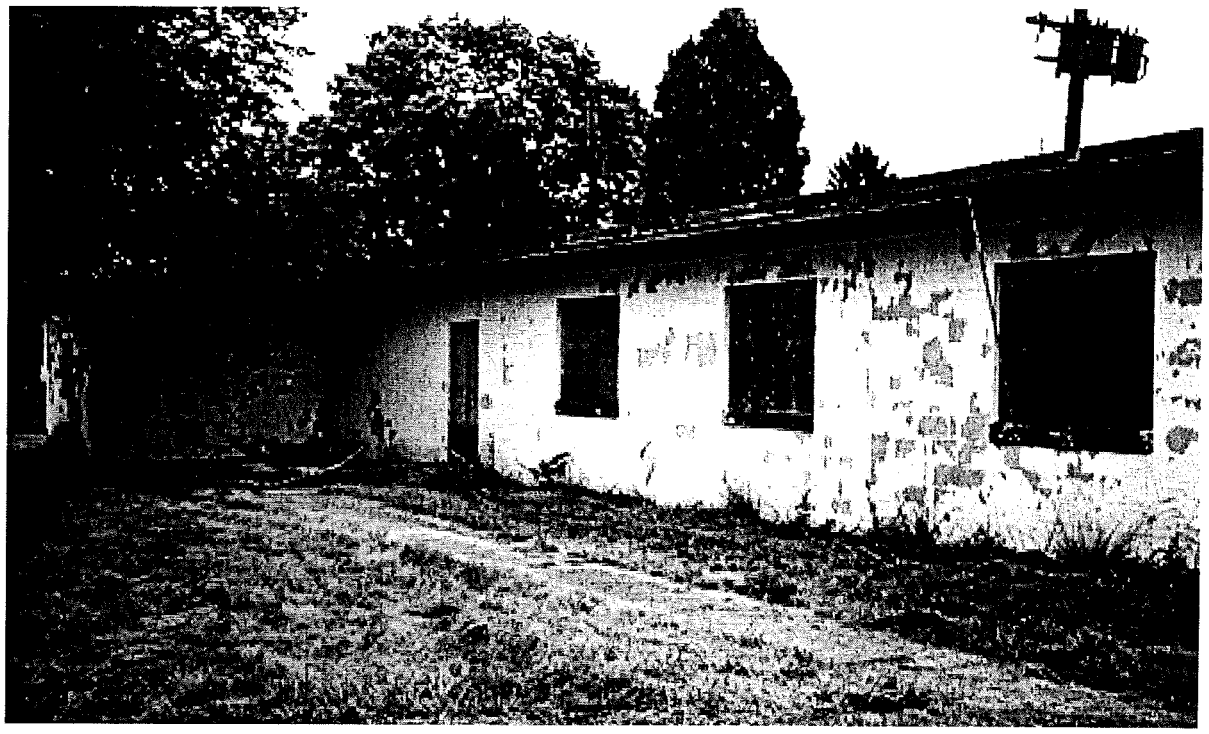


Photo #1

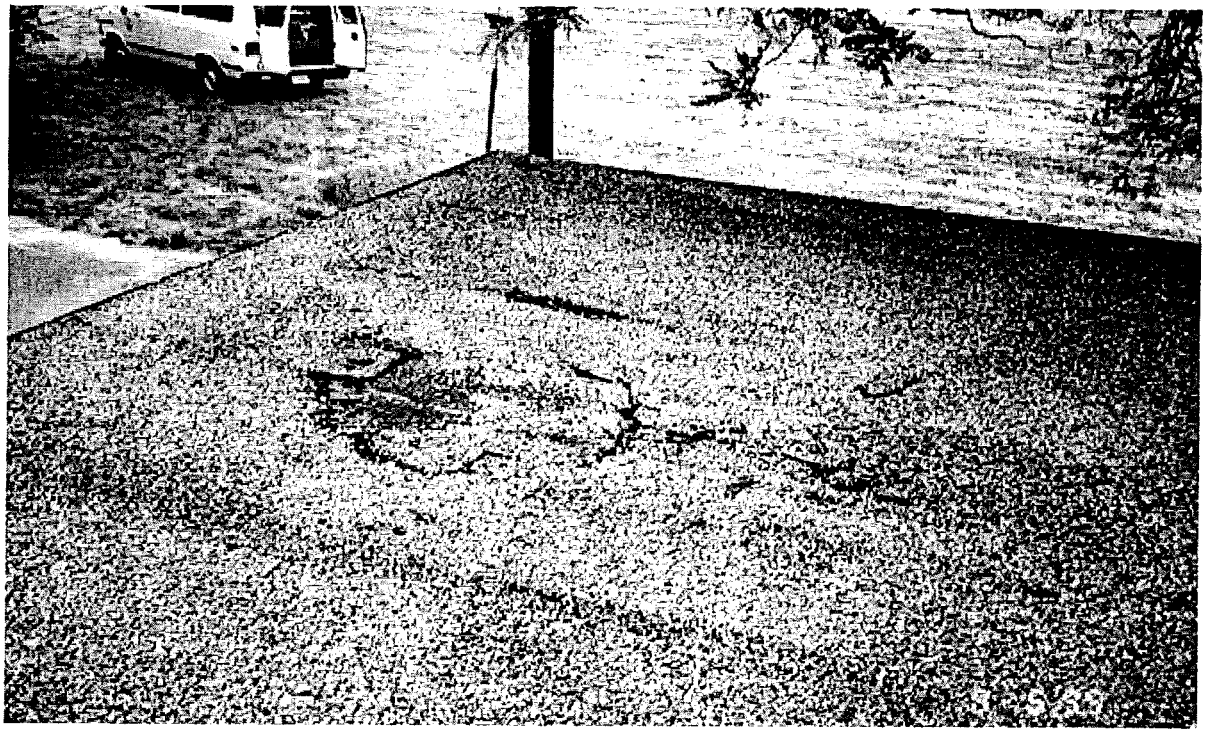


Photo #2

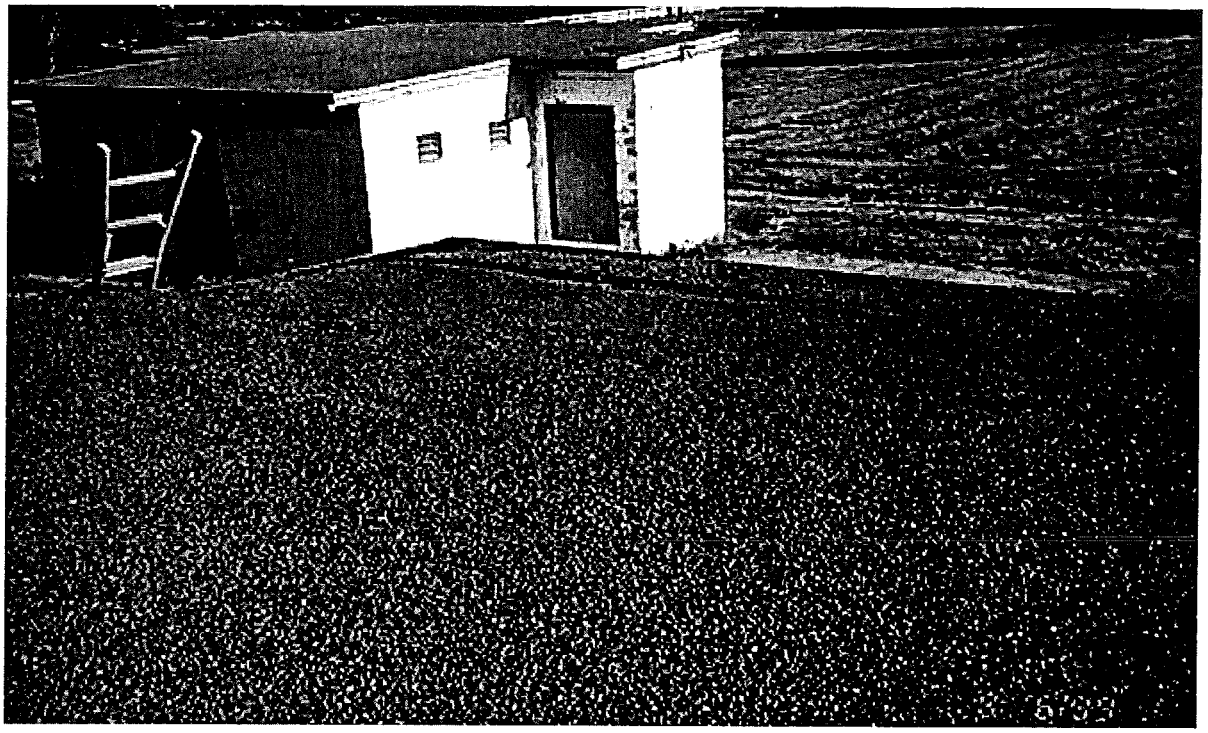


Photo #3

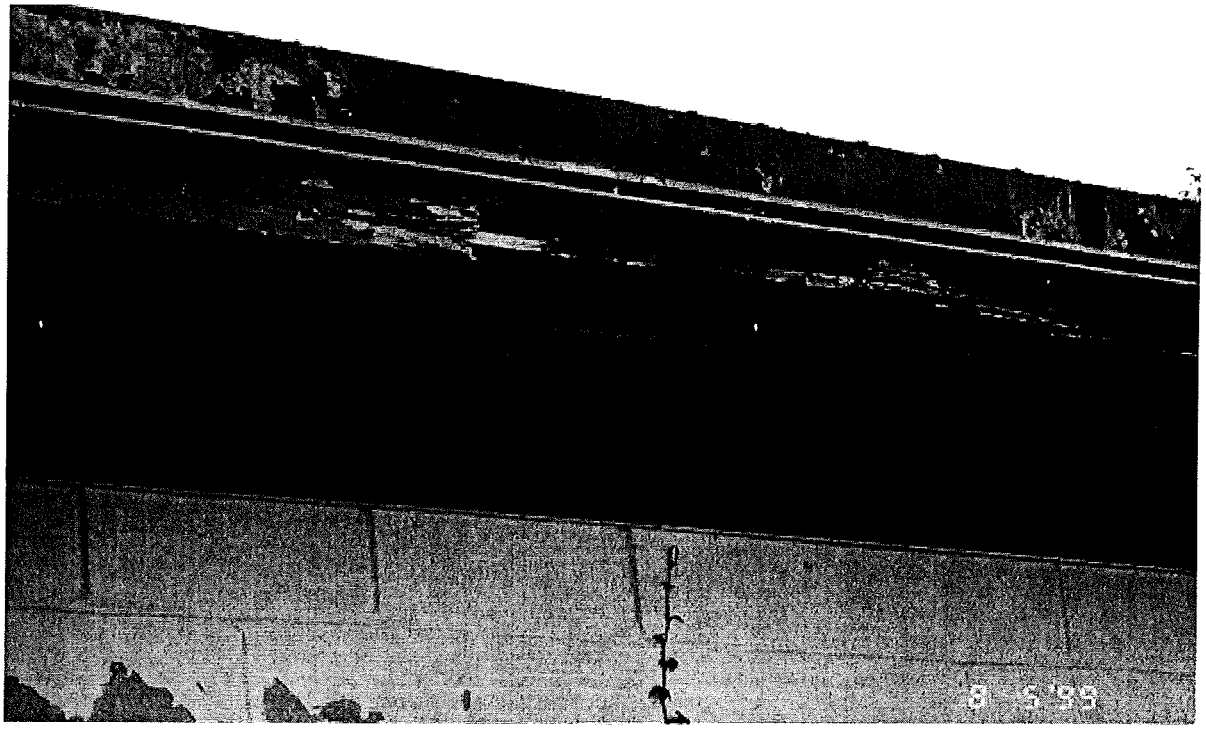


Photo #4

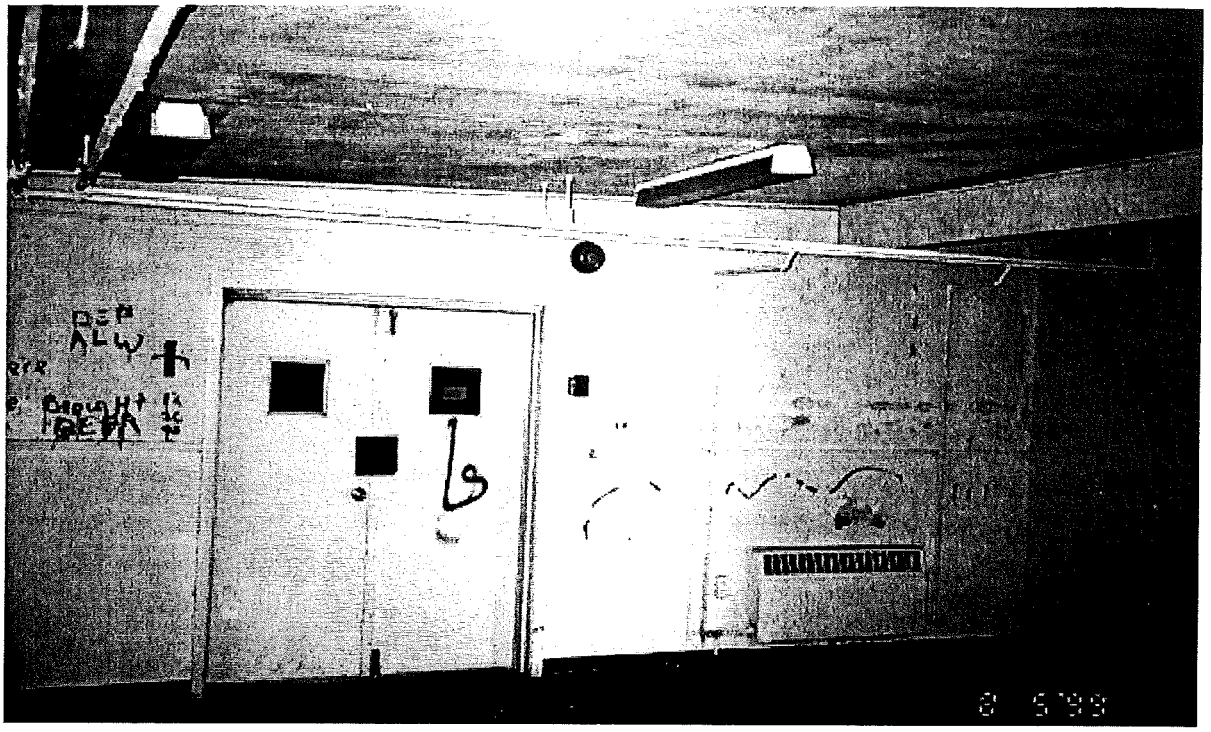


Photo #5

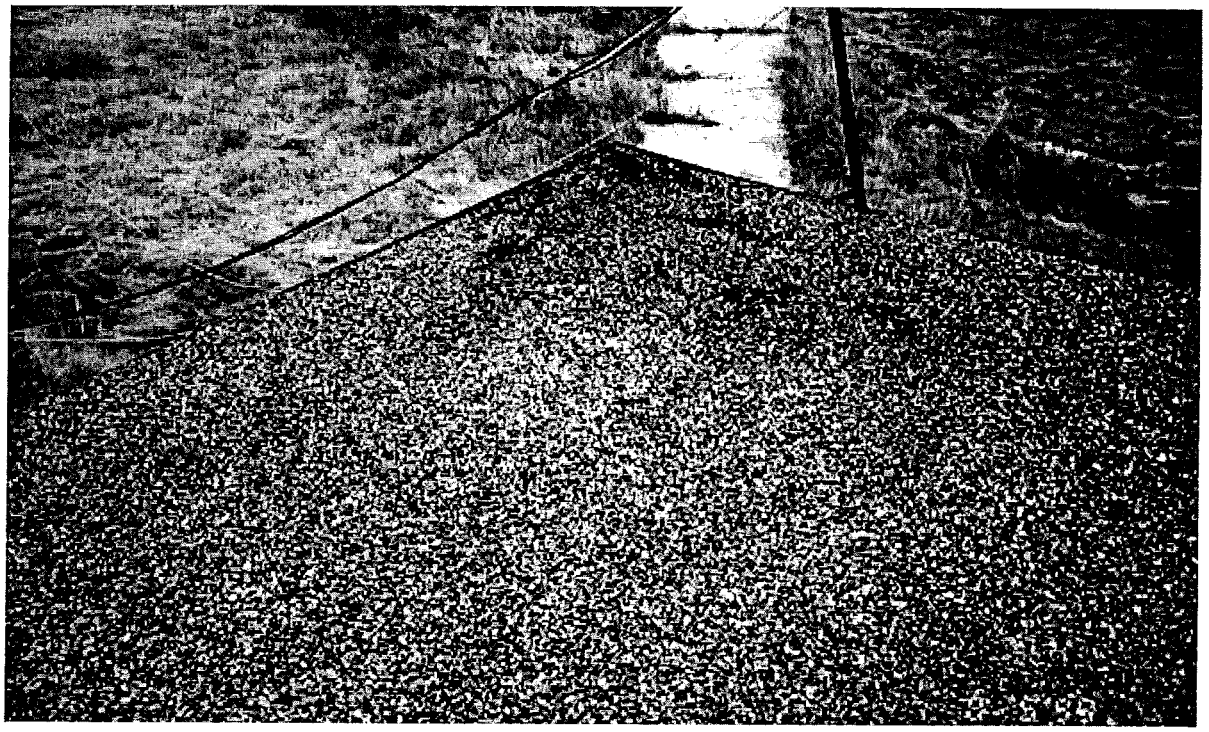


Photo #6

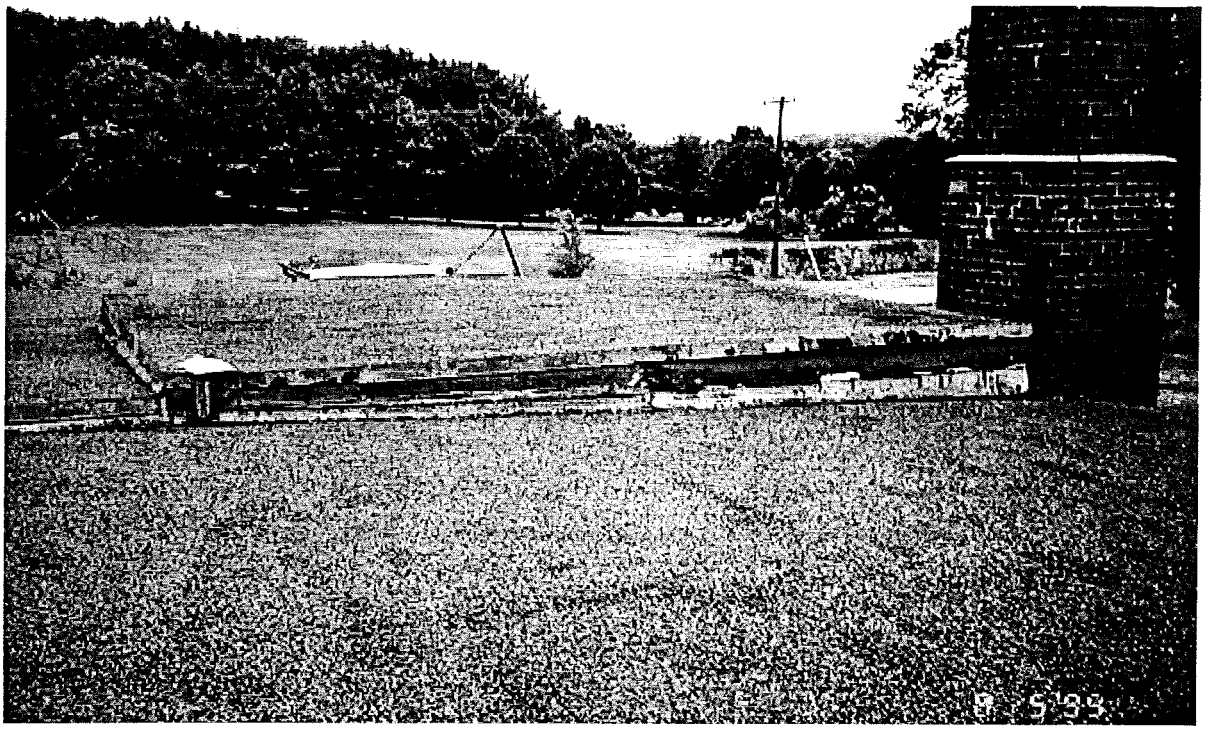
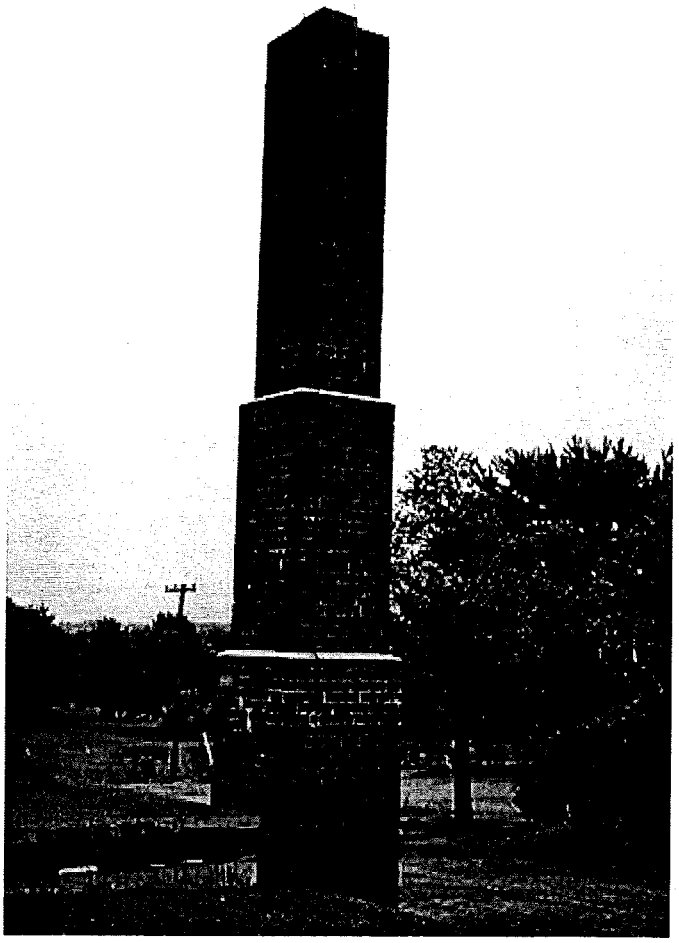


