

Building Number: 33

Original Name: Multi-Purpose / Recreation Building

Est. Year of Construction: 1951

General Data

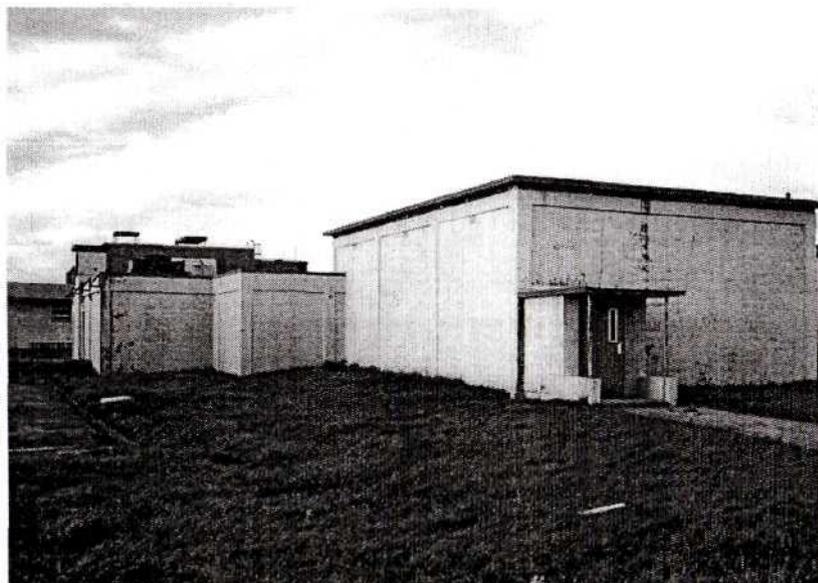
- Square Footage: 5,460
- # of Floors: 1
- # of Rooms: 10
- # of Bedrooms: 0
- # of Bathrooms: 1
- # of Kitchens: 0
- # of Laundry Rooms: 0
- # of Shower Rooms: 0
- Basement or Crawl Space? Slab-on-grade
- Ceiling Heights: 13'-4"; +/- 9'-6"

History and Future Plans

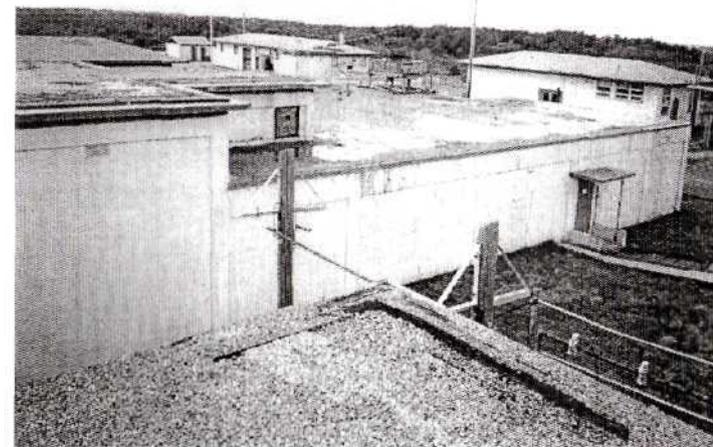
Building #33 was originally used as a multi-purpose and recreation building. NPS anticipates use of this building as a theater (and ample "back-of-the-house" space would also be available for meetings and shops).



Interior of gymnasium.



View from southwest.



View from roof of Building # 31 (southeast).

Exterior Conditions

- *Roofs*
Flat built-up roofs with stone ballast in **poor condition**. Ponding in center. Leaks have damaged interior finishes. Advise replacement of all roofs.
- *Wall*
Exterior is constructed of painted concrete masonry unit (CMU) on a concrete frame in **fair condition**. Some vertical cracks need repair. Some spalling at rebar. Cracking and peeling paint finish. Advise repair of cracks, rebuilding +/- 500 SF, repointing and waterproofing at all walls.
- *Trim*
Metal fascia is in **fair condition**. Soffits damaged; advise repair.
- *Foundation*
Poured concrete slab-on-grade.

Framing

Roofs: Flat concrete slabs appear to be in **fair/good condition**.
Wall: CMU infill in **fair/good condition**.
Floor: Concrete slab in **fair/good condition**.

