INSPECTION REPORT

OF

CRIGLERSVILLE ELEMENTARY SCHOOL

AT

MADISON COUNTY, VIRGINIA

for

Madison County School Board
Route 687
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By

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INSPECTION REPORT

On July 11, 2002, OWPR, Inc. performed an inspection of Criglersville Elementary School located in Madison County, Virginia. Our inspection was to cover the overall condition of the site and building, including the general condition of the mechanical, plumbing and electrical systems of the facility. The two buildings containing Guidance, Art and Music were not inspected. The following reflects our findings:

A. CIVIL

1. The five acre site meets the minimum state standards for schools of less than 100 students.

2. There are 36 parking spaces allocated for cars which is adequate for this size school. However, cars, buses and service vehicles are not separated as recommended by state standards.

3. The building is located approximately 28" below the flood plain. Flooding creates obvious problems with water damage to finishes as well as mud and debris inside the building. The boiler room and steam tunnel, which goes around the perimeter of the building, are below the first floor elevation and are subject to additional damage. Flooding also increases the potential for problems with mold and mildew inside the building. Due to the wide area for the flood water to disperse, the velocity of the water probably would not undermine the building foundation. However, there is increased potential for settlement and cracking of walls due to standing water around the building saturating the footing subgrades as well as damage to paved parking and play areas.

4. The well depth is approximately 70' with a submersible pump. Water is treated by chlorination, liquid caustic soda and calgon. Pump maintains water pressure between 30 psig and 50 psig. Testing of water quality is performed frequently. Since the school has no showers, the existing water supply is adequate for present domestic use. If a sprinkler fire suppression system would be required in any future renovations, a storage tank would be required due to insufficient flow from the well.

5. The septic system is composed of a single concrete septic tank of approximately 1,500 gallons and distribution boxes to a subsurface drain field located below the paved parking lot. The present procedure is to have the septic tank pumped out twice per year. It is our understanding that the water table is above the drain field. This, along with the pavement over the drain field, is in violation of the Virginia Department of Health Sewage Handling and Disposal regulations.

6. The well and septic tank are approximately 41 feet apart. The state waterworks regulations require a minimum separation of 50 feet.

B. ARCHITECTURAL

1. The building is a two-story, K-5 elementary school built around 1946.

2. The first floor area is approximately 11,700 square feet and the second floor is approximately 6,155 square feet for a total area of approximately 17,855 square feet. The roof pitch appears to have a minimal slope, sloping from front to back. Drainage is very poor, however, the roof appears in good condition. The roof was re-roofed about 5 years ago with a "PUFF TYPE" roof system and was patched/re-sprayed with a gritty type substance about 2 years ago.

3. The classrooms, library, administration area, kitchen, cafeteria, multi-purpose area, and associated spaces are sized below state standards. The kitchen equipment needs to be upgraded and the dishwashing area separated from the food preparation areas.

The following items are additional items that reflect our observations and comments:

a. The condition of the buildings exterior and interior is generally in fair condition.

b. Exterior doors are wood with glass and raised panels and are in fair to poor condition. There are no vestibules at the exterior doors for energy conservation.

c. Gutters and downspouts are aluminum and are all in good shape. Downspouts have a galvanized guard around them near the bottom, but there are no collection boots (downspout empty onto grade or paved play area).

d. The windows are single pane, steel type with fixed and operable units and are of fair quality and fair to poor condition. The windows furnish very good natural lighting and adequate ventilation for most interior spaces. These windows are not thermally broken.

e. Egress and flow of pedestrian traffic through the building is very good to fair. Some exit signs are missing. The corridors and doors do not appear to be fire rated, as required by current code. The building does not have a sprinkler system. The stairs are open and not rated, which is in violation of the current code.

f. Interior finishes are in fair to poor condition.

1) Floors: Carpet, vinyl asbestos tile, ceramic tile.

2) Walls: Painted block, painted plaster on block. Corridors have 5'± high plaster wainscot with wood cap at top. Toilets have structural glazed unit wainscot that has been painted.

3) Ceiling: Suspended 2 x 4 acoustical tile. Several tiles show damage from former water leakage. The original ceilings were plaster at the bottom of steel joists.

g. Interior doors are painted solid wood doors with raised panels and are in fair to poor condition.

h. Interior trim at wainscot, casework, wardrobes and base is painted wood. The stage floor, steps and trim is stained red oak. All are in fair condition.

i. Stairs to second floor do not meet current code regarding stair risers, treads, handrail or guardrail heights.

j. Handicapped access to the building is poor. The small ramp at left end of building is not ADA compliant. There is no handicapped access to the second floor.

k. Gang toilets are not ADA compliant.

l. Exterior and interior door hardware is not ADA compliant.

m. Electric water cooler is not ADA compliant.

n. Interior signage is not ADA compliant.

C. STRUCTURAL

1. The structure is constructed of masonry (brick and block) load bearing exterior walls with some interior masonry load bearing walls with bar joists for the floor and roof framing. The roof framing and floor framing were accessible by removing some of the existing plaster ceilings.

2. Investigation of the structure indicates 8" bar joists over the corridors on the first and second floors with 12" joists over the classrooms. When this structure was built, there were at least 3 or 4 different 8" and 12" joists available for use, therefore it would be very difficult to say with any certainty exactly what the load capacity is of the roof or second floor framing. However, the floors and roof appear to be sound with no more than the normal amount of bounce or vibration in the framing. Therefore, as long as the loading conditions do not change, it would appear that the building framing would be adequate.