Photo #7

Photo #8



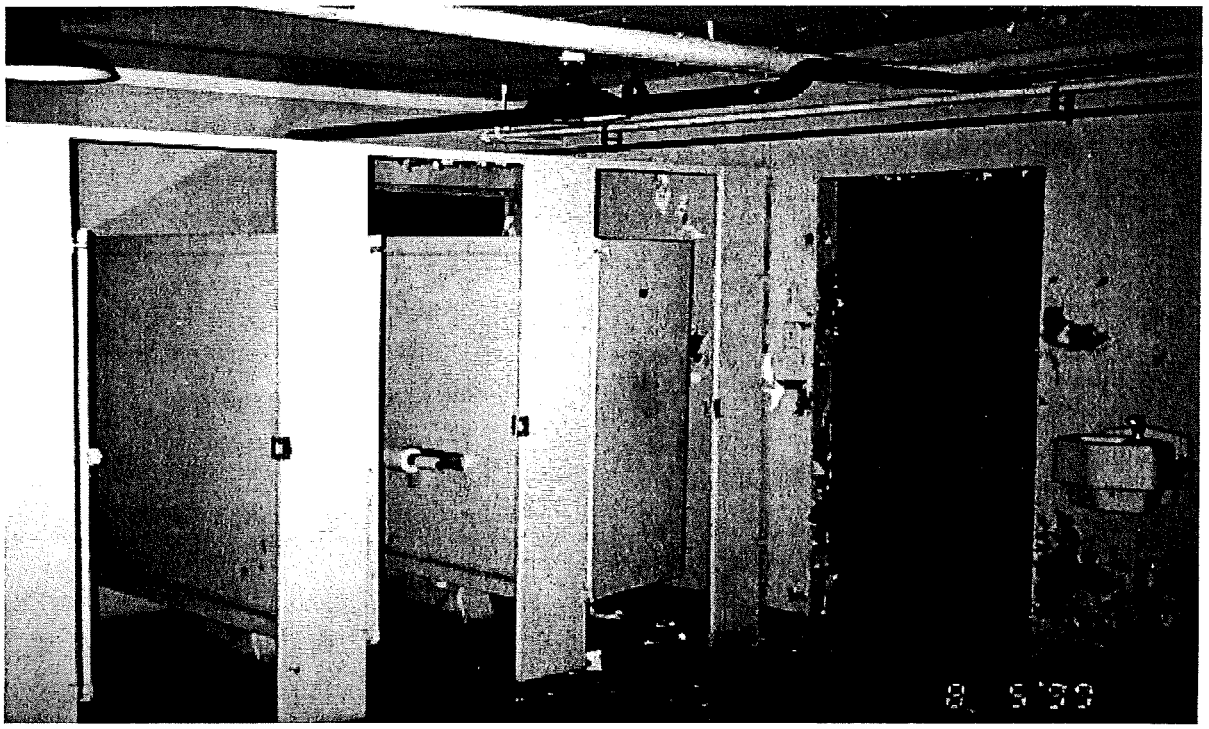


Photo #9

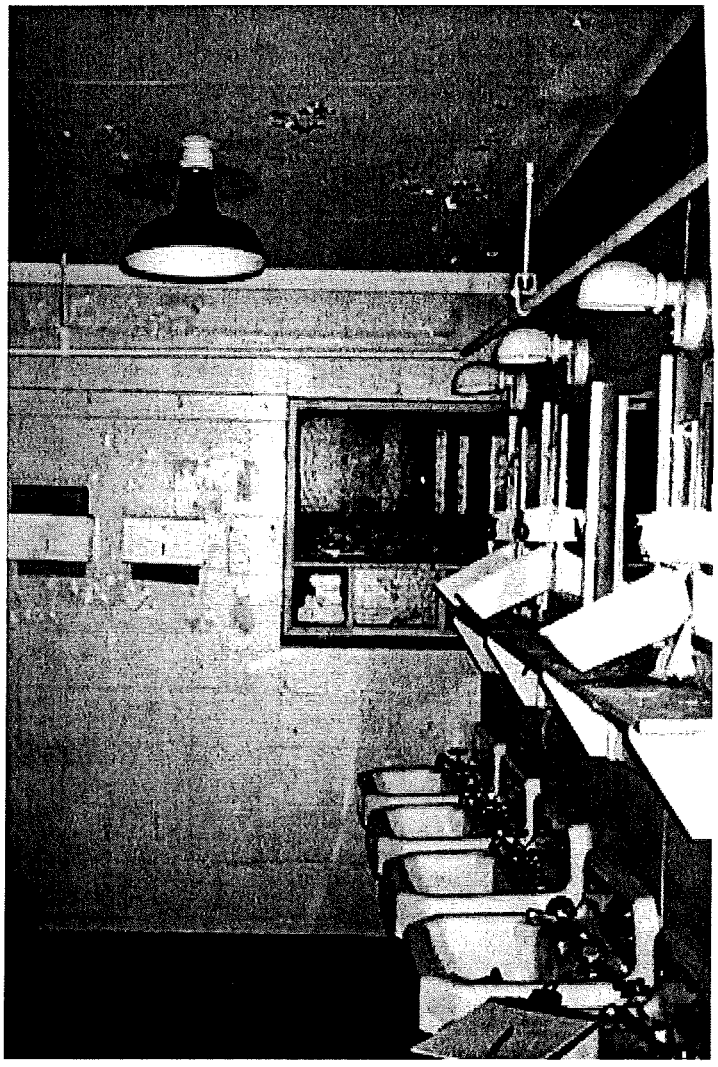


Photo #10

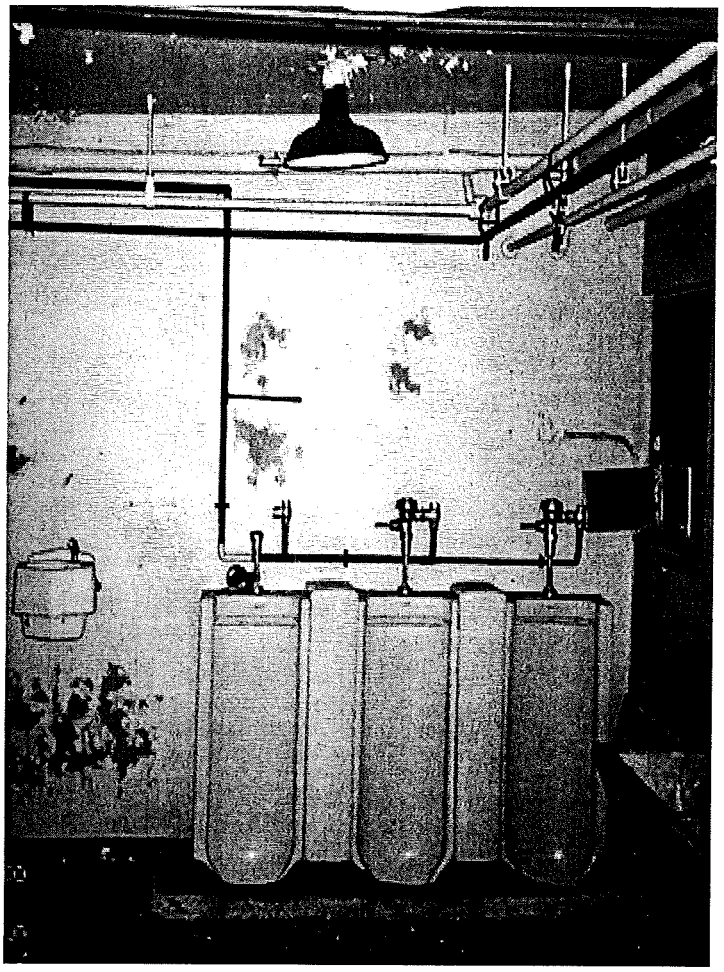
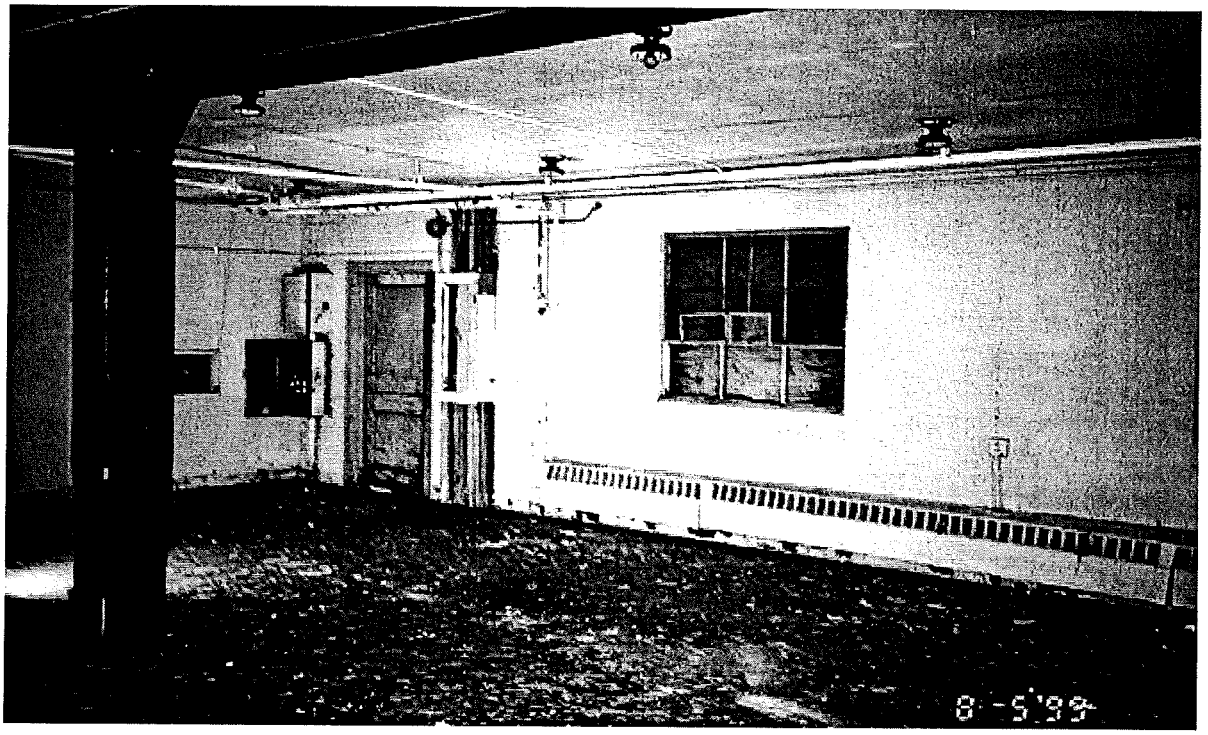


