Property Condition Assessment (PCA) For Petite Riviere Elementary School, 123 Wentzell Rd, Lunenburg, NS

FINAL REPORT

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Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by the South Shore Regional School Board (SSRSB) to perform a property condition assessment (PCA)at Petite Riviere Elementary located at 123 Wentzell Rd, Lunenburg, Nova Scotia. The building is approximately 10,000 sq. ft.

The site observation work was performed on January 20, 2016 by Anneke Lijs (Architectural), Lisa Simpson (Structural), Keith Estey (Mechanical) and Holly White (Electrical). Access to the property was provided by Fred Conrad with SSRSB.

Refer to Appendix "A" Opinion of Probable Costs Tables, Appendix "B" Site Photos, Appendix "C" Areas & Record Drawings, Appendix "D" Well Records, and Appendix "E" Water Quality Report.

In our opinion, the overall property is in fair overall condition as compared to buildings of similar age and construction.

Recommended upgrades items have been prioritized as Immediate Work (<12 months), Short-Term Work (1 to 5 years), Intermediate Work (6 to 10 years) and Long-Term Work (11 to 20 years). Immediate Work includes items that if left unattended, will result in significant deterioration and substantially escalated repair costs/systems failure or life safety. The Short-Term work includes repairs which are required but may be deferred over the next few years. The Intermediate Work and Long-Term Work address those repairs that are not considered urgent. These repairs usually include replacement of equipment or systems that are nearing the end of their life cycle.

Based on our findings, we have identified a total cost of:

$ 26,150 for Immediate Work (<12 months);

$ 585,450 for Short-Term Work (years 1 to 5);

$ 459,200 for Intermediate Work (years 6 to 10) and,

$ 196,500 for Long-Term Work (years 11 to 20)

A total of **$ 1,267,259** for maintenance upgrade is required for the next 20 years.

The following report provides detailed information on our findings and our recommendations. Cost estimates for Required Work are outlined in the tables provided in Appendix A.

The General Purpose and scope of our work and the limitations to our work are outlined in Section 1 of this report. Opinions of costs presented in this report are intended for general budgeting purposes only. Actual costs can only be determined after preparation of tender documents, understanding of site restrictions, effects of ongoing operations of the buildings and definition of a construction schedule.

1.0 GENERAL PURPOSE AND SCOPE OF WORK

The primary purpose of the property maintenance assessment was to visually review the existing condition of the property, and to identify and quantify major defects in materials or systems, based on our observations, which might significantly affect the value of the property or continued operation of the facility over the next twenty (20) years. The assessment of the building was performed using methods and procedures that are consistent with good commercial and customary practice. Reasonable effort was made to check the accuracy of the data forming the basis of the projection of the life expectancy and replacement costs that were developed for this report. Responsibility cannot be accepted for unknown factors that might adversely affect the accuracy of these projections.

We have estimated current dollar capital cost liabilities to repair components that require replacement or upgrade due to condition or life safety requirements. Required Work costs have been identified for physical deficiencies which we observed that we consider being beyond normal or routine maintenance costs or for maintenance procedures which are currently not enforced but are required to maintain the system under consideration. Required Work also includes provisions for the replacement of building components that will have exceeded their Expected Useful Life during the evaluation period of twenty (20) years.

When preparing the Class C+ Cost Estimates we have no control over the cost of labour, materials, equipment or services provided by others, or over the contractor's methods of determining prices, or over the competitive bidding or market conditions. Therefore, the opinion of probable capital cost estimates are provided based on our best professional judgment, experience and information available to us at the time the estimate is prepared. According to the Association for the Advancement of Cost Engineer International (AACEI) guidelines, this opinion of probable capital cost is a Class C+ estimate based on the conceptual level of study and available information. The expected accuracy of the Class C+ estimates is -15% to +25%. The estimated cost should only be used for project screening, feasibility determination, concept evaluation, and budgeting forecasting purposes.

The findings of our maintenance assessment of this property are based on the areas observed. The scope of our work included visual reviews by professional engineers and technologists to observe and document existing conditions and interviews with site representatives. Our work did not include destructive testing, testing of life safety systems or quantitative testing. The major components and systems observed by Stantec included:

- Building Structure
- Building Envelope
- Roofing
- Electrical Systems
- Site
- Interior Finishes
- Mechanical Systems
- Water Well
- Septic

The recommendations and our opinions of probable costs associated with these recommendations presented in this report are based on portions of the building which were accessible during our investigation. The opinions of costs presented in this report are also based

on information received during interviews with the site representatives. During our assessment, we have attempted to verify information received. However, Stantec cannot be held responsible for incorrect information received during the interview process.