3. The brick is in fair condition with no apparent cracks or settlement problems in exterior walls. Brick mortar is tight and in good condition. The interior revealed only minor cracking in the plaster walls. It is not clear whether the cracking is limited to the plaster or extends through into the masonry wall behind. There were a few cracks in unplastered masonry walls that could potentially indicate some foundation settlement. However, in a 56 year old building, a certain amount of cracking is to be expected. The cracking observed, while needing some patching to improve the appearance of the walls, should not be an immediate structural concern.

4. The building currently has no central air conditioning. Typically, with buildings of this age, additional concentrated loading from new HVAC equipment, in combination with current dead and live loads, is enough to push stresses in the existing framing beyond their allowable limits. Therefore, if adding air conditioning equipment or upgrading heating equipment is a future consideration, it will likely also force some modifications to the existing structural framing system.

D. HEATING, COOLING AND PLUMBING SYSTEM

1. Fire Suppression:

   a. No sprinkler system is existing in the building. If the same building was constructed today, the codes would require sprinklers in the boiler room and in storage rooms over 50 square feet in area.

   b. The only fire suppression system located in the kitchen hood, is a wet chemical extinguishing system.

2. Domestic Water System: The cold water piping from the well system pressure tank to plumbing fixtures throughout the building is galvanized steel with threaded joints. The piping condition is very poor; the potential exists for a complete deterioration of the entire water piping system. A backflow preventer is on the makeup water to the boiler.

3. Waste and Vent System: The waste and vent piping from the plumbing fixtures to outside the building is cast iron soil pipe and galvanized steel pipe. There is a limited amount of cleanouts.

4. Plumbing Fixtures: In general, all the plumbing fixtures are in good condition. Water closets are floor mounted, floor outlet, flush valve type. Urinals are wall

mounted, washdown type. Lavatories in toilets are wall mounted, enameled cast iron type with cold water only. Classroom sinks are countertop, vitreous china type with cold water only. Present day codes require 120°F hot water at toilet lavatories and other sinks. Electric water coolers are wall mounted type. The gang toilets have floor drains and hose bibbs for washdown purposes. No ADA plumbing fixtures are existing. There is one 80 gallon electric water heater in the kitchen storage room which serves the kitchen equipment.

5. Air Conditioning System: Presently, each classroom and the Administration offices have a window type air conditioning unit. A ductless split system air conditioning unit serves the library office.

6. Ventilation System: Numerous gravity ventilators, located on the roof, provides ventilation for classrooms and toilets through ceiling plenums and screened ceiling vents in classroom closet areas. A propeller fan is located in the kitchen window to provide ventilation in the kitchen. The kitchen hood exhausts the kitchen equipment located under the hood. A kitchen hood fan is located on the roof.

7. Heating System: The fuel is No. 2 fuel oil located in an above-ground 2500± gallon steel tank that is surrounded by a concrete block structure with a concrete top slab. Fuel oil lines are routed underground and into the Boiler Room to the oil-fired boiler. The steam boiler is a fire-tube Federal Boiler, Built 1964, 1558 pounds per hour, in poor condition and needs replacement. A duplex condensate pump/receiver is located in a pit in the Boiler Room and needs replacement. A steam pipe tunnel goes around the entire perimeter of the building. The steam and condensate piping feeds steam convectors located in each space on the inside surface of the exterior wall. The steam and condensate piping is black steel and has been in a deteriorate state for some years and needs replacement. Steam piping in the tunnels and boiler room is insulated. Steam risers from the tunnels to the steam convectors in the

classrooms are uninsulated. There is only one thermostat, located in the first floor corridor, which controls the steam boiler. Temperature control in the various spaces is non-existent.

E. ELECTRICAL

1. General: The electrical system in the school generally is in very poor condition. The original 208Y/120 volt, 3 phase, 4 wire service has been replaced with a 120/240 volt, 1 phase, 3 wire overhead service. Three phase primary voltage lines are existing along the main road in front of the building. Several branch circuit panelboards are the original "Trumbull Electric" and are no longer being manufactured; others are Square D load center type. Load centers are normally used in residential facilities. The main service equipment is obsolete and not of adequate capacity to serve a modern school. New service disconnects have been added to serve the electrical load created by the addition of window air conditioners and computers. The panel serving the computer room did not have an oversized neutral which can lead to overheating.

2. Classroom Receptacles: The classrooms typically have three original duplex receptacles, which are mostly two wire ungrounded, and two duplex or quadplex receptacles added for the television and computers. One surface mounted receptacle had been added for the window type air conditioner. Two or more classrooms are served by one branch circuit. In comparison, new classrooms normally have two or more branch circuits per room.

3. Lighting:

   a. Classroom lighting is provided by four recessed fluorescent fixtures. The maintained light level is 15-20 footcandles. The state requirement is 70 footcandles. The Gymnasium/Activity Room has a light level of approximately 10 footcandles. Fixtures are switched in two levels.

b. Emergency lighting is provided by wall mounted battery packs located in the corridors.

c. Stage lighting consists of three incandescent fixtures.

d. Exterior lighting is provided by wall packs attached to the building.

4. Fire Alarm System: The fire alarm system includes manual pull stations at the exterior doors and alarm horns with strobes in the corridors and Gymnasium/Activities Room.

5. Communication System: Speakers are located in each classroom and the Gymnasium/Activities Room. We did not observe a switch that would allow teachers to initiate calls to the central office. We did not have access to the office and did not access the control panel.

6. Telecommunication Network: All classrooms have a minimum of one computer outlet. The Computer Room has twenty computers served via power poles attached to the ceiling. A small hub is located in the room above the closet door.

F. CONSTRUCTION COSTS

1. The costs for renovating this facility, similar to Waverly Yowell, without any new construction and bid in 2003 would be approximately $1,600,000.00.

2. We recommend that before any additional time and resources are expended, the ability to obtain a loan for renovations to a facility located in a flood plain should be investigated.

If you have any questions, please contact our office.

Respectfully submitted,

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