Photo #11

Photo #12



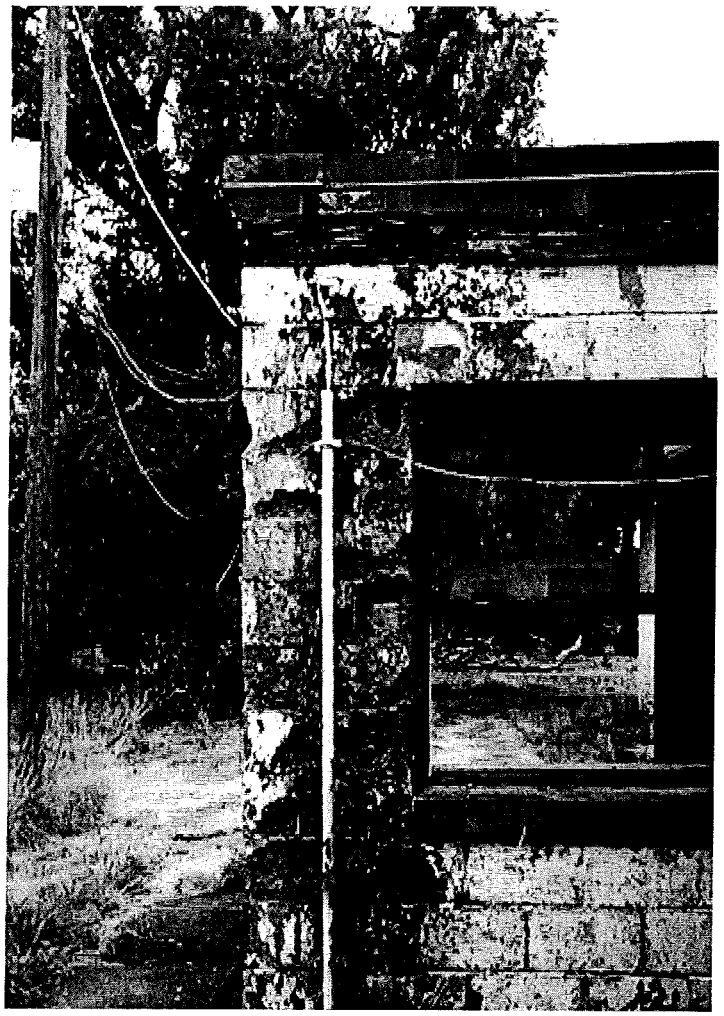


Photo #13

Photo #14

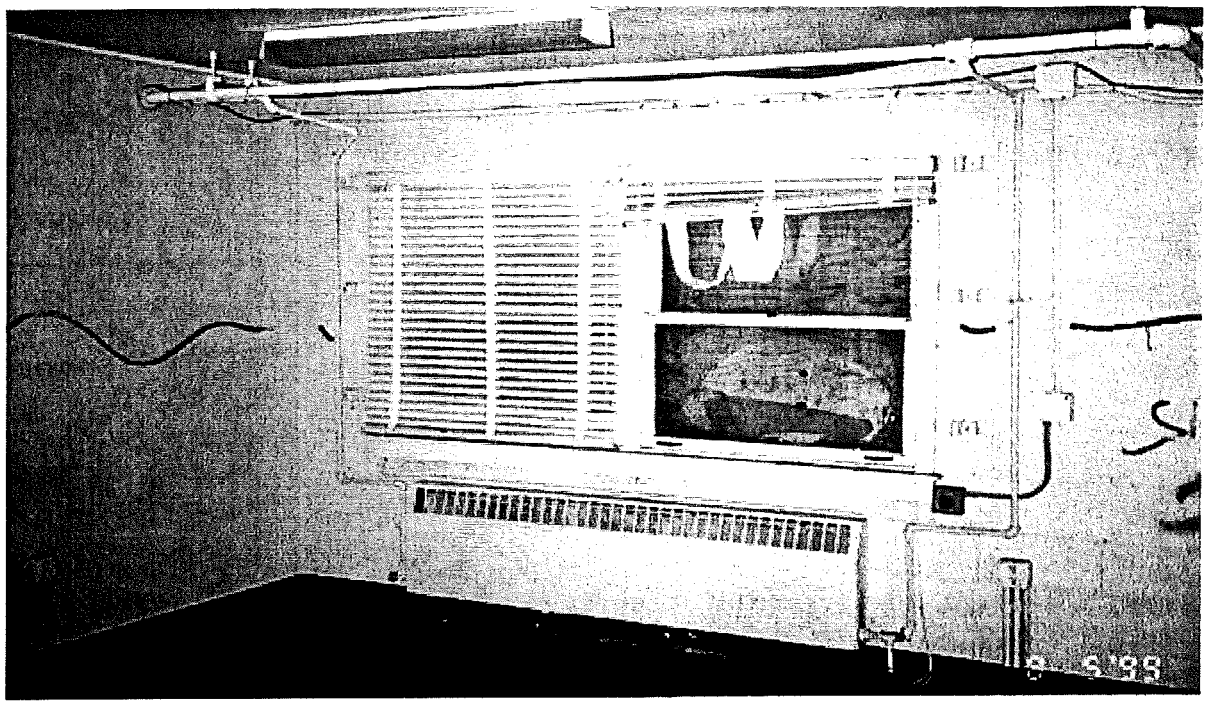


Photo #15

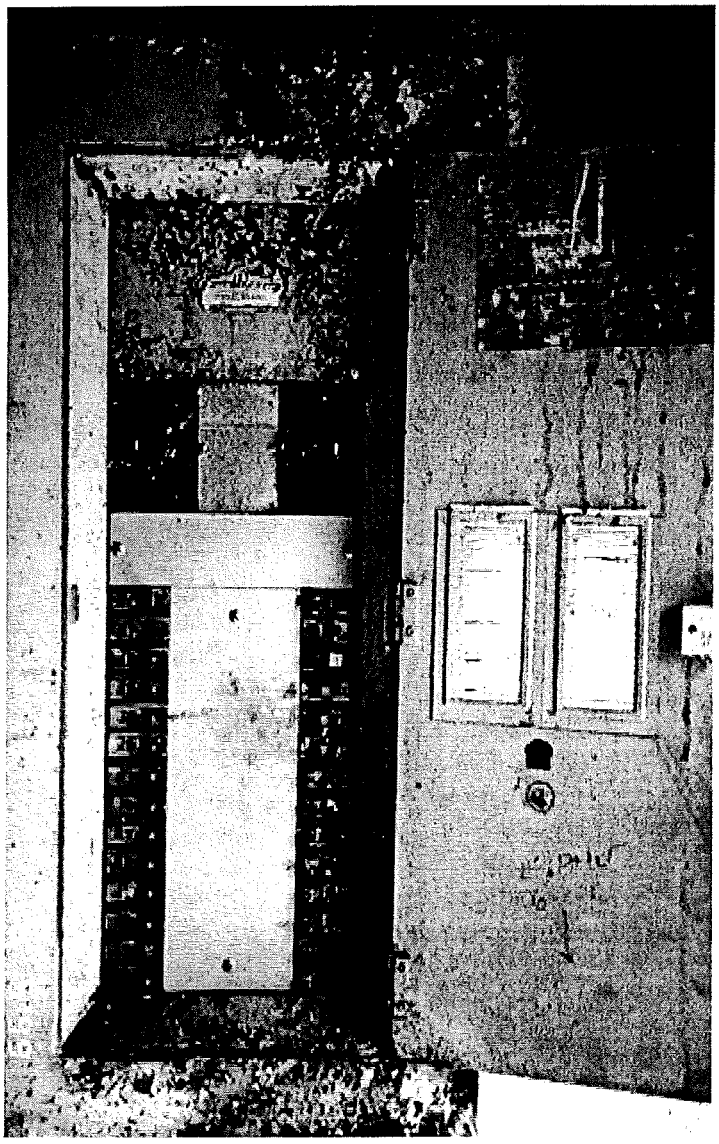


Photo #16

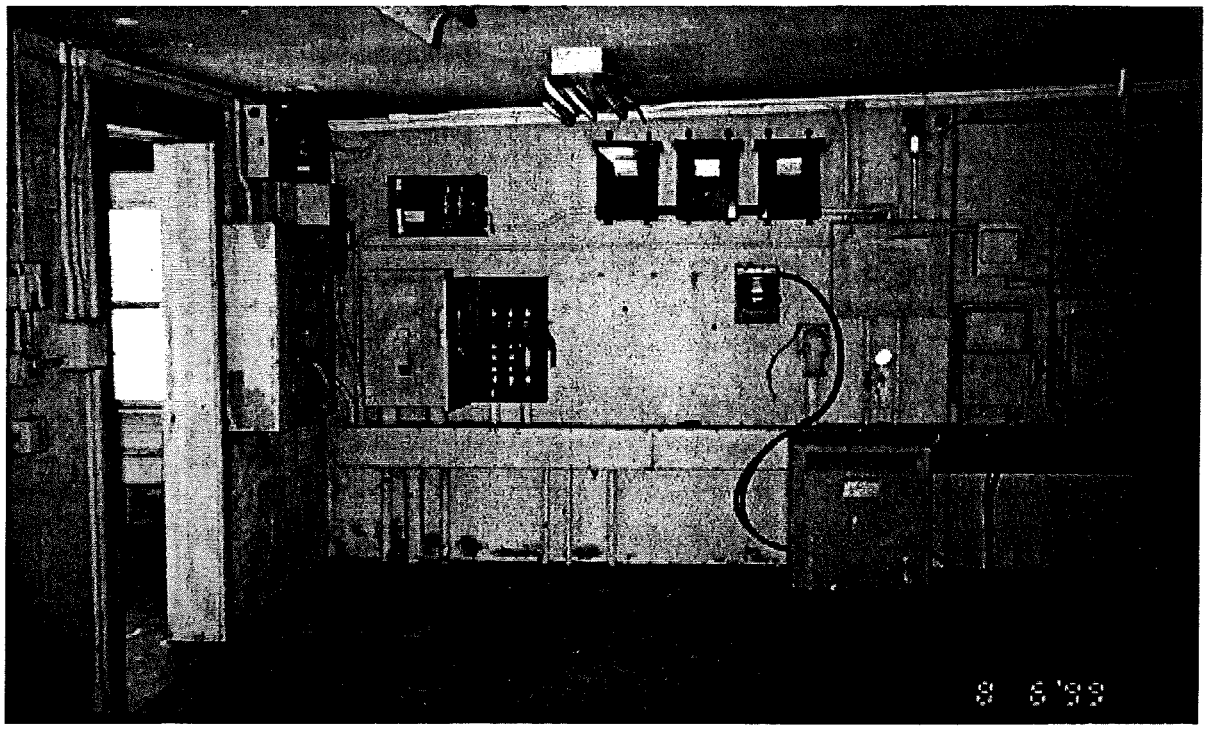


Photo #17

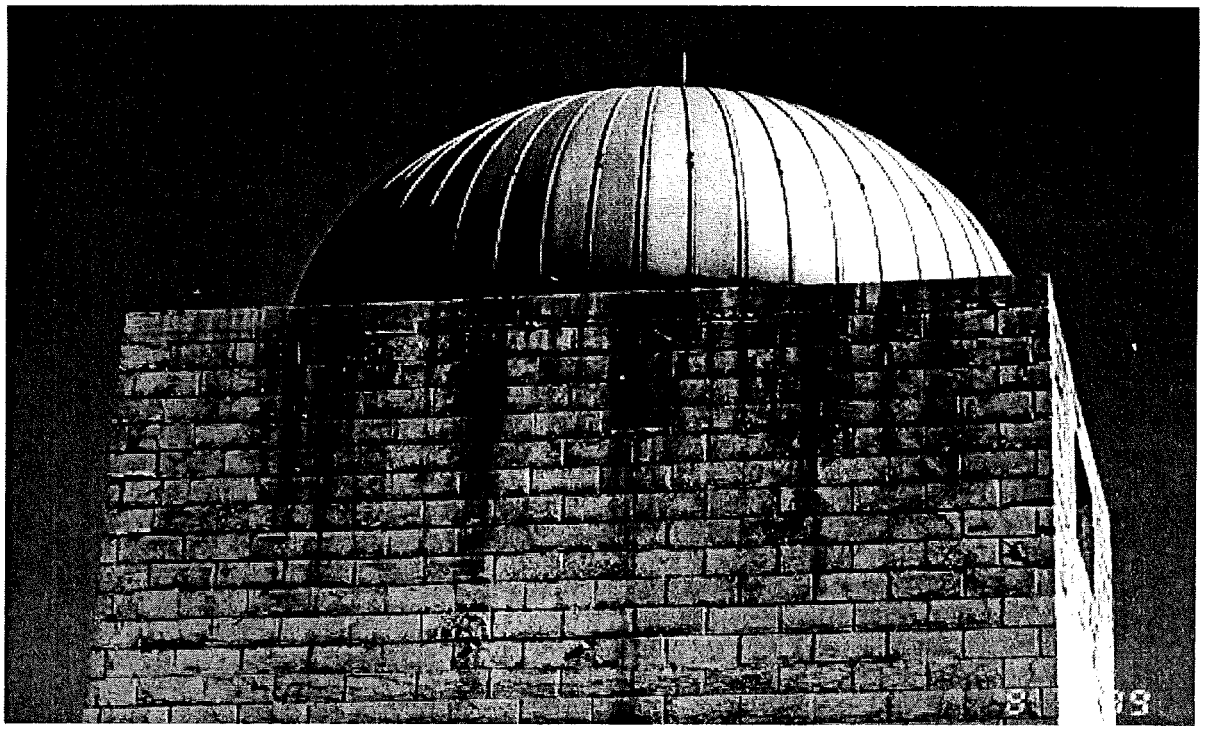


Photo #18

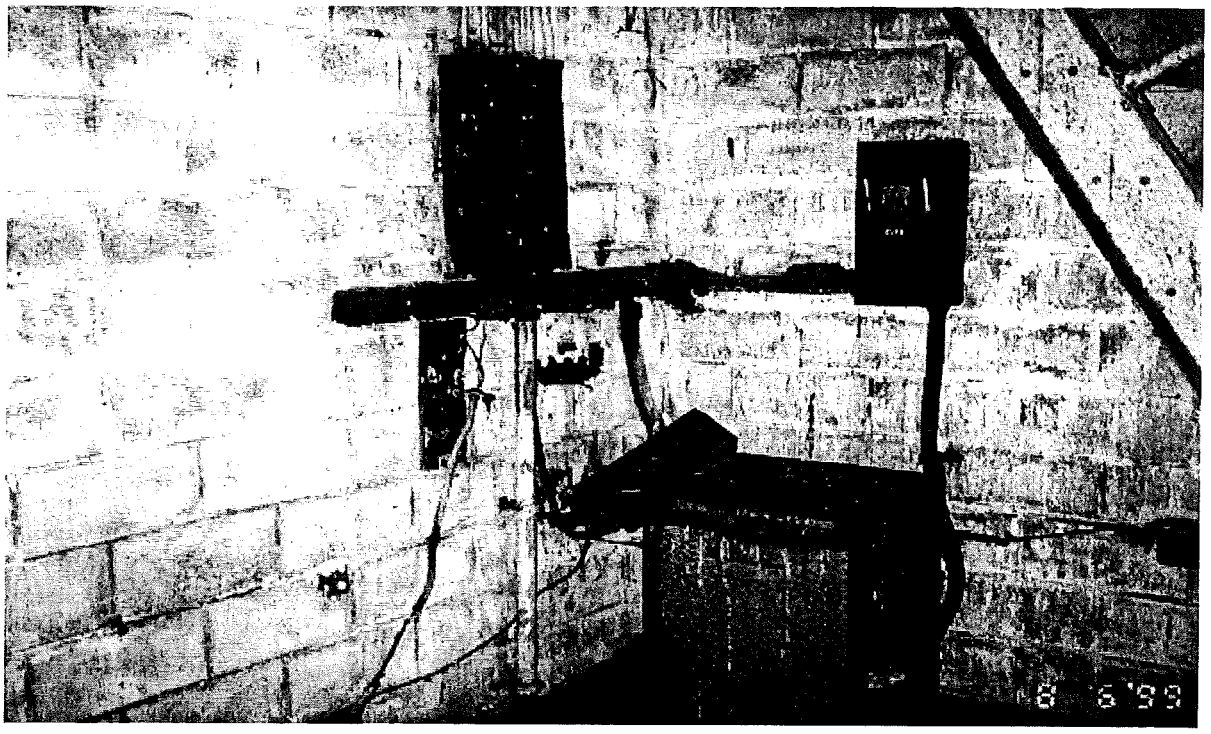


Photo #19

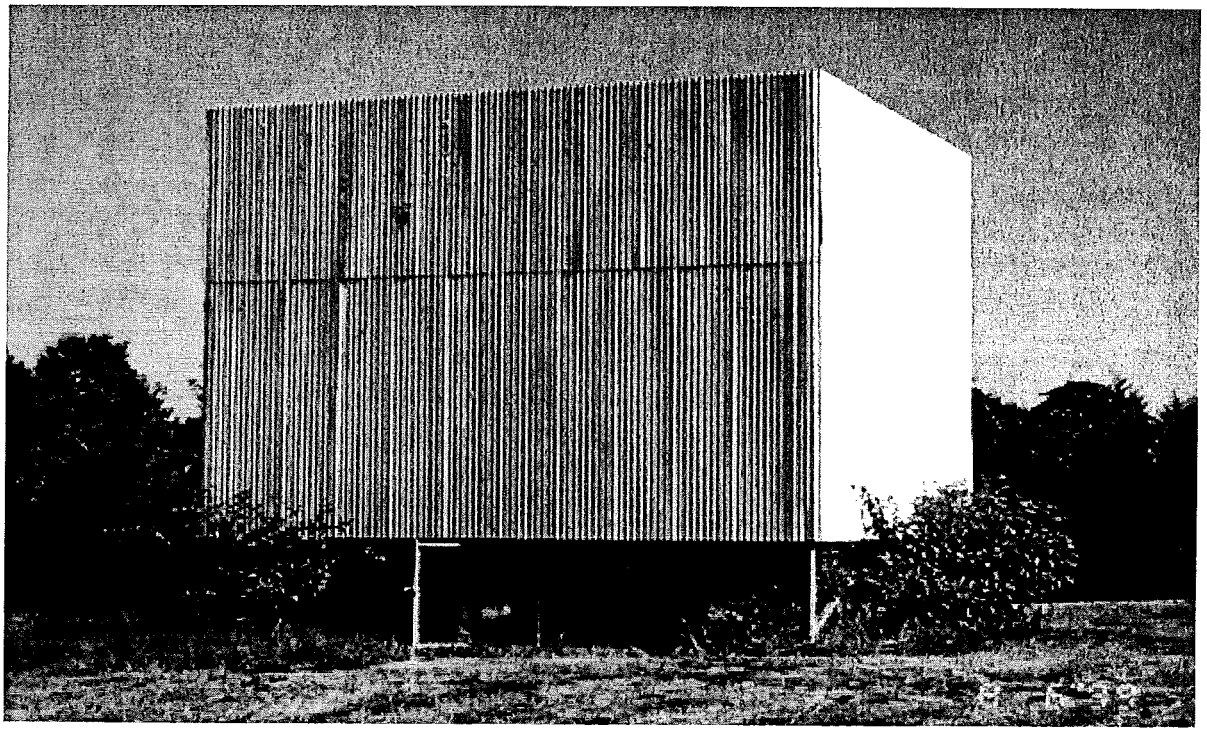


Photo #20

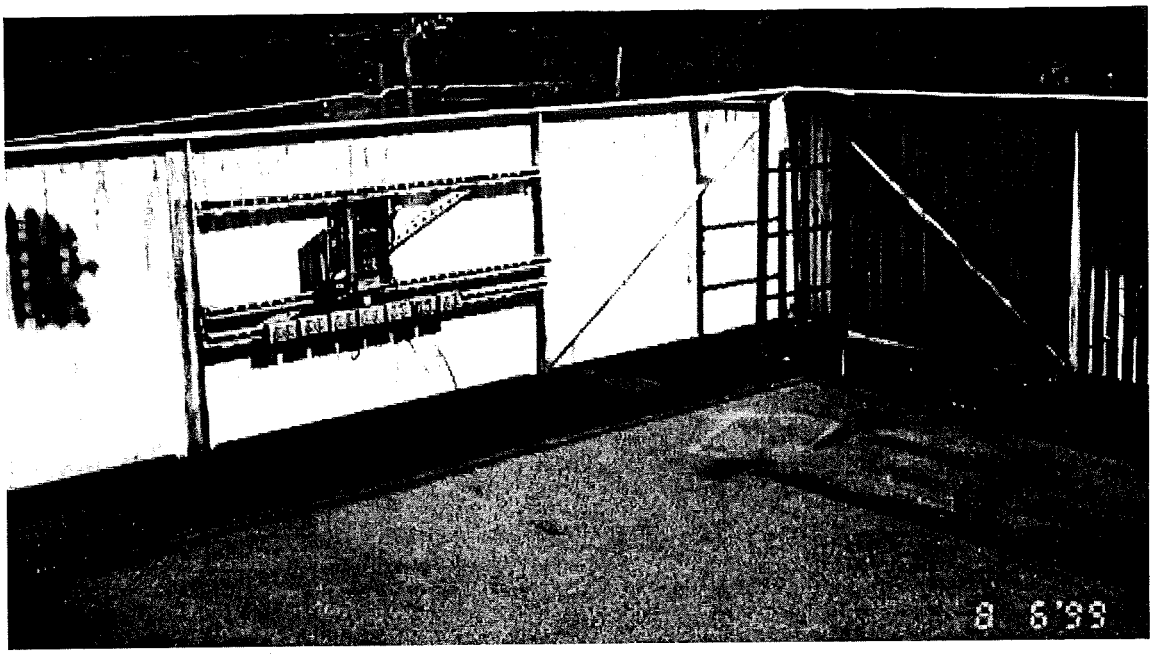


Photo #21

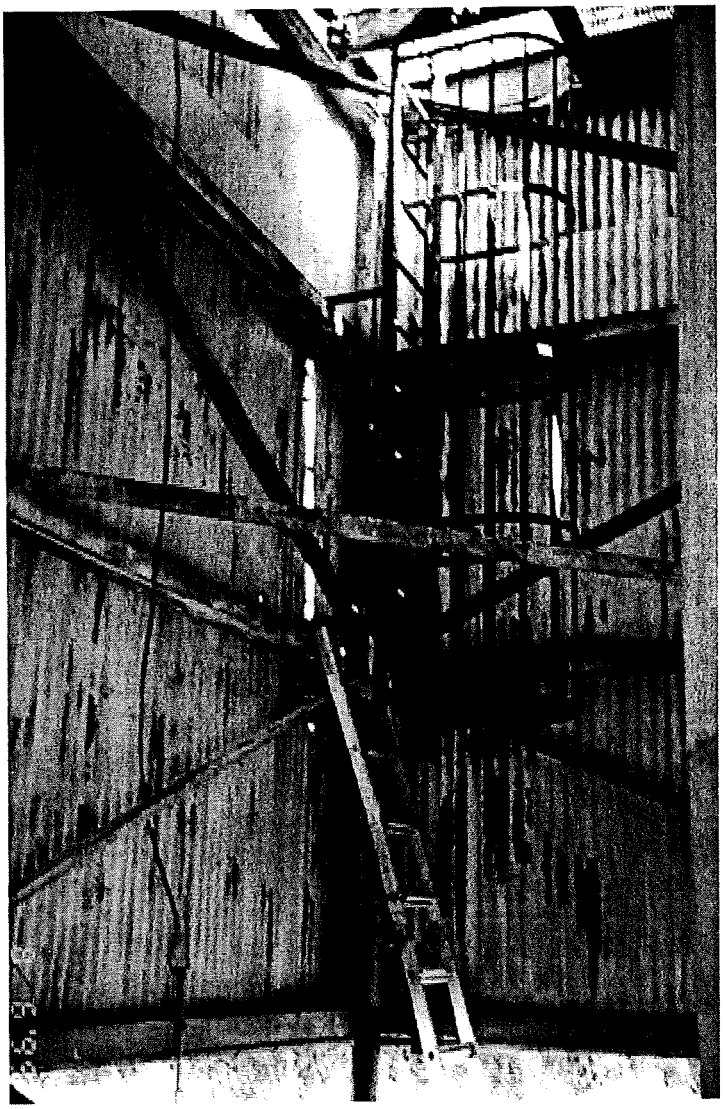


Photo #22

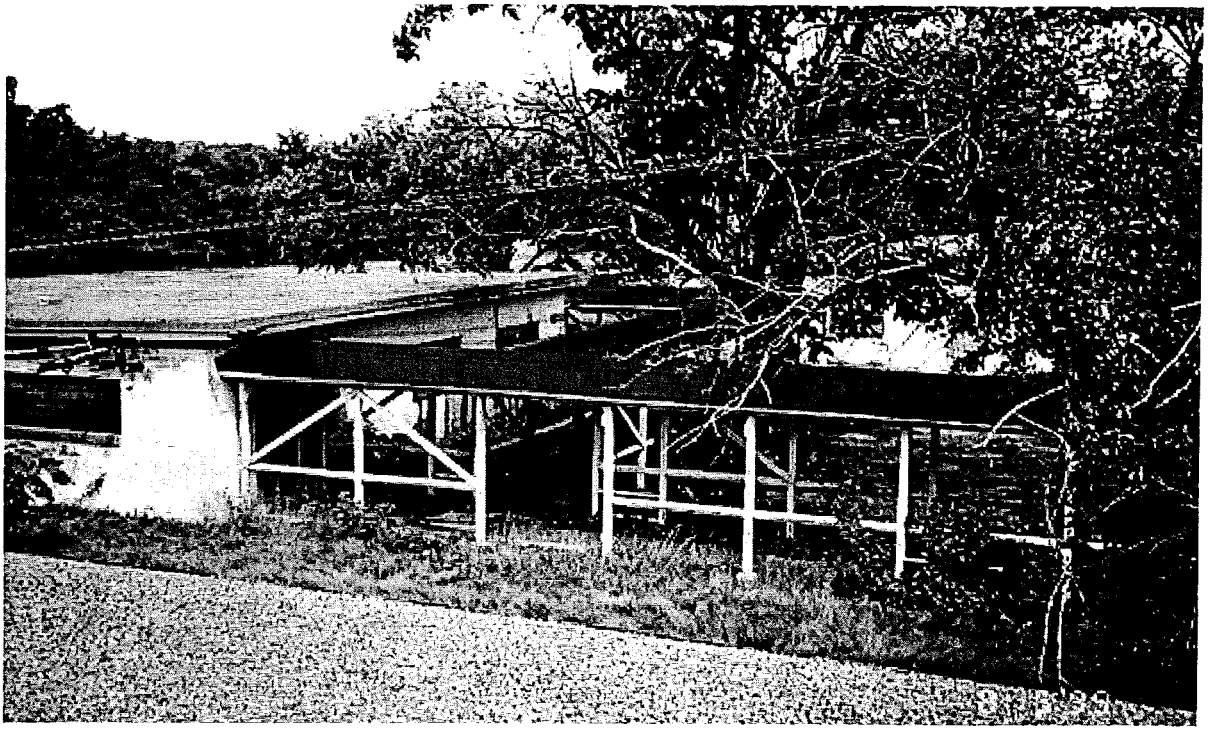


Photo #23

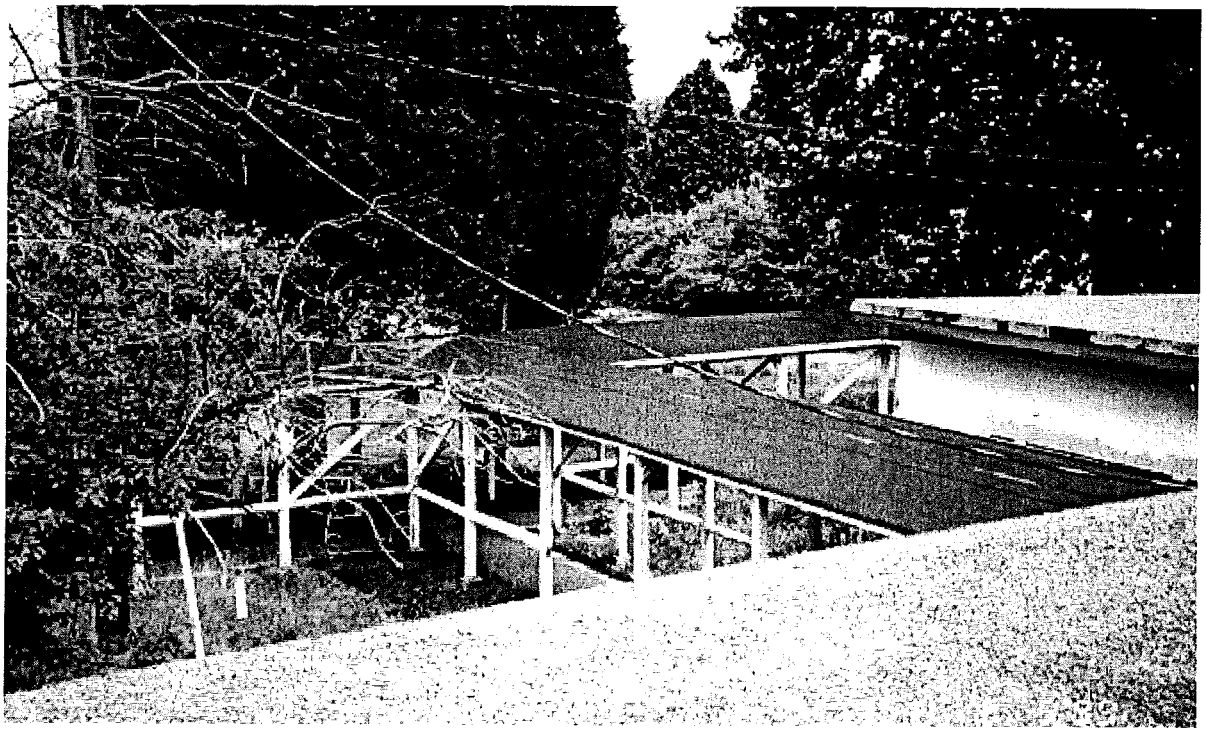


Photo #24

Appendix B

Asbestos Laboratory Report

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

7469 WHITE PINE ROAD - RICHMOND, VA 23237
804-275-4788 FAX 804-275-4907

BULK ASBESTOS SAMPLE ANALYSIS SUMMARY

CLIENT: ODES
P.O. Box 341
Midlothian, VA 23113

DATE OF RECEIPT: 06 AUG 1999
DATE OF ANALYSIS: 06 AUG 1999
DATE OF REPORT: 06 AUG 1999

CLIENT NUMBER: 48-2673
EHS PROJECT #: 08-99-0824
PROJECT: DMA/Turner Farm

EHS SAMPLE #	CLIENT SAMPLE #/ LABORATORY GROSS DESCRIPTION	% ASBESTOS	OTHER MATERIALS
01	B1-ACM-01A/ Gray Chalky; Brown Fib.; Blue Brittle	NAD	40% Cellulose 60% Non-Fibrous
02	B1-ACM-01B/ Gray Chalky; Brown Fib.	NAD	20% Cellulose 80% Non-Fibrous
03	B3-ACM-01A/ Gray Cementitious; Fib.	37% Chrysotile 37% Total Asbestos	63% Non-Fibrous
04	B3-ACM-01B/ Gray Cementitious; Fib.	36% Chrysotile 36% Total Asbestos	64% Non-Fibrous
05	B4-ACM-01A/ White Chalky; Brown Fib.	NAD	30% Cellulose 70% Non-Fibrous
06	B4-ACM-01B/ White Chalky	NAD	8% Cellulose 92% Non-Fibrous
07	B4-ACM-02A/ Gray Cementitious; Fib.	40% Chrysotile 40% Total Asbestos	60% Non-Fibrous
08	B4-ACM-02B/ Gray Cementitious; Fib.	40% Chrysotile 40% Total Asbestos	60% Non-Fibrous