The opinions of cost presented in this report are intended for general budgeting purposes only. Actual costs for work recommended can only be determined after preparation of tender documents, understanding of site restrictions, effects of ongoing operations of the building and definition of the construction schedule. The scope of recapitalisation work recommended in this report must be confirmed with a more detailed site investigation prior to implementation. Stantec expressly waives any responsibility for the effects of any action taken as a result of this service unless we are specifically advised and participate in the action, in which case our responsibility will be agreed to at that time. No other warranty, expressed or implied is made.

Hazardous materials (asbestos, lead in paint, PCBs, radioactive materials, halocarbons, mercury, mould, silica, etc.) may be present in the subject buildings. The costs allocated to future capital expenditure projects do not include the identification of or cost for any potential remediation and removal of these hazardous materials, which are regulated under the provisions of the Nova Scotia Occupational Health and Safety Act. If not done so already, a Hazardous Building Materials assessment should be performed for the purpose of quantifying hazardous building materials which will be disturbed during any future renovation or demolition activities.

No legal survey, soil tests, detailed engineering calculations, or quantity surveying compilations were made during this assessment. No responsibility, therefore, is assumed concerning these matters. Stantec did not design or construct the buildings or structures and therefore will not be held responsible for the impact of any design or construction defects, whether or not described in our final report. No evaluation of environmental conditions at the site was carried out within the scope of work.

The information and opinions expressed in this report are solely for the benefit of South Shore Regional School Board. No party shall distribute the final report or any portion or copy thereof without the express written permission of Stantec, except that the client may make copies of the report as are reasonable for their own use. It shall not be relied upon for any purpose other than intended for SSRSB without the express written consent of Stantec.

Any use which a third party makes of this report, or any reliance or decisions to be made based on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report.

2.0 AUDIT TEAM

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3.0 GENERAL PROPERTY DESCRIPTION

Petite Riviere Elementary facilitates a rural elementary school. The building consists of a single storey with classrooms, washrooms, and an assembly hall area with a small platform area where equipment is stored for gymnasium activities. The building was constructed in 1961. The reported building area is approximately 11,000 sq. ft. The site has an access road on the West which comes in from the south and exits towards the north. The access road includes teacher and visitor parking along the south side and room for the bus pickup and drop-off along the west. There are playing fields to the south and east of the school property.

4.0 SYSTEMS DESCRIPTIONS, OBSERVATIONS & RECOMMENDATIONS

4.1 BUILDING STRUCTURE

4.1.1 Review Criteria

The review of the building structural elements was based on observations of the property focusing on areas where structural systems were visible; primarily the exterior walls, foundations and roof areas. The structural review was limited in other areas due to interior/exterior concealed finishes and hence was not technically exhaustive. The floor slabs in most areas were not able to be visually assessed due to the presence of floor coverings. This evaluation did not involve extensive use of measurements, instruments, testing, calculations or other means to develop detailed scientific or engineering findings, conclusions, or recommendations. Intrusive testing and performance calculations were beyond the scope of this assignment. The room numbers and north orientation were taken from the drawings produced by MacDonnell Group Consulting Ltd.

4.1.2 Description

Petite Riviere Elementary is a single storey school built in 1961. The roof is constructed of exposed open web steel joist (OWSJ) with painted exposed timber tongue and groove ceiling planks which form the underside of the roofing system.

4.1.3 Assessment and Recommendations

4.1.1.1 Exterior Structural

The visible exterior of the main school building is in generally good condition. Access to the roof was not possible, nor was it visible from the ground.

Hairline to 1/32” wide foundation cracks were noted on the exposed poured concrete around the perimeter of the school (Photo 4.1.1). These cracks appear approximately every five to six

feet around the building. Typically for all foundation cracks from hairline to ¼" it is recommended that repair be done by chemical injection. For cracks greater than ¼" and larger areas of concrete loss, the damaged concrete is to be chipped away, if rebar is exposed a corrosion inhibitor is to be applied and then new concrete or mortar is to be applied. Crack repairs are to be done to prevent water infiltration. Given that these cracks are below the slab it is recommended that they be monitored and only repaired if there are changes or issues arising from them.

Corrosion was noted on the steel feet supporting the windscreens on the east side of the building (Photo 4.1.2) and the columns at the main entrances on the west side of the building (Photo 4.1.3). It is recommended that the corrosion be removed, any loss of material reported and repaired if required, and then the items be primed and repainted to prevent any further deterioration.

4.1.1.2 Interior Structural

The interior of the school was found to be in good condition with several structural items that should be monitored.

In the Mechanical Room a hairline crack was noted in the south end of the west concrete wall below piping which should be repaired to prevent water infiltration (Photo 4.1.4). Damage was noted on the nosing of several of the concrete stair treads leading to the basement which is a slipping and tripping hazard (Photo 4.1.5). Deterioration of the bottom stair was also present and it should be replaced (Photo 4.1.6). For all foundation cracks from hairline to ¼" it is recommended that repair be done by chemical injection. For cracks greater than ¼" and larger areas of concrete loss, the damaged concrete is to be chipped away, if rebar is exposed a corrosion inhibitor is to be applied and then new concrete or mortar is to be applied.