Life Safety

The four means of egress from Building #33 are in **fair condition**. Advise that all doors be replaced. One step up to main entrance - not handicap accessible.

Interior Conditions

- *Ceiling*
Concrete in **fair condition**. ACT in **fair condition**. Some tiles are missing / damaged. Several leaks and water damage. Advise repair and refinish.
- *Wall*
Painted CMU in **fair condition**. Paint is peeling. Refinishing recommended. Racking crack near entry needs repair. Water damage on northwest wall of existing gymnasium needs repair.
- *Trim*
Wood door trim is in **fair condition**. Paint is peeling and cracking. Refinishing is recommended. Vinyl base molding in **fair/ good condition**.
- *Floor*
Vinyl-asbestos tile (VAT) throughout in **fair/poor condition**. Some extensive water damage in corridor and toilet room. Advise replacement.

Windows

Building #33 has 1 sliding window (only!) in **fair/poor condition**. Replacement is recommended.

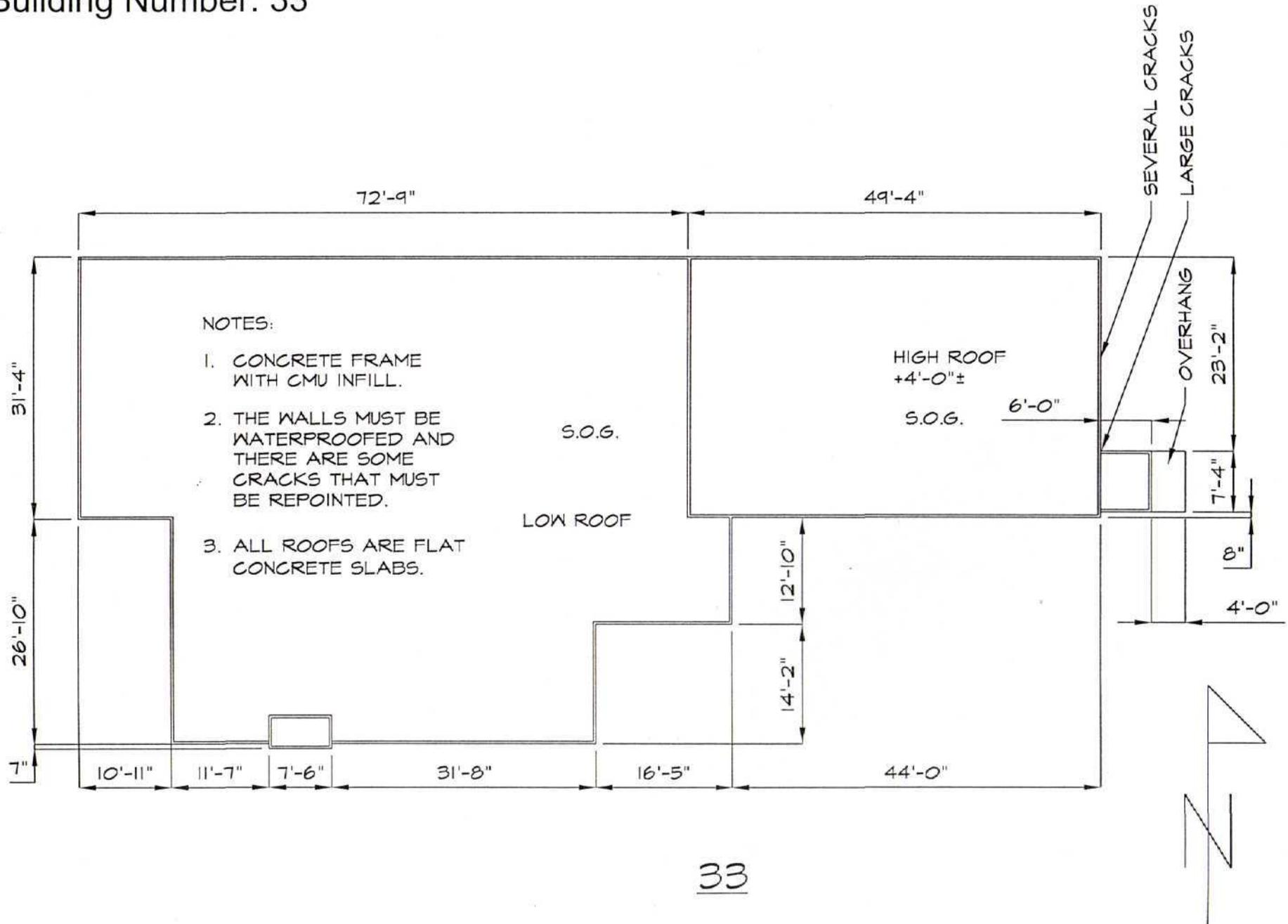
Doors

Interior hollow core doors in **fair/ poor condition**. Four metal doors to exterior with one life and panic hardware in **fair condition**. Doors and hardware are rusted. Replacement of all doors recommended.

Reusable Fixtures

Janitor's sink may be refurbished with new hardware, etc. Refer to Mechanical/Electrical/Plumbing section.

Building Number: 33



Building 33**A. Building Classification**

Existing Multi-Purpose Recreation Building is assumed to be A-3 assembly use, a category including galleries, museums, lecture halls without fixed seats, libraries and recreation centers (Table 306.2). Proposed A-3 theater use assumes a “concentrated” assembly (i.e., with chairs only) at the 1,580 sf, double-height former gymnasium, 1,000 sf of “unconcentrated” assembly (i.e., tables and chairs) in new one-story exhibit or meeting areas, and accessory uses in the balance of the space.

B. Occupancy and Fire Separations

Per 302.1.1, boiler and furnace rooms require 1-hour separation or an automatic fire suppression system. For A and B use groups, storage rooms > 50 sf and < 100 sf in area require 1-hour separation or automatic fire suppression system with smoke partitions; storage rooms > 100 sf require automatic fire suppression system with smoke partitions. In occupancies other than F, paint shops employing hazardous materials (in quantities less than those which cause H use group classification) require 2-hour separation, or 1-hour with automatic fire suppression system.