09	B8-ACM-01A/ Gray Chalky; Brown Fib.	NAD	6% Cellulose 94% Non-Fibrous
10	B8-ACM-01B/ Gray Chalky	NAD	5% Cellulose 95% Non-Fibrous
11	B8-ACM-02A/ Brown Fib.	NAD	40% Cellulose 40% Fibrous Glass 20% Non-Fibrous
12	B8-ACM-02B/ Brown Fib.	NAD	40% Cellulose 40% Fibrous Glass 20% Non-Fibrous
13	B10-ACM-01A/ Gray Chalky	NAD	5% Cellulose 95% Non-Fibrous

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

CLIENT NUMBER: 48-2673
EHS PROJECT #: 08-99-0824
PROJECT: DMA/Turner Farm

EHS SAMPLE #	CLIENT SAMPLE #/ LABORATORY GROSS DESCRIPTION	% ASBESTOS	OTHER MATERIALS
14	B10-ACM-01B/ Gray Chalky	NAD	6% Cellulose 94% Non-Fibrous

QC SAMPLE: NIST REF

REPORTING LIMIT: 1% Asbestos

METHOD: Polarized Light Microscopy, EPA Method 600/R-93/116

ANALYST: Donna Blackwell

Reviewed By Authorized Signatory: _____

Howard Varner, Laboratory Director
Irma Faszewski, Quality Assurance Coordinator
David Xu, MS, Senior Chemist
Feng Jiang, MS, Senior Geologist

Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C. California Certification #2319

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy ((TEM), for enhanced detection capabilities) for materials regulated by the EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

LEGEND NAD = no asbestos detected
SCF = suspected ceramic fibers

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

7469 Whitepine Road Richmond, Virginia 23237 Phone (804) 275-4788 Fax (804) 275-4907

CHAIN OF CUSTODY FORM

14PLM

Company Name: ODES

Address: P.O. Box 341

City, State, Zip: Midlothian, VA 23113

EHS Client Account #: 48-2673

Phone# : (804) 379-6482 **Fax#:** (804) 379-9891

Date: 8-6-99

Contact Name: JOHN GEROW

Sampler Name: JOHN GEROW

Project #: DMA/TURNER FARM

P.O. #:

		Asbestos					Lead						Other Metals (Specify metals below)						
Sample Number	Sample Date	Bulk ID by PLM	Asbestos Wipe	Fiber Count (PCM)	TEM Air	TEM Chatfield (Bulk)	Air	Paint	Soil	Wipe	TCLP (Pb)	Waste Water	TCLP RCRA 8					Air Volume (L) OR Wipe Area (ft^2) OR Scrape Area(cm^2)	Comments
B1-ACM-01A	8/5/99	X																	WALLBOARD
B1-ACM-01B	↓	X																	WALLBOARD
B3-ACM-01A		X																	TRANSITE
B3-ACM-01B		X																	TRANSITE
B4 ACM-01A		X																	WALLBOARD
B4 ACM 01B		X																	WALLBOARD
B4 ACM 02A		X																	TRANSITE
B4 ACM 02B		X																	TRANSITE
B8 ACM 01A		X																	WALLBOARD
B8 ACM 01B		X																	WALLBOARD

Released by:	Signature:	Date:
Received by:	Signature:	Date:
Released by:	Signature:	Date:
Received by:	Signature:	Date: 8/11/99

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.
7469 Whitepine Road Richmond, Virginia 23237 Phone (804) 275-4788 Fax (804) 275-4907

CHAIN OF CUSTODY FORM

Company Name: ODES
Address: P.O. Box 341
City, State, Zip: Midlothian, VA 23113
EHS Client Account #: 48-2673
Phone# : (804) 379-6482 **Fax#:** (804) 379-9891

Date: 8-6-99
Contact Name: JOHN GEROW
Sampler Name: JOHN GEROW
Project #: DMA/TURNER FARM
P.O. #:

Sample Number	Sample Date	Asbestos: Bulk ID by PLM	Asbestos: Asbestos Wipe	Asbestos: Fiber Count (PCM)	Asbestos: TEM Air	Asbestos: TEM Chatfield (Bulk)	Lead: Air	Lead: Paint	Lead: Soil	Lead: Wipe	Lead: TCLP (Pb)	Lead: Waste Water	Other Metals (Specify metals below): TCLP RCRA 8					Air Volume (L) OR Wipe Area (ft^2) OR Scrape Area(cm^2)	Comments
B8 ACM 02A		X																	CEILING TILE
B8 ACM 02B		X																	CEILING TILE
B10 ACM 01A		X																	WALLBOARD
B10 ACM 01B		X																	WALLBOARD