In the Electrical Room below the stage, fine cracks were noted in the walls and should be repaired, particularly in the east wall below and around the pipe penetrations (Photo 4.1.7). It is also recommended that the large gouge in the floor be infilled as it is a tripping hazard (Photo 4.1.8).

Throughout the school larger gaps between the tongue and groove roof/ceiling planks were present in some areas, however; no areas of complete separation between the members were noted (Photo 4.1.9). Also, some tongue and groove ceiling planks were noted to be split (cracked) longitudinally although they still appear to be structurally intact (Photo 4.1.10). These items should be monitored to ensure no further changes occur. Complete separation of the tongue and groove planks or complete cracking of the plank could cause a reduction in the structural strength of the roof. The following rooms outline where the issues were more prevalent, however this is not a comprehensive list of all areas. Splitting was noted in: Room 111 (Library), Room 114 (Primary), Room 120 (Resouce) and Room 127 (Boys Washroom). Room 114 (Primary) also had one plant cracked transversely which should be repaired (Photo 4.1.11). Larger gaps between the planks were noted in: Room 111 (Library), Room 119, Room 120 (Teachers Room), and Room 120 (Resource).

OWSJ were noted to have bent web members (Photo 4.1.12) in Rooms 112 and Room 127 (Boys Washroom) and lateral deflection of the bottom chord (Photo 4.1.13) was also noted in Room 114 (Primary), Room 118, Room 119, Room 123 (Girls Washroom), and Room 127 (Boys Washroom). Further investigation is required to determine the cause of bending in this joist and should be performed immediately. The opinion of cost provided in this report is an allowance for a detailed inspection of the bent joists and design of a structural reinforcement. The capital cost of the repair shall be determined after the inspection and engineering have been completed.

Corrosion was noted on the OWSJ and the lateral bracing in Room 127 (Boys Washroom) (Photo 4.1.14). It is recommended that the corrosion be removed, any loss of material reported and repaired if required, and then the joist and bracing be primed and repainted to prevent any further deterioration.

Horizontal and vertical drywall cracks were noted over the southwest interior vestibule door and the north exit door. These cracks are to be repaired as part of the interior finishes, however if reoccurrence occurs, further investigation should be performed to determine if they are structural in nature.

Water damage was observed in the northeast corner of the stage. Water damaged areas should be investigated for structural damage when the repairs are performed to fix the leak and repair the interior finishes. No costs for the structural investigation related to leaks have been considered as it would be incidental to the other repair work.

4.1.4 Opinion of Cost Summary – BUILDING STRUCTURE

IMMEDIATE WORK (<12 months)

- Allowance to Perform Roof Assessment $ 3,750

SHORT-TERM WORK (years 1 to 5)

- Allowance to Repaint OWSJ in Boys Washroom and Repair Plank in Primary Classroom $ 2,250
- Allowance to Repair Concrete in Mechanical and Electrical Room $ 2,250

INTERMEDIATE WORK (years 6 to 10)

- No repairs or replacement

LONG-TERM WORK (years 11 to 20)

- No repairs or replacement

OPINION OF TOTAL COST **$ 8,250**

4.2 BUILDING ENVELOPE

4.2.1 Review Criteria

Our review of the architectural building envelope elements of this property is based on a visual review of the building exterior.

4.2.2 Description

4.2.2.1 Exterior Walls

The exterior wall cladding for the building consists of painted wood shingles with vertical wood siding at the windows.

4.2.2.2 Windows & Doors

The building has white vinyl frame, double glazed single hung windows. The buildings four (4) primary double-door entrances appear to be in fair condition and consist of aluminum frames and side lights. Two (2) single exit doors at the rear of the school (east) serve the Teacher's room and a primary classroom. All exterior doors are aluminum with glazing at the top and bottom. A single wood door provides access to the mechanical room on the west elevation.

4.2.3 Assessment and Recommendations

4.2.3.1 Exterior Walls

The exterior cladding is in overall good condition. Repainting of the wood shingles and siding is typically recommended every 5-7 years. Some wear of the paint was noted on each elevation. Costs have been allocated in the short term of the evaluation period to repaint the exterior of the building.

4.2.3.2 Windows & Doors

The windows are in fair condition. There are 3 sizes and styles used throughout the building, which are all vinyl. The exact date of when the windows were last replaced is not known. It is anticipated that the windows will need to be replaced in the long term of the assessment period. Costs have been allocated in year 15 to replace the vinyl windows. The doors appear to be in fair condition, however the date of installation is not known. The doors are expected to be replaced in 9 years based on their current condition and the expected useful life. The mechanical room wood door should be replaced by a metal door. A cost has been allocated in the short term.