C. Type of Construction

Type 1 or 2, concrete frame with CMU infill and concrete slab ceilings; exact classification requires confirmation of fire-resistance of existing materials (e.g., depth of steel reinforcement in slabs and columns and thickness of roof slabs).

D. Floor Area

1,580 sf gymnasium and portico + 3,880 sf balance = 5,460 sf < 8,400 sf max. allowed for 2C construction (worst case, “unprotected” due to insufficient depth of steel reinforcement), per Table 503.

E. Height and Number of Stories

1-story; conforms to 2-story/30' max. for A-3 uses (assuming 2C construction, per Table 503).

F. Occupancy

Proposed continuation of A-3 assembly use, results in no change in Hazard Index (unless testing determines that the construction is “unprotected.”) Chapter 34 provisions are limited for assembly use; any alteration or change in occupancy within an assembly use group shall comply with the requirements of the State Code for new construction.

226 occupants (at 7 nsf per occupant allowance for “concentrated” theater assembly) in 1,580 sf former gym + 67 occupants (at 15 nsf per occupant allowance for “unconcentrated” exhibit/meeting space) in 1,000 sf + 29 occupants (at 100 gsf per occupant in other areas) = 322 max. occupants.

G. Exiting Requirements

Existing one-story building has four single-leaf exits. Per Table 1009.2, for A, B and F uses, egress width of doors, ramps and corridors per occupant is .2” without sprinkler system, .15” with sprinkler system. 322 occupants requires width increase of each means of egress component to 64.4” min. without sprinkler system or 48.3” min. with sprinkler system. Alternatively, provide 2 new, remote, double-leaf exits from theater space; existing exits in one-story wings have sufficient width for 96 max. occupants.

H. Loading Requirements

Slab-on-grade. Refer to plan diagrams for structural information.

I. Accessibility

Main entrance is one step up; must be refurbished or adapted for universal accessibility. New accessible toilets, water fountain, etc. required.