Released by:	Signature:	Date:
Received by:	Signature:	Date:
Released by:	Signature:	Date:
Received by:	Signature:	Date: 8/6/99

Appendix C

Lead-in-Paint Laboratory Report

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

7469 WHITE PINE ROAD - RICHMOND, VA 23237
804-275-4788 FAX 804-275-4907

LEAD IN PAINT ANALYSIS SUMMARY

CLIENT: ODES
P.O. Box 341
Midlothian, VA 23113

DATE OF SAMPLING: 05 AUG 1999
DATE OF RECEIPT: 06 AUG 1999
DATE OF ANALYSIS: 06 AUG 1999
DATE OF REPORT: 08 AUG 1999

CLIENT NUMBER: 48-2673
EHS PROJECT #: 08-99-0825
PROJECT: DMA/Turner Farm

EHS SAMPLE#	CLIENT SAMPLE#	SAMPLE WEIGHT (g)	CONCENTRATION (% BY WEIGHT)
01	B1-LBP-01	0.153	0.81
02	B2-LBP-02	0.112	1.9
03	B3-LBP-03	0.182	3.8
04	B4-LBP-04	0.111	3.7
05	B7-LBP-01	0.192	9.9
06	B8-LBP-01	0.151	0.29
07	B10-LBP-01	0.195	0.23
08	B11-LBP-01	0.143	<0.018
09	BARN-LBP-01	0.171	0.18
10	SHED-LBP-01	0.197	0.45

QUALITY CONTROL DATA

BATCH#:	080699P-6
INCLUSIVE EHS SAMPLE NUMBERS:	01-10
Continuing Calibration Verification 10 (10.0ppm Pb)	104% Recovery
Continuing Calibration Verification 5 (5.00ppm Pb)	106% Recovery
Laboratory Control Standard	104% Recovery
Matrix Spike	96.0% Recovery
Duplicate Relative Percent Difference	3.17 RPD
Reporting Limit	25.0ug
Method Detection Limit	4.95ug

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

CLIENT NUMBER: 48-2673
EHS PROJECT #: 08-99-0825
PROJECT: DMA/Turner Farm

PREPARATION METHOD: EPA 600/R-93/200
ANALYSIS METHOD: EPA SW846 7420

ANALYST: Aubrey Simonds

Reviewed By Authorized Signatory: _____

Howard Varner, Laboratory Director
Irma Faszewski, Quality Assurance Coordinator
David Xu, MS, Senior Chemist
Feng Jiang, MS, Senior Geologist

This method has been validated for sample weights of 0.020g or greater. When samples with a weight of less than that are analyzed those results fall outside of the scope of accreditations.

Sample results denoted with a "less than" (<) sign contain less than 25.0ug total lead, based on a 50ml sample volume.

Results represent the analysis of samples submitted by the client. Sample location, description, area, volume etc., was provided by the client. This report shall not be reproduced, except in full, without the written consent of Environmental Hazards Services, L.L.C. California Certification #2319

LEGEND	g = gram	ug = microgram	ppm = parts per million
	ml = milliliter	Pb = lead	

painpb08.dot/01 APR 1999/mec

EHS 08-99-0825

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

7469 Whitepine Road Richmond, Virginia 23237 Phone (804) 275-4788 Fax (804) 27[illegible]

CHAIN OF CUSTODY FORM

10 Pb paint

Company Name: ODES
Address: P.O. Box 341
City, State, Zip: Midlothian, VA 23113
EHS Client Account #: 48-2673
Phone# : (804) 379-6482 **Fax#:** (804) 379-9891

Date: 8-6-99
Contact Name: JOHN GEROW
Sampler Name: JOHN GEROW
Project #: DMA/TURNER FARM
P.O. #:

	Sample Number	Sample Date	Asbestos: Bulk ID by PLM	Asbestos: Asbestos Wipe	Asbestos: Fiber Count (PCM)	Asbestos: TEM Air	Asbestos: TEM Chatfield (Bulk)	Lead: Air	Lead: Paint	Lead: Soil	Lead: Wipe	Lead: TCLP (Pb)	Lead: Waste Water	Other Metals (Specify metals below): TCLP RCRA 8	Other Metals	Other Metals	Other Metals	Other Metals	Air Volume (L) OR Wipe Area (ft^2) OR Scrape Area(cm^2)	Comments
1	B1-LBP-01	8/5/99							X											
2	B2-LBP-02								X											
3	B3-LBP-03								X											
4	B4-LBP-04								X											
5	B7-LBP-01								X											
6	B8-LBP-01								X											
7	B10-LBP-01								X											
8	B11-LBP-01								X											
9	BARN-LBP-01								X											
10	SHED-LBP-01								X											

Released by:	Signature:	Date:
Received by:	Signature:	Date:
Released by:	Signature:	Date:
Received by:	Signature:	Date: 8/6/99

8/6/99

Appendix D
Inspector Qualifications

DEPARTMENT OF PROFESSIONAL AND OCCUPATIONAL REGULATION
COMMONWEALTH OF VIRGINIA

3600 West Broad Street, Richmond, VA 23230
Telephone: 1 (804) 367-8500

EXPIRES ON
07-31-2000

NUMBER
3303 000039

VIRGINIA ASBESTOS LICENSE
INSPECTOR LICENSE

JOHN GEROW
1513 SWIFTWOOD DRIVE

POWHATAN, VA 23139

Jack E. Kotvas, Director

ALTERATION OF THIS DOCUMENT, USE AFTER EXPIRATION, OR USE BY PERSONS OR FIRMS OTHER THAN THOSE NAMED MAY RESULT IN CRIMINAL PROSECUTION UNDER THE CODE OF VIRGINIA

(SEE REVERSE SIDE FOR NAME AND/OR ADDRESS CHANGE)

DEPARTMENT OF PROFESSIONAL AND OCCUPATIONAL REGULATION
COMMONWEALTH OF VIRGINIA

3600 West Broad Street, Richmond, VA 23230
Telephone: 1 (804) 367-8500

EXPIRES ON
07-31-2000

NUMBER
3304 000010

VIRGINIA ASBESTOS LICENSE
MANAGEMENT PLANNER LICENSE

JOHN GEROW
1513 SWIFTWOOD DRIVE

POWHATAN, VA 23139

Jack E. Kotvas, Director

ALTERATION OF THIS DOCUMENT, USE AFTER EXPIRATION, OR USE BY PERSONS OR FIRMS OTHER THAN THOSE NAMED MAY RESULT IN CRIMINAL PROSECUTION UNDER THE CODE OF VIRGINIA

(SEE REVERSE SIDE FOR NAME AND/OR ADDRESS CHANGE)

Appendix E
Turner Barn Cost Items

Limited Development	Full Development
Division 2	Division 2
Many removal items are included in the divisions where replacement work is described (i.e., removal of existing roofing for installation of new roofing).	
1. Include a figure for clearing and grubbing and general clean-up type of work. Remove vines and other growth from building.	1. Same
2. Do not include site work items such as roads, parking, landscaping, etc. The assumption is that this work will be the same whether we fix up this building or build a new building.	2. Same
3. Include an amount for removal of loose junk.	3. Same
4. Remove first floor concrete slab.	4. Same
5. Remove wood frame passage between barn and silo.	5. Same
6. Remove tree growing against silo.	6. Same
7. Remove wood frame shed at east side of barn (approximately 12 x 30). Include an amount for removal of concrete footing.	7. Same
8. Remove wood lean-to framework from south side of barn (approximately 11 x 18). No footing involved.	8. Same
9. Remove milk shed. CMU walls, wood frame roof, concrete slab and foundation.	9. Same
10. Remove fans from windows, all electrical cable and conduit, light fixtures, and other electrical items.	10. Same
	11. Remove the "upper-upper" portion of the second floor, salvaging the floor joists and flooring for reinstallation.

Limited Development	Full Development
Division 3	Division 3
1. Install new concrete floor slab at first floor. Provide an amount for finishing the inside surface of the exterior walls where slab is lowered and the wall will be exposed.	1. Same
2. Repair concrete foundation walls in two locations where spalled concrete is compromising the bearing condition of the existing wood sill plate.	2. Same
3. Repair parging on the surface of existing exposed concrete foundation walls. Assume 20 sq. ft.	3. Same
4. Repair spalled concrete on side of walkway from barn to silo. Assume 25 SF.	4. Same

Limited Development	Full Development
Division 4	Division 4
Not Used	Not Used

Limited Development	Full Development
Division 5	Division 5
1. Install three new 5-inch diameter steel pipe columns at the first floor to replace missing columns.	1. Same
2. Column bases at 3 of the existing 5-inch pipe columns have rusted through the wall of the column. Install new pipe sleeves to reinforce the base of the column.	2. Same
	3. Install pair of new steel beams at location of existing upper-upper level floor to support new floor. Assume elevation of beams to be same as wood beams at north end.
3. Install new concrete filled steel pan stairs with steel stringers and steel pipe handrails (two stairs required).	4. Same

Limited Development	Full Development
Division 6	Division 6
1. Replace 25% of wood sills at bottom of studs of exterior walls.	1. Same
2. Strengthen 25% of the existing exterior 2x6 wall studs by adding an additional stud to the face of the existing stud.	2. Same
3. Replace one broken rafter on south side.	3. Same
4. Replace all corner boards on wood siding.	4. Same
	5. Reinstall existing wood joists for upper-upper level floor on new steel beams. Reinstall existing wood floor, assuming replacement of approximately 50 SF.
5. Install horse tie stalls approximately 5 feet wide by 10 feet with removable wood slats on floor. Stall posts of wood or steel, dividers of 2 inches x 8 inches dressed boards with 2-inch pace at floor and between boards, 5 feet 6 inches high with trim at top. No door required.	
	6. Assume 35 lineal feet of wood cabinets with plastic laminate top with 20 lineal feat of wood wall cabinets above.

Limited Development	Full Development
Division 7	Division 7
1. Install new standing seam lead coated copper roof. Assume 10% of existing sheathing has to be replaced.	1. Remove existing sheet metal roof and wood sheathing. Install new plywood sheathing plus a layer of Vent-Top ThermaCal. Then install new standing seam lead coated copper roof.
2. Reinstall existing sheet metal roof ventilator after rebuilding.	2. Same
3. Remove the bottom two feet of wood siding to inspect condition of studs and then reinstall. Assume that 50% of this siding will have to be replaced. Assume that 15% of the remainder of the existing wood siding will have to be replaced.	3. Remove all wood siding, install sheathing and building paper over existing studs and reinstall existing siding. Assume that 20% of the ½-inch x 6 inches siding will have to be replaced.
	4. Install 6-inch batt insulation in existing exterior walls, both floors.

Limited Development	Full Development
Division 8	Division 8
1. Remove existing pair of overhead sliding doors at each end and replace with wood sliding doors on new track. 7 feet 4 inches x 9 feet 4 inches	1. Same
2. Remove all existing wood windows at first floor (sides and ends) and replace with new operable wood windows. Assume windows to be 26 inches x 42 inches high (2 lites wide x 3 lites high). Glass can be DSB. Include cost of new wood frames, casings, and sills.	2. Same, but use ½-inch insulating glass.
3. At north end, upper level, there is a single door (4 feet x 6 feet) and a pair of doors near roof ridge (4 feet x 6 feet each). Replace each with fixed glazing in wood frames of same size. ¼-inch glass.	3. Same, but use insulated glass.
4. At north end, upper level, there are two wood windows (2 feet 4 inches x 3 feet 8 inches). Replace with new wood windows, DSB.	4. Same, but use ½ insulating glass.
5. At south end, upper level, replace existing door opening (46 inches x 80 inches) with fixed glass in wood frame. Rebuild stud framing between floor and window sill (25 inches from floor).	5. Same, but use insulating glass.
6. Remove existing wood trim around doors and windows and replace with new wood trim (interior and exterior. Replace all wood sills.	6. Same
7. Remove existing sliding door at platform to silo and install new sliding door.	7. Same
8. Assume 10 solid core wood doors with steel frames plus 5 'B' label wood doors with rated frames.	8. Assume 35 solid core wood doors with steel frames plus 5 'B' label wood doors with rated frames.
	9. Allow for 20 lineal feet of wood framed glazed window wall with a pair exterior wood doors to form a vestibule immediately inside the exterior sliding doors.
	10. Include 40 square feet of unframed mirror mounted on wall in restrooms.

Limited Development	Full Development
Division 9	Division 9
1. Install 1-hour shaftwall construction at stair and elevator enclosures. Assume that this construction will extend to the underside of the roof.	1. Same
2. Replace 50 SF of rotted floorboards in various locations of second floor.	2. Same
3. Install new sheetrock partition at upper level to seal off the upper-upper level from the remainder of the upper floor.	
4. Assume 75 LF of 5/8-inch gypsum board partitions with metal studs (not including partitions at stairs/elevator) at upper level. Height approximately 10 feet.	3. Assume 600 LF of 5/8-inch gypsum board partitions on metal studs (not including partitions at stairs/elevator. Assume 2/3 at lower level. Partitions at upper level average 14 feet high. At lower level go to underside of floor above.
5. Assume 320 SF gyp bd ceilings on metal stud framing supported by partitions.	4. Gypsum board ceilings. At upper level assume half of area has ceilings. At lower level assume full ceiling on underside of existing upper floor construction.
	5. Cover interior side of exterior walls, both levels, with gypsum board.
6. Rubber tile at landings, treads, and risers of stairs.	6. Same
7. Assume 320 SF resilient flooring on underlayment at second floor.	7. Assume carpet on first floor, carpet on underlayment on second floor.
8. Paint all interior surfaces, first floor.	8. Same
9. Paint new partitions and ceilings only on second floor.	9. Paint all interior surfaces including exposed framing and sheathing of roof at second floor.
10. Paint all exterior wood siding, doors, windows and trim.	10. Same
	11. Include 525 square feet of mud set 2 inches x 2 inches ceramic tile on floors and 450 square feet of thin set 2 x 2 ceramic wall tile with wainscot with bullnose at top.