4.2.4 OPINION OF COST SUMMARY – BUILDING ENVELOPE

IMMEDIATE WORK (<12 months)

- No repairs or replacements

SHORT-TERM WORK (years 1 to 5)

- Replace wood shingles siding and vertical wood siding $74,200
- Replace existing mechanical room wood door with a metal door $ 4,200

INTERMEDIATE WORK (years 6 to 10)

- Replace exterior doors (4 sets of double and 2 single doors) $50,400
- Replace two singled glazed aluminum doors $13,500

LONG-TERM WORK (years 11 to 20)

- Replaced vinyl windows $45,000
- Paint wood shingles siding and vertical wood siding $6,850

OPINION OF TOTAL COST **$ 194,150**

4.3 ROOFING

4.3.1 Review Criteria

Roof reviews are of a visual nature and accordingly not technically exhaustive and do not involve cut tests, extensive use of measurements, instruments, testing, calculations, and other means to develop scientific or engineering findings, conclusions, and recommendations. Intrusive testing and performance calculations were beyond the scope of this assignment.

4.3.2 Description

The roof is a flat modified bitumen roof and has two different roof levels, with the higher being over the assembly area. It was not possible to view the roof during the site assessment due to the coverage of snow. We did not have access to get a look at the roof. The total estimated square footage of the roof is 11,000 square feet. It was reported that a series of small leaks had occurred in recent years and have been resolved.

4.3.3 Assessment and Recommendations

At the time of the site visit, the roof was covered in snow/ice and a full visual review could not be completed. A modified bitumen roof has an expected useful life of twenty years. Due to the suspected age of the roof (around 20 years old) a full replacement of the roof is recommended in year 5 with allocated repairs in the long term. When the roof is fire of snow, a roof assessment is recommended to determine if a roof repair is required in the short term or can be deferred to the intermediate or long term.

4.3.4 OPINION OF COST SUMMARY - ROOFING

IMMEDIATE WORK (<12 months)

- No repairs or replacements

SHORT-TERM WORK (years 1 to 5)

- Allowance for full roof replacement $272,250

INTERMEDIATE WORK (years 6 to 10)

- No repairs or replacements

LONG-TERM WORK (years 11 to 20)

- Allowance for roof repairs $6,850

OPINION OF TOTAL COST **$ 279,100**

4.4 MECHANICAL SYSTEMS

4.4.1 Review Criteria

Our review of the mechanical systems at this property was based on observations including the heating, ventilation, plumbing, and fire protection systems and equipment.

The scope of this evaluation was limited to a visual assessment of the conditions present and was limited to accessible equipment. The control schematics of the existing operation of the mechanical systems were not reviewed in the context of this study. Calculations were not made to verify the adequacy of the mechanical systems' performance.

Quantitative measurements for space temperature, humidity, and air quality were not taken. Sanitary and domestic water pipe sizes and capacities were not evaluated. Intrusive (destructive testing) and non-destructive testing were not performed as they are beyond the scope of this assignment.

4.4.2 Description

4.4.1.1 Heating, Ventilation and Air Conditioning (HVAC)

4.4.2.1.1 Heating System

Heating for the school is produced via an oil fired Buderus Boiler (model number G315/5, serial number 0517840-00-4173-0172) equipped with a Riello burner, which is located in the mechanical room below the Principal' and Secretary's offices. Fuel for the boiler is stored in two Roth tanks (Type 1000L) located in the same mechanical room. Each tank has a rated holding capacity of 1000 liters. Heating water produced from the boiler is then distributed via two Grundfos pumps to two (2) zones, which are rated for 420 watts each. One zone runs along the North West wing and the other zone runs along the South East side of the building. Also, these

pumps have electronic speed control that automatically adjusts to the heating system's demand. The heating water feeds perimeter fin-tube baseboards and vestibule cabinet heaters.

It is noted that the heating pipes in the mechanical room are not insulated; however, the visible piping inside of the building is insulated.

Heating control for the school is via independent low voltage thermostats and control valves.

4.4.2.1.2 Ventilation

Ventilation for the building is provided by sidewall propeller exhaust fans in the washrooms and the Assembly Hall.

4.4.2.2 Plumbing

4.4.2.2.1 Domestic and Sanitary Services

The domestic water is provided by a drilled well that is located to the same mechanical room as the boilers. A submersible pump is located within the well that pumps water to the building's HydroPro Water Systems pressure tank. The pressure tank is rated for a maximum pressure of 125 psi. The age of the well was not reported; however, the well pump was reported to have been replaced in January 2012. Before domestic cold water is distributed throughout the building, it is conditioned by one Myers water conditioner.