BUILDING #33: REQUIRED ARCHITECTURAL AND STRUCTURAL REPAIRS

1. Remove and replace damaged soffits	475	lf
2. Install alum. roof edge (cant, nailer, flashing)	475	lf
3. Repair/rebuild damaged CMU masonry, including needle bms.	500	sf
4. Scrub coat and paint/seal exterior CMU masonry	4,000	sf
5. Remove and replace exterior doors, hardware	4	ea
6. Remove windows and replace with metal-clad wood windows	1	ea
7. Repair and recondition window sill, lintel; paint	1	ea
8. New m.o., loose lintels, new metal-clad wood d.h. windows, complete	10	ea
9. Install new single-ply membrane roof with 1-1/2" polyisocyanurate insulation	5,460	sf
10. Roof drainage system repair/replacement	1	job
11. Install batt insulation/gypsum wallboard at walls	4,000	sf
12. General interior cleanout, mildew treatment	5,460	sf
13. Patching and floor, wall and ceiling finishes (gfa)	5,460	sf
14. Repair/replace/paint interior doors & trim	1	job
15. New toilet and mechanical room enclosures, toilet accessories	1	job
16. Refurbish main entrances for universal accessibility (path, ramp)	1	job

IV MECHANICAL, ELECTRICAL, FIRE PROTECTION AND PLUMBING REPORTS – BUILDING NUMBER 33

A. HEATING, VENTILATING AND AIR CONDITIONING

1. Existing Conditions

- a. Heating Systems
 - 1) Heating systems media provided from above-ground low pressure steam distribution systems that have been disconnected from inactive boiler plant.
- b. Heating Distribution
 - 1) Fin-tube radiation elements (steel 4"x4" fins and 1" or 1½" steel tube) piping throughout the building and piped to steam reheat coils.
- c. Air Systems
 - 1) A central air-handling unit provided with the air conditioning is located within an interior fan room. The unit is provided with eight (8) reheat zones and associated controls. Supply air and return air ductwork (not insulated) is distributed throughout the building.
- d. Humidifiers
 - 1) The air systems are provided with two steam humidifiers.
- e. Cooling Media
 - 1) Located on the building back roof is a roof mounted air-cooled condensing unit, with approximately 15 tons of cooling capacity.
- f. Windows
 - 1) One window existing at the back of the building.
- g. Toilet Exhaust
 - 1) Toilet provide with exhaust fans.
- h. Condensate
 - 1) Condensate pump located in fan room inactive.

2. Recommended Systems (without air conditioning)

- a. Heating Media
 - 1) Hot water heating plant, with heating media of propane tanks located outside of the building.

Additional space within building will be required for heating plant. Mechanical room to be provided with gas-fired boilers, pumps, et cetera

- b. Heating Equipment
 - 1) The existing fan room within the building will have to be enlarged for installation of new central heating and ventilation unit for all spaces. All existing distribution supply and return air ductwork to be removed and replaced. Outside air intake ductwork and louvers need to be enlarged.
- c. Ventilation
 - 1) Due to the high ventilation air volume (concentrated occupancy of 332 people) new ventilation air-handling unit (\pm 5000 cubic feet per minute) will be required.
- d. Heating Distribution
 - 1) Exterior exposures provided with fin-tube radiation and interlocked with zone controls from air-handling unit.
- e. Theater Ventilation
 - 1) Suggest the theater section of the building be provided with a separate package roof mounted air-handling unit and operated only when needed.
- f. Economizer
 - 1) All air-handling systems shall be provided with 100 economizer with Enthalpy controls exhaust / return fans for free ventilation and cooling.
- g. Toilet Exhaust
 - 1) New toilet exhaust air systems.
- h. Miscellaneous Heating
 - 1) Heating of Vestibules provided with cabinet unit heaters.
- i. Domestic Hot Water
 - 1) Refer to plumbing for domestic hot water services.

3. Miscellaneous

- a. Estimated building heating with ventilation systems is 8,000 MBH and estimated building cooling requirement 60 tons of cooling.
- b. Refer to supplement section: Sustainable Passive Solar and Wind Energy Technologies