Limited Development	Full Development
Division 10	Division 10
1. Include small allowance for signage.	1. Include allowance for signage.
	2. Provide toilet accessories for 3 toilets, 3 urinals, and 4 lavatories in men's restroom(s) and 6 toilets and 4 lavatories in women's restroom(s).
	3. Include 9 toilet stalls and 3 urinal screens.

Limited Development	Full Development
Division 11, 12 and 13	Division 11, 12 and 13
Not used.	Not used.

Limited Development	Full Development
Division 14	Division 14
1. Install new LULA type elevator.	1. Same

Limited Development	Full Development
Division 15	Division 15
1. Install gas-fired unit heaters, both floors.	1. Provide gas heat/electric chilling forced air HVAC system comparable to that for new school and/or community center.
2. No restrooms required.	2. Assume two restrooms. For men, provide 3 urinals, 3 w.c., 4 lavatories plus normal restroom accessories. For women provide 6 w.c. and 4 lavatories plus normal accessories. Plastic laminate toilet stalls and urinal screens.
	3. Automatic fire suppression system, both floors.

Limited Development	Full Development
Division 16	Division 16
1. Assume minimal lighting and power requirements at first floor. Lighting at second floor comparable to that in meeting rooms.	1. Assume psf cost for lighting and power to be comparable to that for a school or community center.

N 87°48'28"W 171.86'
CHAIN LINK FENCE
53
52
N 02°08'35"E 144.03'
N 22°44'01"E 633.55'
N 87°52'05"W 698.45'
CHAIN LINK FENCE
CONCRETE PAD
BOARD FENCE
SCHOOL BUS SIGN
CONCRETE SIDEWALK
CONCRETE BOX
7
8
9
6
10" WOOD BOLLARD
10" WOOD BOLLARD
10
PARCEL 24
Concrete Pad
CONCRETE SIDEWALK
Asphalt
CONCRETE SIDEWALK
COVERED SIDEWALK
CONCRETE
ASPHALT
CONCRETE
ASPHALT
M.U.Court
CONCRETE
11
Access Road
2
3
4
14
1
4" IRON POST
15
STEEL POST
N 15°48'47"W 474.64'
CHAIN LINK FENCE
MAIL BOX POST
STOP SIGN
CONCRETE SIDEWALK
13
12
STOP SIGN
Asphalt
Access
Road
3
2" L POST
54
CHAIN LINK FENCE
N 88°46'33"E 730.41'
N 81°05'55"E 246.47'
SPRINGVALE RD. (RT. 674 30'R/W)
S 02°05'40"W 175.61'
F . C . P . A .
LEXINGTON PARK
PARCEL "K"
38
N 81°26'00"E 143.97'
S 89°24'54"E 158.00'
37

LEGEND

1		Barracks
2		Bath House
3		Mess Hall
4		Administration Building
6		Chlorinator House
7		Missile Tracking Radar Tower
8		Communications
9		Transformer Pad
10		Tractor and Implement Shed
11		Observation Tower
12		Sentry Post
13		Sentry Post
14		Multi-use Court
15		Parking Lot
Ø	PP	Power Pole
	GW	Guy-wire
	SW	Side walk
		Existing Tree
	FH	Fire Hydrant
	MH	Manhole
		Buildings Included in Assessment

NOTE:

Site Survey Plan Was Provided by Fairfax County Park Authority, Entitled Lexington Park, DMA/Lexington Estates, Location of DMA Buildings, Project Number 475598, Fund 7371370, W/O 599-26, Dated 5/99.

0' 50' 100' 200'
SCALE

LOCATION OF DMA BUILDINGS

Fairfax County Park Authority

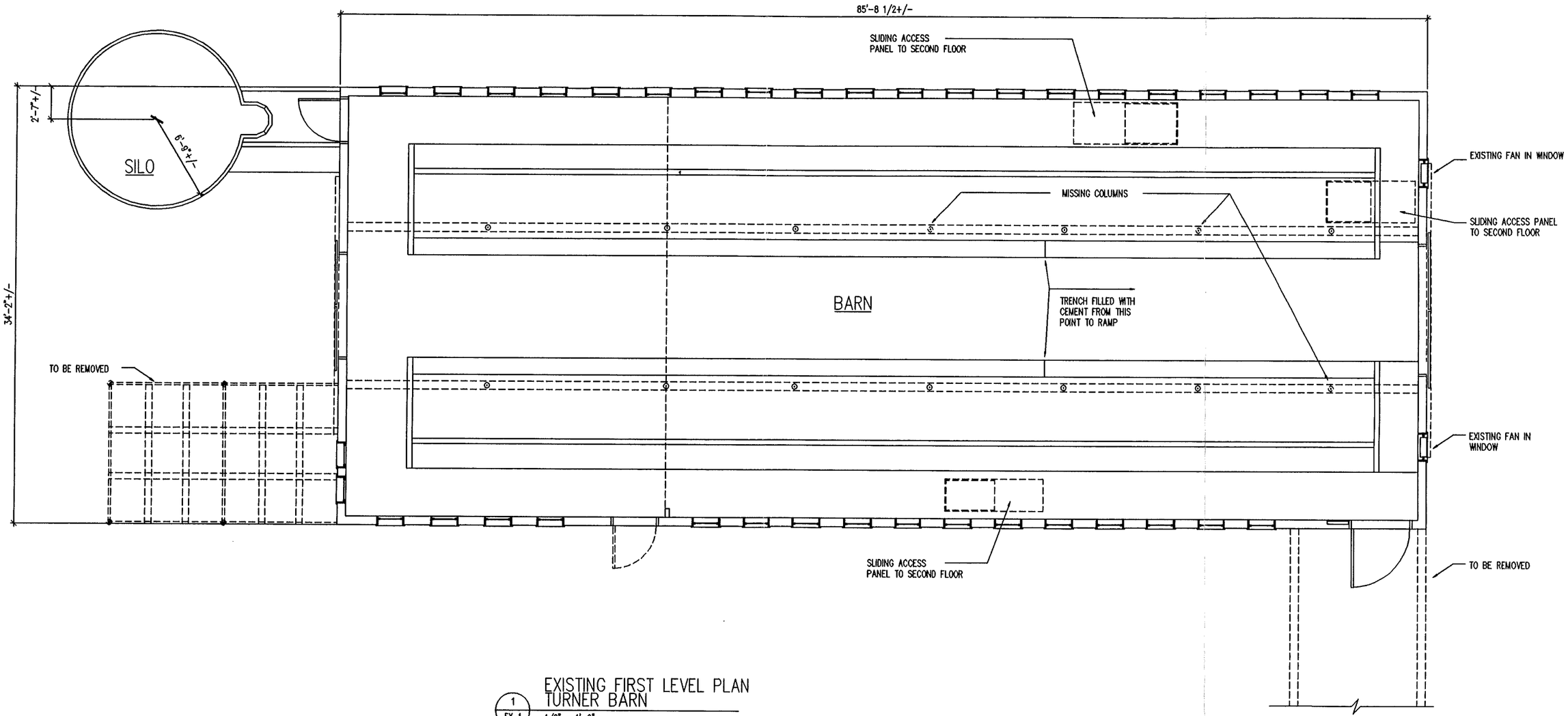
Revisions

EARTH TECH
1420 KING STREET, SUITE 600. ALEXANDRIA, VA 22314 (703) 549-8728

Date 9/27/99
Scale AS SHOWN
Drawn by FPW
Designed by
Checked by
Status

Drawing Title
EXISTING CONDITIONS

Drawing No.
S-1



1 / EX-1 EXISTING FIRST LEVEL PLAN TURNER BARN

1/8" = 1'-0"

PREPARED BY:
JOHN MILNER ASSOCIATES, INC.
5250 Cherokee Avenue Alexandria, Virginia 22312 (703) 354-9737
Structural Engineer:

McMullan & Associates
8381 Old Courthouse Road, Suite 350
Vienna, Virginia 22182

Turner Farm Barn and Milk Shed

Fairfax County Park Authority

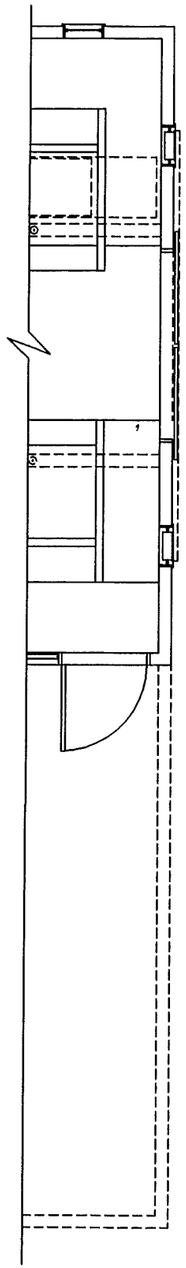
Revisions

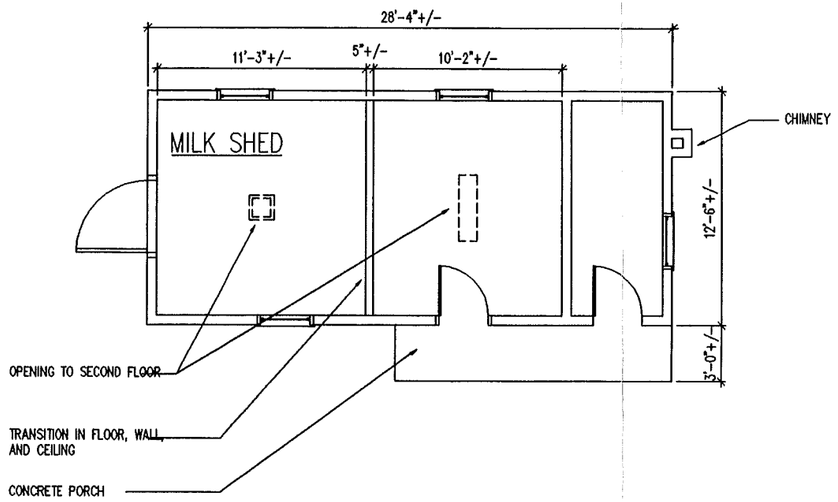
EARTH TECH
1420 KING STREET, SUITE 600, ALEXANDRIA, VA 22314 (703) 549-8728

Date 9/27/99
Scale AS SHOWN
Drawn by FPW
Designed by
Checked by
Status

Drawing Title
EXISTING FIRST LEVEL BARN PLAN

Drawing No.
EX-1





1 / EX-2 EXISTING PLAN MILK SHED
1/8" = 1'-0"

PREPARED BY:
JOHN MILNER ASSOCIATES, INC.
5250 Cherokee Avenue Alexandria, Virginia 22312 (703) 354-9737
Structural Engineer:
McMullan & Associates
8381 Old Courthouse Road, Suite 350
Vienna, Virginia 22182

Turner Farm Barn
and Milk Shed
Fairfax County Park Authority

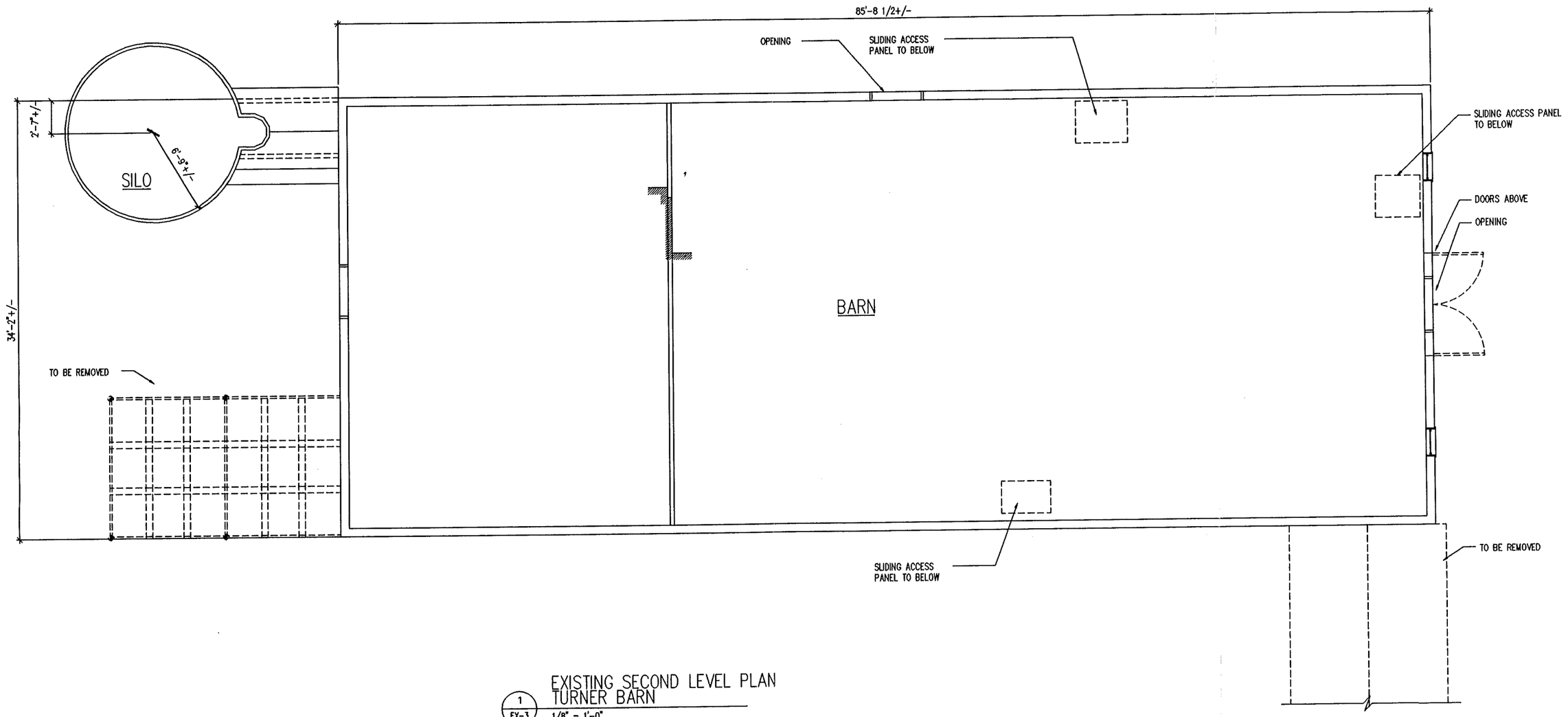
Revisions

EARTH TECH
1420 KING STREET, SUITE 600. ALEXANDRIA, VA 22314 (703) 549-8728

Date 9/27/99
Scale AS SHOWN
Drawn by FPW
Designed by
Checked by
Status

Drawing Title
EXISTING PLAN
MILK SHED

Drawing No.
EX-2



1 EX-3 EXISTING SECOND LEVEL PLAN TURNER BARN
1/8" = 1'-0"

PREPARED BY:
JOHN MILNER ASSOCIATES, INC.
5250 Cherokee Avenue Alexandria, Virginia 22312 (703) 354-9737
Structural Engineer:
McMullan & Associates
8381 Old Courthouse Road, Suite 350
Vienna, Virginia 22182