The domestic water is distributed via copper piping. Exposed piping is noted to be insulated; however, the majority of piping is within wall cavities and therefore could not be observed or commented on.

Domestic hot water is generated by an indirect fired domestic hot water tank manufactured by Buderus (model ST 200/1), and is rated for 200 gallons per minute. It was reported that the tank is the same age as the boiler.

The sanitary piping for the building is a mixture of cast iron and plastic piping. The age of the piping varies throughout the building; however, the cast iron is most likely original to the building.

4.4.2.2.2 Plumbing Fixtures

The washroom fixtures consist of vitreous china urinals (3), water closets (13), water fountains (3) and lavatories (11). Also, there are stainless steel sinks (2) within the kitchen and off of the stage in the assembly. In each main washroom, there is a plastic utility sink. In the janitors closet there is one vitreous china slop sink.

4.4.2.3 Life Safety

The school consists of wall mounted fire extinguishers located throughout the two buildings, which were last inspected by Cumings' Fire & Safety Equipment Limited in September, 2015.

4.4.3 Assessment and Recommendations

This section details our assessment and recommendations for the systems noted in section 4.4 above. All allowances for replacement and repairs have been included in the Section 4.4.4 Opinion of Cost Summary.

4.4.3.1 Heating, Ventilation and Air Conditioning (HVAC)

4.4.3.1.1 Heating System

The Buderus boiler appeared to be in good condition with no reported issues with providing heat to the building. It was reported that the unit was installed in 2014. The expected useful life of these boilers is typically twenty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated during the evaluation period.

The Roth fuel oil storage tanks are in good condition with no reported issues. Based on the name plate, the tanks were manufactured in 2014. The expected useful life of these tanks is typically fifteen years; however, depending on insurance requirements, these tanks can be replaced prematurely. Based on the observed condition and estimated remaining useful life, a replacement is anticipated during the long term of the evaluation period. If there is an insurance requirement, the year of replacement should be adjusted to meet this requirement.

The Grundfos circulation pumps appeared to be in good condition and are no more than a few years old. The expected useful life for these pumps is typically twenty to twenty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated during the evaluation period.

The heating distribution piping, perimeter baseboards, and cabinet heaters appeared to be in fair to good condition for their age, with no reported issues of line pin-holes or lack of heat in the building. It was reported that these components are original to the building. The expected useful life of these two components is typically thirty-five to forty years, which they have surpassed. Since these components have surpassed their expected useful life and are still functioning properly, replacements are not anticipated until the intermediate term of the evaluation period.

The building's controls was reported to be in good condition and control valves have been replaced over the past five years. Typically, these controls have an expected useful life of twenty to twenty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated during the evaluation period.

4.4.3.1.2 Ventilation System

The exhaust sidewall exhaust fans appear to be in fair condition; however, they are still operational. The age of these fans could not be determined on site but are starting to reach the end of their expected useful life of twenty to twenty-five years. Based on the observed condition and estimated remaining useful life, replacements are anticipated during the short term of the evaluation period.

As the building only has limited ventilation, which relies on natural air infiltration for supplying outdoor air, it is recommended that a new ventilation system with dedicated fresh air intake be considered. It is recommended that a professional mechanical engineer or engineering firm that is experienced in ventilation systems, review the building and existing mechanical system. From this review, the consultant should propose options for new ventilation systems and their associated estimated costs to meet current building code requirements with respect to ventilation. It is recommended that this review be completed within the short term of the evaluation period.

We have also included a cost based on total building area for a simple packaged heat recovery unit with constant volume air flow. This would include all work to design and complete the renovation (equipment, ducting, time of day controls, and installation). We have included this work in the intermediate term, but can be done at any time as there is no dedicated ventilation system presently.

4.4.3.2 Plumbing

The condition of the well and septic system will be discussed in the following section 4.7.

The domestic and sanitary distribution piping was reported to be in fair condition with areas that were observed to be replaced/ repaired. It was reported that the majority of these pipes are original to the building. The expected useful life for these systems is typically forty years or more. Based on the observed conditions, it is recommended that a contractor be retained to scope the sanitary lines to get a better understanding of the interior condition of the pipes. Also, it is recommended that a sample number of sections within the main domestic water lines be cut so the interior of the pipes can be investigated for condition. It is recommended that these investigations be completed in the short term of the evaluation period. Due to the piping's age, and that repairs have completed, further repairs are anticipated during the long term of the

evaluation period; however, depending the on results of the investigations, the timing of these repairs may need to be adjusted.

The water treatment system appeared to be in fair to good condition with no reported issues. The age of the system was not reported; however, it is most likely no more than five years old. Typically, the expected useful life of this equipment is twenty years old. Based on the observed condition and estimated remaining useful life a replacement of the system is anticipated during the long term of the evaluation period.