4. Recommended Systems (without Air Conditioning)

- a. Heating Media
 - 1) Hot water heating plant, with heating media of propane tanks located outside of the building. Additional space within building will be required for heating plant. Mechanical room to be provided with gas-fired boilers, pumps, etcetera
- b. Heating, Ventilating and Air Conditioning Equipment
 - 1) The existing fan room within the building will have to be enlarged for installation of new central heating and ventilation unit for all spaces. All existing distribution supply and return air ductwork to be removed and replaced. Outside air intake ductwork and louvers need to be enlarged.
- c. Cooling Media
 - 1) Replacement of roof mounted air-cooled condensing unit with a new 60 ton air-cooled water chiller and provide a new chilled water piping and pumping system.
- d. Ventilation
 - 1) Due to the high ventilation air volume (concentrated occupancy of 332 people) new air-handling unit will be required.
- e. Heating Distribution
 - 1) Exterior exposures provided with fin-tube radiation and interlocked with zone controls from air-handling unit.
- f. Theater Ventilation
 - 1) Suggest the theater section of the building be provided with a separate package roof mounted air-handling unit and operated only when needed.

- g. Economizer
 - 1) All air-handling systems shall be provided with 100 economizer with Enthalpy controls for free ventilation and cooling.
- h. Toilet Exhaust
 - 1) New toilet exhaust air systems.
- i. Miscellaneous Heating
 - 1) Heating of Vestibules provided with cabinet unit heaters.
- j. Domestic Hot Water
 - 1) Refer to plumbing for domestic hot water services.

5. Miscellaneous

- a. Estimated building heating with ventilation systems is 800 MBH and estimated building cooling requirement 60 tons of cooling.
- b. Refer to supplement section: Sustainable Passive Solar and Wind Energy Technologies

B. PLUMBING**1. Existing Conditions**

- a. Plumbing Fixtures
 - 1) Two toilet rooms (total)
 - a) (5) water closets, floor mounted, flush valve
 - b) (4) lavatories, wall mounted
 - c) (1) janitor's sink
 - 2) (1) electric water cooler
- b. Water Service
 - 1) None found – assume rises from below slab in mechanical room.
- c. Water Heating
 - 1) Vaughn corporation model C-52, 52-gallon cement lined, electric (2,000 W, 1 phase, 240 V storage water heater (1965).
- d. Domestic Water Distribution
 - 1) Assume above ceiling (low building) between water heater and toilet rooms.
- e. Sanitary Distribution
 - 1) The building is slab on grade. No sanitary piping was found. No floor drains were found.

- f. Miscellaneous (beyond assumptions)
 - 1) The building storm system was not verified.
 - 2) Pending results of careful demolition, the janitor's sink may be refurbished and reused at another location with new waste, trim and faucet.
 - 3) No floor drains were found in the toilet room/water heater room or throughout all the mechanical room spaces.
 - 4) Exterior wall hydrants were not present on this building.

2. Recommendations (Theater)

a. Plumbing Fixtures

- 1) 161 Men (Theater)
 - a) (1) water closet
 - b) (1) urinal
 - c) (2) lavatories
 - d) (1) floor drain
 - e) (1) hose bibb
- 2) 161 Women (Theater)
 - a) (4) water closets
 - b) (2) lavatories
 - c) (1) floor drain
 - d) (1) hose bibb
- 3) General building
 - a) (1) drinking fountain
 - b) (1) janitor's sink
 - c) (2) exterior wall hydrants
 - d) (1) mechanical room floor drain
 - e) (1) mechanical room hose bibb

b. Water Service

- 1) A new 1¼-inch service would be required to accommodate the proposed fixtures. The new service would run below the slab and rise up within a mechanical room.

c. Water Heating

- 1) Theater
 - a) The recommended base building water heater would be a small 10-gallon electric storage heater with a low recovery electric input. The heater would be located on a shelf within the

janitor's closet (assume close to the toilet rooms).

- b) Although not recommended, the domestic hot water could also be supplied from the building heating system boiler.
- d. Domestic Water Distribution
 - 1) New hot and cold water piping would run primarily within partitions between the janitor's closet and the toilet room wet walls. Branch cold water would run above the ceiling and drop in exterior partitions to exterior wall hydrants.
- e. Sanitary Distribution
 - 1) A new 4-inch sanitary service would be required to accommodate the proposed fixtures. The piping would run buried below the slab and within the partitions. A new 4-inch vent would collect the vents within the partitions and extend through the roof above the toilet areas.
- f. Propane System
 - 1) A single bottle point-of-use system would be installed to accommodate the building heating system.
 - 2) A new gas main will follow the domestic water route to the mechanical rooms.
 - 3) It may be more feasible to combine propane gas loads with Building 31 for possible gas source via a bulk tank
- g. Miscellaneous
 - 1) The plumbing costs will include cutting and patching the slab to remove the existing sanitary piping and accommodate the new proposed fixtures.
 - 2) The plumbing costs will include a new storm water system for this building. The system would consist of several new roof drains (varies with roof pitch), several new roof leaders and a new 8-inch storm exit main to the site system.
 - 3) For sustainability, review Sustainability Section and possible combining of systems noted above.