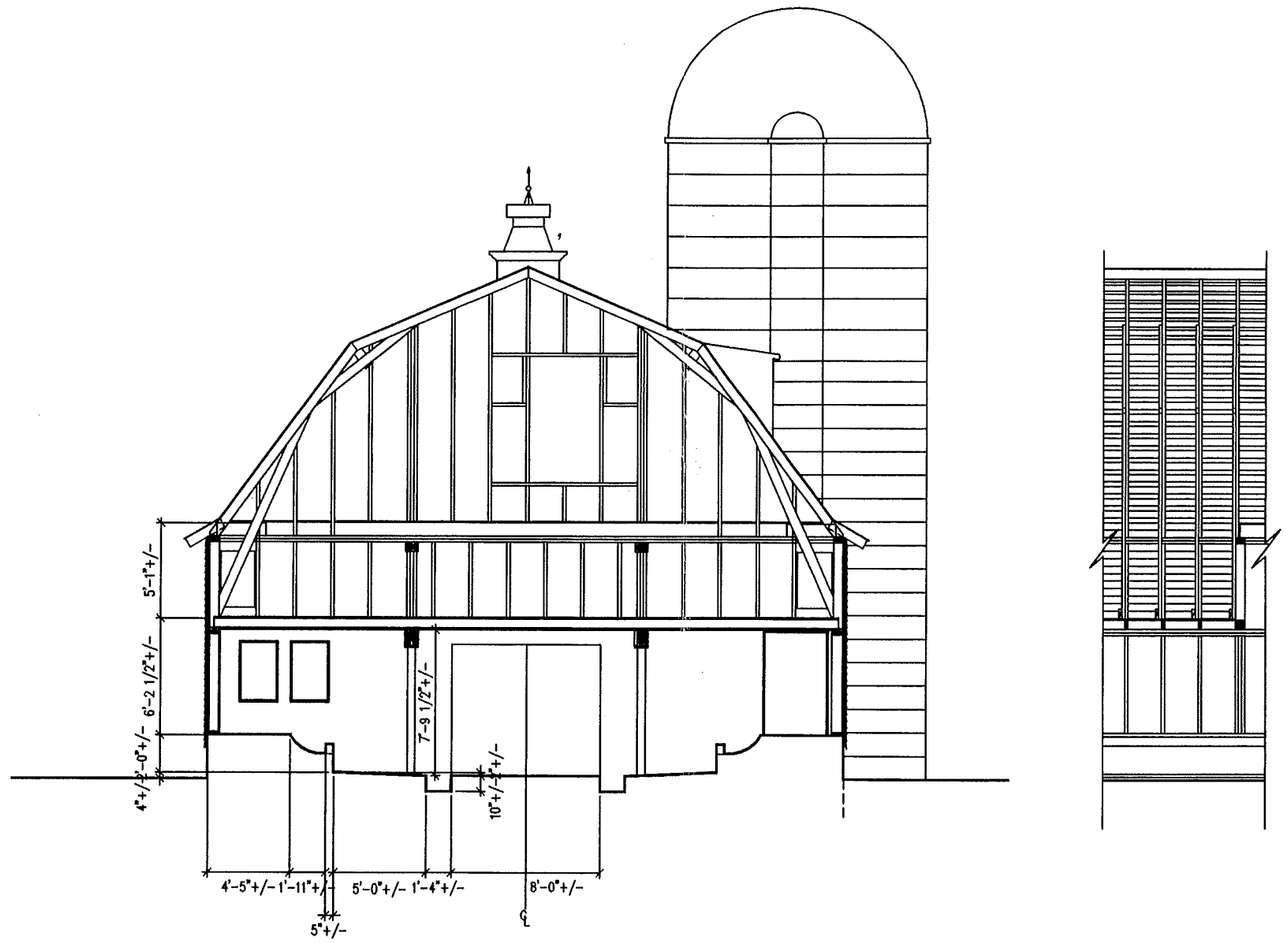
Turner Farm Barn and Milk Shed
Fairfax County Park Authority

Revisions

EARTH TECH
1420 KING STREET, SUITE 600. ALEXANDRIA, VA 22314 (703) 549-8728

Date 9/27/99
Scale AS SHOWN
Drawn by FPW
Designed by
Checked by
Status

Drawing Title
EXISTING SECOND LEVEL BARN PLAN
Drawing No.
EX-3



1 EX-4 SECTION TURNER BARN
1/8" = 1'-0"

PREPARED BY:
JOHN MILNER ASSOCIATES, INC.
5250 Cherokee Avenue Alexandria, Virginia 22312 (703) 354-9737
Structural Engineer:
McMullan & Associates
8381 Old Courthouse Road, Suite 350
Vienna, Virginia 22182

Turner Farm Barn
and Milk Shed
Fairfax County Park Authority

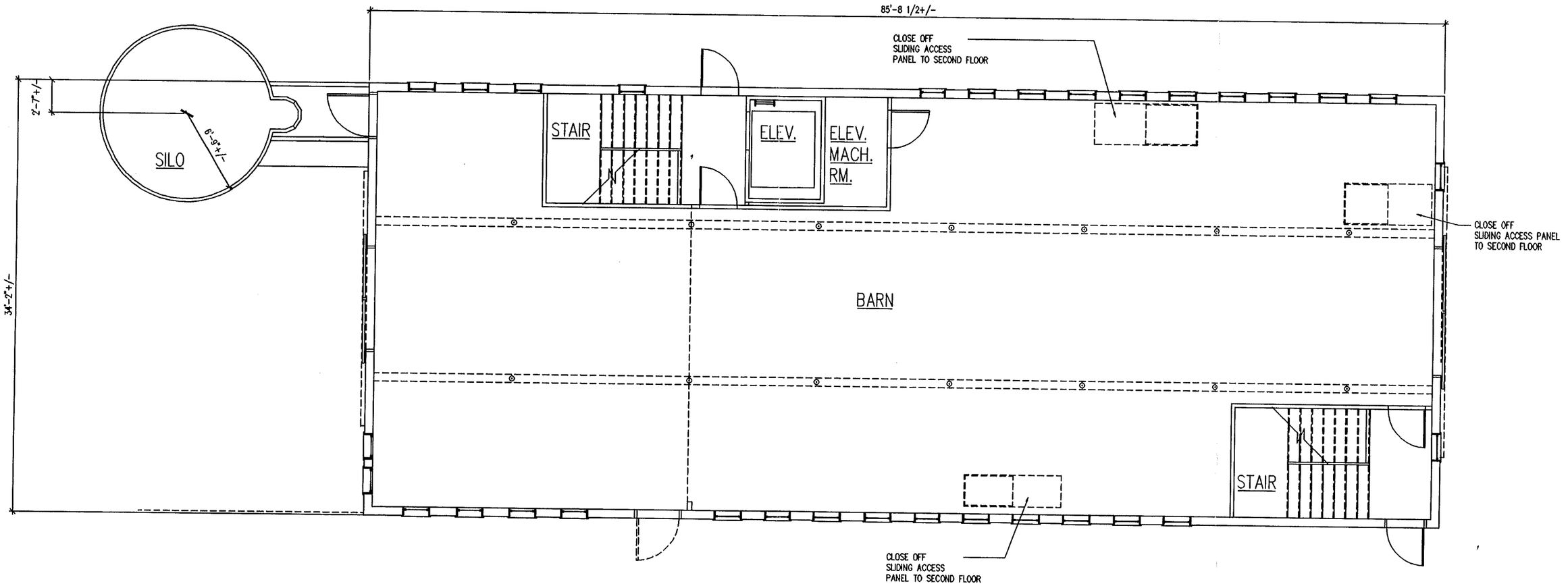
Revisions

EARTH TECH
1420 KING STREET, SUITE 600. ALEXANDRIA, VA 22314 (703) 549-8728

Date 9/27/99
Scale AS SHOWN
Drawn by FPW
Designed by
Checked by
Status

Drawing Title
EXISTING SECTION
TURNER BARN

Drawing No.
EX-4



1 / A-1 FIRST LEVEL PLAN
TURNER BARN
1/8" = 1'-0"

PREPARED BY:
JOHN MILNER ASSOCIATES, INC.
5250 Cherokee Avenue Alexandria, Virginia 22312 (703) 354-9737
Structural Engineer:
McMullan & Associates
8381 Old Courthouse Road, Suite 350
Vienna, Virginia 22182

Turner Farm Barn
and Milk Shed
Fairfax County Park Authority

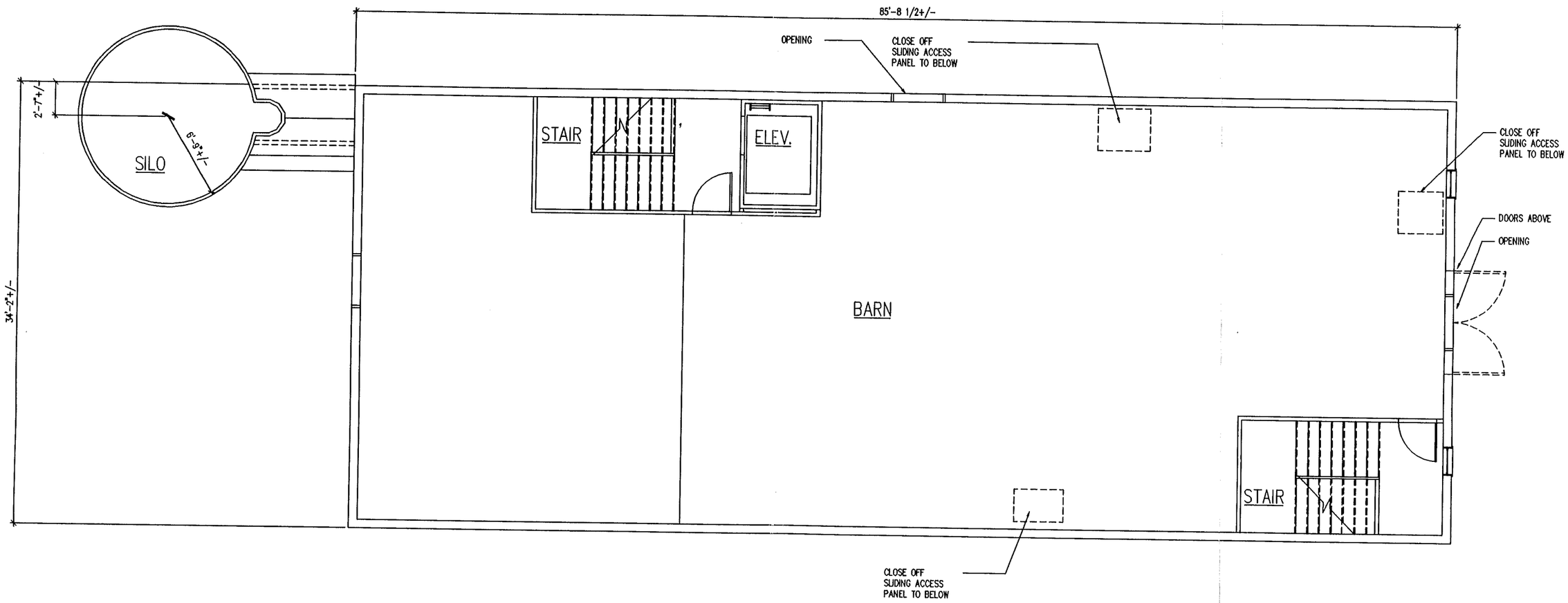
Revisions

EARTH TECH
1420 KING STREET, SUITE 600. ALEXANDRIA, VA 22314 (703) 549-8728

Date 9/27/99
Scale AS SHOWN
Drawn by FPW
Designed by
Checked by
Status

Drawing Title
FIRST LEVEL PLAN
BARN

Drawing No.
A-1



1 / A-2 SECOND LEVEL PLAN
TURNER BARN
1/8" = 1'-0"

PREPARED BY:
JOHN MILNER ASSOCIATES, INC.
5250 Cherokee Avenue Alexandria, Virginia 22312 (703) 354-9737
Structural Engineer:
McMullan & Associates
8381 Old Courthouse Road, Suite 350
Vienna, Virginia 22182

Turner Farm Barn
and Milk Shed
Fairfax County Park Authority

Revisions

EARTH TECH
1420 KING STREET, SUITE 600. ALEXANDRIA, VA 22314 (703) 549-8728

Date 9/27/99
Scale AS SHOWN
Drawn by FPW
Designed by
Checked by
Status

Drawing Title
SECOND LEVEL PLAN
BARN

Drawing No.
A-2