The domestic hot water tank appeared to be in good condition with adequate hot water supply to the plumbing fixtures. It was reported that the tank was installed when the boiler was installed in 2014. The expected useful life of this type of tank is twenty years. Based on the reported information and the expected useful life, a replacement is not anticipated during the evaluation period.

4.4.3.2.1 Plumbing Fixtures

The majority of the plumbing fixtures appeared to be in fair to good condition; however, it was noted that the urinals and water closets do have staining. The age of these fixtures was not reported; however, they most likely twenty-five to thirty years old. The expected useful life for these fixtures is thirty-five to forty years old. With the exception of the staining, these fixtures are anticipated to surpass their expected useful life and will not require replacement until the long term of the evaluation period.

The plastic utility sink appeared to be in fair to good condition; however, the age of the unit was not reported at the time of the site visit. Based on the observed condition, it is most likely less than ten years old. The expected useful life for these fixtures is typically thirty to thirty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated.

The enameled coded steel utility sink in the janitors closet, appeared to be in fair to good condition with typical ware. The age of the fixture was not reported but is most assumed to be more than twenty years old. Based on the observed condition and estimated remaining useful life a replacement is anticipated during the long term of the evaluation period.

4.4.3.3 Life Safety

The fire extinguishers appeared to be in good condition and have up to date inspection tags, typically these items are replaced as they fail yearly inspections and completed through regular operations budgets. No costs have been included for these items.

4.4.4 OPINION OF COST SUMMARY - MECHANICAL

IMMEDIATE WORK (<12 months)

- No repairs or replacement

SHORT TERM WORK (years 1 to 5)

• Scoping sanitary piping and investigating DCW piping	$7,500
• Ventilation study	$5,000

INTERMEDIATE TERM WORK (years 6 to 10)

• Replacing baseboards and heating water distribution piping	$77,000
• Allowance for a simple packaged heat recovery unit with constant volume air flow (design and build)	$220,00

LONG TERM WORK (years 11 to 20)

• Replace Roth Tanks	$9,000
• Allowance for repairing sanitary and DCW piping	$36,400
• Allowance to replace plumbing fixtures	$37,000
• Allowance to replace water fountains	$6,800
• Allowance to replace janitor's sink	$2,300
• Allowance to replace water treatment equipment	$2,300
OPINION OF TOTAL COST	**$403,400**

4.5 ELECTRICAL SYSTEMS

4.5.1 Review Criteria

Our review of the electrical systems at this property was based on visual conditions and interviews with the building operations personnel. The review included the main service, distribution equipment, lighting, fire alarm, and security systems.

The scope of the review was limited to an assessment of the existing conditions and only to accessible equipment. The electrical consumption was not investigated.

4.5.2 Description

4.5.2.1 Main Service

The building is equipped with a 1-phase, 3-wire, 120/240V, 200A electrical service from Nova Scotia Power Inc. (NSPI). The service enters into an Amalgamated Electric brand splitter, located in the Electrical room, below the stage (Photo 4.5.1). The splitter supplies a 60A, 120/240V, 1-phase, 3-wire service for the boiler room loads, and a 200A, 120/240V, 1-phase, 3-wire service to the rest of the school. The main feed is run in underground conduit from the single-phase pole-mounted utility transformer located at the front of the building (Photo 4.5.2). Access is provided from the interior of the building via an entrance at the stage area (Photo 4.5.3). Utility metering is located on the wall to the left of the main service equipment. The two services are metered separately.

4.5.2.2 Distribution

A 200A, 120/240V, 1-phase, 3-wire Federal Pioneer brand distribution panel feeds four sub panels located in the main level of the school. The panel is missing some filler plates that would otherwise prevent inadvertent contact with energized surfaces inside the panelboard (Photo 4.5.4).

Three of the branch circuit panelboards located throughout the building are Federal Pioneer brand and one is Cutler Hammer. A 200A, 40 circuit Federal Pioneer brand panel is located in the room labeled “Principal’s Office” (Photo 4.5.5). There are two 100A, 16 circuit Federal Pioneer brand panels located in the corridors, feeding the classroom and corridors (Photos 4.5.6-4.5.7). A newer 125A, 60 circuit Cutler Hammer panel complete with a 100A, 2P main breaker is located in the Kitchen (4.5.8).

A 60A disconnect located in the Electrical room feeds a 200A, 120/240V, 1-phase, 3-wire, 40 circuit Federal Pacific panelboard located in the boiler room for mechanical loads (Photo 4.5.9)

4.5.2.3 Wiring

Wiring throughout the building appears to be a combination of BX and building wiring in rigid metallic conduit. In some locations, Wiring has been secured to the walls and ceiling where new

devices such as overhead projectors have been installed (Photo 4.5.10). Wiremold is commonly used in areas throughout the building (Photo 4.5.11).