C. FIRE PROTECTION**1. Recommendations**

- a. Theater
 - 1) None required by code. However, the policy of the National park service is to maximize life safety. Therefore, an automatic sprinkler system would be recommended for this building due to the proposed use (theater with large volume of occupants). An automatic sprinkler system installation will also help to reduce code requirements such as fire separations, exiting, et cetera
 - 2) A wet automatic fire suppression system would initially be proposed for this building due to the construction (i.e., no attic or crawlspaces). But since there is a high risk potential of power/building heating failure, a dry system is recommended. This will isolate the potential of freezing pipes at the sprinkler water entrance room only.
 - 3) A dry automatic fire suppression system would be installed throughout the building.
 - 4) A new 4-inch service with double check valve assembly would be necessary.
 - 5) Two new dry alarm check valves with related trim would be necessary.
 - 6) Piping would be schedule 40 steel with screwed and mechanical joint fittings. Piping would be divided into two zones and be sized for light hazard occupancy per NFPA 13 standards.
 - 7) Sprinklers would be installed throughout this building and be coordinated with the various ceiling levels.
- b. Miscellaneous (beyond assumptions)
 - 1) None.

D. ELECTRICAL**1. Existing Conditions:**

- a. Building Electric Service:
 - 1) There are two building services to this building. The first is from the Essential Power System, which originates in Building 29 and runs underground in a covered trench to Building 33. The Essential Power System service is 150 ampere, 120/208 volts, three phase, 4-wire to a 200 ampere fused disconnect switch with 150-ampere fuses. The second service is from the Non-Essential Power System and also originates from Building 29, running underground in the same trench. The Non-Essential Power System service is a 200-ampere, 120/208 volts, three phase, 4-wire, to a 200-ampere disconnect switch with 200-ampere fuses. Both disconnect switches are located in the back corridor near the rear entry. Service has been disconnected.
 - 2) The Essential Power Service switch feeds a Kelek, 125 ampere, 120/208 volt, 3 phase, 4 wire panel located in the back corridor near the rear entry and a Kinney, 200 ampere, 120/208 volt, 3 phase, 4-wire panel located in the water heater room. The panels are in poor condition.
 - 3) The Non-Essential Power service switch feeds a Kinney, 200-ampere, 120/208 volt, 3 phase, 4-wire panel located in the water heater room. The panel is in poor condition.
 - 4) There is also two miscellaneous small load centers in other ancillary rooms. The load centers are in poor condition.
- b. Fire Alarm System:
 - 1) None.
- c. Lighting:
 - 1) Fixtures in the gym area are incandescent recessed, 1foot square with lenses. Fixtures are in poor condition.
 - 2) Additional fixtures in other areas are fluorescent, pendant, 2 lamp with louvers. Fixtures are in poor condition.
- d. Emergency Lighting:
 - 1) Central batteries with remote lighting heads. The system is not operational. Batteries are dead.
 - 2) Exit signs are incandescent and are in poor condition.

- e. Exterior Lighting:
 - 1) Incandescent jelly jar type, with wire guard. Fixtures are rusted and in poor condition.
- f. Wiring Devices:
 - 1) Grounding type receptacles, color: brown. Devices and coverplates are in fair to poor condition.
- g. Telephone System:
 - 1) System enters the building underground. System has been disconnected. Interior wiring is in poor condition.

2. Recommendations:

- a. All systems are in fair to poor condition and must be replaced for the building to be habitable for any use. See Part III Typical Mechanical, Electrical, Fire Protection and Plumbing Items.
- b. Refer to "Sustainability Supplement" section.

We have listed in Table 1 the location and estimated quantity, by square foot (sf), linear foot (lf), or other appropriate unit, of each type of ACM identified at the site. We have also provided asbestos location drawings in Appendix B.