4.5.2.4 Lighting

Interior lighting has all been updated to T8 fluorescent based luminaires. The lighting is 120V and is controlled via wall-mounted toggle switches.

There are several types of luminaires within the building:

- Corridors are illuminated with 1'x4' surface-mounted fluorescent fixtures (Photo 4.5.12).
- Typical classroom lighting is provided by 1'x4' fluorescent fixtures mounted to the structure (Photo 4.5.13).
- The gymnasium has surface-mounted 2'x4' fluorescent fixtures (Photo 4.5.14).
- The stage is illuminated by a combination of recessed fluorescent pot lights and track lighting (Photo 4.5.15).
- Incandescent fixtures are located in the Janitor room and Storage rooms off of the gymnasium (Photo 4.5.16).
- Washrooms are illuminated by surface-mounted 1'x4' fluorescent luminaires (Photo 4.5.17).

Exterior lighting consists of the following luminaires:

- Wall-mounted compact fluorescents over the entrances (Photo 4.5.18)
- 2-lamp surface-mounted fluorescent vaportight luminaires at the canopy at each front entrance (Photo 4.5.19)
- A surface-mounted HID luminaire at the west side entrance complete with a photocell (Photo 4.5.20)
- Surface-mounted incandescent luminaire at the east side entrance (Photo 4.5.21)
- Wall-mounted HID fixtures on the corners of the school (Photo 4.5.22).

4.5.2.5 Emergency Power

The building has no central emergency power source. Emergency lighting is provided via battery units with integrated heads (Photo 4.5.23) as well as remote lighting heads (Photo 4.5.24).

Exit signs are all in good condition. Areas which are required to have exit signage are equipped with them (Photo 4.5.25).

4.5.2.6 Life Safety

A fire alarm system is present, with the main panel located in the main vestibule (Photo 4.5.6). The make of the panel is GE – FireShield Plus. The system was last inspected on Aug. 19th, 2015. Nova Alarms provides remote monitoring for this building (Photo 4.5.26).

Alarm bells are located throughout the school. The fire alarm system is inspected annually.

A security system is present with the control panel location in the electrical room (Photo 4.5.27). A security keypad is located at the main entrance (Photo 4.5.28). Motion sensors are located throughout the building (Photo 4.5.29). There is no surveillance system present.

4.5.3 Assessment and Recommendations

4.5.3.1 Main Service

The main service and distribution equipment appear to be in acceptable physical condition. The majority of the electrical service equipment has reached or is past the end of its life of generally forty years, and it is recommended that the equipment be upgraded.

A single-line diagram was not found on site and it is recommended to have one developed and for this to be installed within the main electrical room, mounted under plexiglass.

As requested by the client, we have allocated a cost to extend 3-ph power from the Petite Riviere bridge area to the Petite Riviere Elementary School, a distance of approximately 600 meters. We have allocated this cost in the intermediate term, but should be done when the building is renovated and have additions. Changes include the following:

- The feed will be overhead and will most likely require the replacement of power poles along Wentzell Road to the school.
- The primary cables will extend from the power pole underground to a new external padmount transformer via a concrete encased ductbank.
- The client will prepare the pad and grounding for the new padmount transformer.
- The incoming supply to the school will be 347/600V.
- Secondary cables from the padmount transformer will be underground and will run in either PVC conduit or as direct buried cables.
- Bollards will be required around the transformer if it is subject to possible vehicular damage.
- A new dedicated electrical room (not included) will be required for any service with voltages exceeding 250VAC or ampacities exceeding 250A.

Total capital is approximately $80,000. There are several important points for note:

- Final loads are not known and therefore secondary conductor sizes cannot be confirmed.
- Costs will change if the padmount transformer / underground feeds are eliminated and overhead secondary conductors are used (Maximum of 600A at 120/208V or 200A at 347/600V for overhead).
- The location of the padmount transformer is approximate only and is subject to change.
- Any additional costs for road and driveway restoration are not included.

- Secondary conductor routing inside the school is not included.
- Costs associated with new distribution panels and step-down transformers to 120V have not been included in these figures.

4.5.3.2 Distribution

Panelboards which are located in the electrical room, corridors, boiler room and Principal's office should be upgraded as they have reached their end of life of generally forty years, and to allow for more circuits and spare capacity. In addition, the new panels should be equipped with locking doors to prevent unauthorized access.

In the interim, the 200A distribution panel located in the electrical room should have new filler plates installed in the unused breaker locations to make the panelboard safe.

4.5.3.3 Wiring

The wiring and conduit that was visible throughout the building appeared to be in good condition.

All wiring devices within the building appear to be in good condition.