TABLE 1. • List Of Materials Testing Positive For Asbestos

Building 33, Truro Air Base, North Truro, Massachusetts

Type of Material	Location	Quantity
Green 12"x12" floor tile	Auditorium	1,288 sf
Brown 9"x 9" floor tile and associated mastic adhesive (2 layers)	Throughout rear of building	3,504 sf

In Table 2, all materials that tested negative for asbestos are listed, including the locations where these materials were observed and the corresponding bulk sample reference number(s).

Type of material	Location(s) observed	Sample number(s)
White 1'x1' ceiling tiles	Auditorium	33-01A
Black baseboard and associated tan mastic adhesive	Throughout	33-06A, 33-07A
Tan mastic adhesive underlying green 12"x12" floor tile	Auditorium	33-09A
Black asphalt roof material	Top layer of core sample	33-10A
Black asphalt roof felt	Middle layer	33-11A
Black asphalt roof material	Bottom layer	33-12A

2.0 Conclusions and Recommendations

On the basis of our findings, we offer the following conclusions and recommendations:

1. Only nonfriable ACBM were identified at the site. Should the building be renovated or demolished, removal of the ACBM will be necessary. Abatement of all nonfriable ACBM that will be made friable by demolition activities must be performed before building demolition. This work should be conducted by a licensed Asbestos Abatement Contractor in accordance with a project design prepared by a certified Abatement Project Designer.
2. If any suspect ACBM are identified at a later date that are not addressed in this inspection report, they should be assumed to be ACBM unless appropriate sampling and analysis demonstrates otherwise.
3. Develop a site-specific operations and maintenance (O&M) program for properly maintaining ACBM that will remain in place. Such a program would include a site-specific O&M plan, training of workers who may impact ACBM, periodic inspection of locations where ACM is present, and other applicable guidelines and procedures.

VHB**XRF Field Testing Results**

Site Access: Yes
 Demo Permitted?: Yes
 Project# 06780
 Location: Building #33

Date 11/4/99
 Page 1 of 1
 Project Name: N. Truro AFS
 Inspector: TMD

Location	Surface Tested	Substrate	Concentration (mg/cm ²)	Estimated Quantity
Gym Area	Dark green lower wall	Block	0.1	
	Light green upper wall	Block	< 0.1	
Recreation Supply	Tan door	Wood	0.6	
	Green door	Wood	1.3	
Hallway	Green wall	Block	0.1	
	Dark green lower wall	Block	0.4	
	Light green upper wall	Block	0.9	
	White ceiling	Plaster	< 0.1	
Lab	White ladder	Metal	2.4	
	Brown door	Wood	1.0	
Nursery	Yellow wall	Block	0.1	
	Yellow door	Wood	2.2	
Bathroom	Gray door	Wood	1.0	
	Green stall divider	Metal	< 0.1	
	Yellow wall	Block	0.4	
Infirmary	Light green wall	Block	2.3	
	Blue door	Wood	0.2	
Security	Blue wall	Block	5.3	
	Blue wall	SR	0.2	
	Blue door to exterior	Wood	< 0.1	
Mechanical Room	Light green wall	Block	0.8	
	White door	Wood	0.4	
Northwest Exit	Black door to exterior	Metal	< 0.1	
Northeast Exit	Tan door to exterior	Metal	< 0.1	
Rear Patient Room	White door	Wood	0.8	
	Yellow wall	Block	0.1	
Vestibule	Tan/Orange wall	Block	< 0.1	
Exterior	Yellow wall	Block	< 0.1	
	Yellow corner support	Concrete	< 0.1	
	Red eve	Metal	4.6	
	Red door	Metal	0.2	

*LBP components only. Limit of detection of NITON XRF is < 0.1 mg/cm²) SR=Sheet Rock Block=Cinder Block

VHB Oil and Hazardous Materials (OHM) Inventory

Project: Former Air Force Station
 Location: North Truro, MA

Project # 06780

Location	Waste Type	Container Type	Volume of Conte	Quantity	Comments
Building #33					
	Mercury	Fluorescent bulbs		45	4 foot
	PCBs	Light ballasts		14	
	PCBs	Light starters		24	
	6-volt batteries	Plastic		6	2 Emergency lights