4.5.3.4 Lighting

Overall the lighting appeared to be functioning and in good physical condition. Consideration should be given into upgrading the exterior lighting to LED wall packs.

No maintenance beyond re-lamping and cleaning is expected during the evaluation period.

4.5.3.5 Emergency Power

Emergency lighting and exit signage appear to be functioning properly. The lighting levels should be evaluated to ensure the units are providing adequate coverage. It is recommended to continue testing as part of regular maintenance procedures. As part of regular maintenance, the emergency lighting battery packs may have to be replaced when they can no longer endure the required testing/operational period.

4.5.3.6 Life Safety

The life safety systems present within this building all appear in good physical and working condition. Regular testing should be continued as part of regular maintenance procedures.

4.5.4 OPINION OF COST SUMMARY - ELECTRICAL

IMMEDIATE WORK (<12 months)

- Preventive maintenance on distribution equipment $1,000

SHORT TERM WORK (years 1 to 5)

• Develop single line diagram for electrical room	$2,400
• Allowance to upgrade outdated electrical distribution equipment	$21,000

INTERMEDIATE TERM WORK (years 6 to 10)

• Upgrade exterior lighting to LED	$5,800
• Upgrade emergency lighting	$2,000
• Overhead Primary Line extension (600m - 92m NSP allowance)	$27,000
• Underground primary extension from pole line to padmount xfmr - Approx. 40m distance	$18,000
• Padmount Transformer Pad Installation (500kVA)	$8,000
• Secondary buried duct installation (50 me; size not confirmed)	$25,000
• Revenue Metering	$2,000

LONG TERM WORK (years 11 to 20)

- No repair or replacement

OPINION OF TOTAL COST **$112,200**

4.6 SITE FINISHES

4.6.1 Review Criteria

The review of the site finishes of this property is based on a walk around and visual review of the property. Significant snowfall had recently occurred and as a result much of the site was covered with snow, making assessment difficult. Review of the axillary buildings was not performed. The north orientation has been taken as plan north from the drawings produced by MacDonnell Group Consulting Ltd.

4.6.2 Description

The school is located at 123 Wentzell Rd, Petite Riviere, Nova Scotia. The site has an asphalt driveway that serves as both the bus loop and the parking lot on the west side of the building. There are asphalt walkways on both sides of the school (to the north and the south). A playing field is located south of the school and there are playgrounds located on the east and south sides of the school.

4.6.3 Assessment and Recommendations

Both asphalt walkways, north of the school and south of the school, are showing signs of deterioration and should be repaired as they could be tripping hazards(Photos 4.6.1). The driveway on the east side of the school is also deteriorating and showing signs of cracking/deterioration and should be resurfaced within the next three years (Photo 4.6.2 and 4.6.3). An alternative would be to implement a plan to patch and repair the existing asphalt, where it could be assumed that 20% is required to be replaced each year in order to spread out the costs.

There is a crack in the concrete step outside the north exit. The crack is less than ¼" wide and is not a major concern at this time but could become a tripping hazard in the future, so it should be monitored (Photo 4.6.4).

4.6.4 Opinion of Cost Summary – SITE FINISHES

IMMEDIATE WORK (<12 months)

- No repairs or replacement $ 0

SHORT-TERM WORK (years 1 to 5)

- Allowance to Replace Asphalt Driveway/Walkway $ 132,000

INTERMEDIATE WORK (years 6 to 10)

- No repairs or replacement $ 0

LONG-TERM WORK (years 11 to 20)

- No repairs or replacement $ 0

OPINION OF TOTAL COST **$ 132,000**

4.7 WELL WATER AND SEPTIC

4.7.1 Review Criteria

Well Water

Our review of the water well at this property is based on the water well record retrieved from the Provincial water well log database (Nova Scotia Environment (NSE), 2015), a description of existing conditions provided by Mr. Fred Conrad (SSRSB property services supervisor), and the last round of water chemistry results provided for bacteriological and general chemistry. A site visit was not conducted because the location of the well fails our assessment criteria, as described below.

4.7.2 Description

Well Water

The driller's log for the existing well (#600192) was retrieved from the Nova Scotia Well Logs Database (NSE, 2015), and is included in Appendix D. The record indicates that the well was drilled in 1960 to a total depth of 66.4 m and the depth to bedrock is 12.8 m. There is no other available information on the well construction or water yield.

Fred Conrad noted that this well is located in the basement of the building. Mr. Conrad also noted that this school has never had a water quality or quantity issue associated with the well. The water is softened before distribution. Evaluating the condition of the water softener and indoor plumbing was not part of the scope of work.

Septic

The sanitary piping for the building is cast iron that is connected to alternating area beds. Two area disposal beds can be observed and it appears that both disposal fields are gravity fed. However, it could not be determined what type of mechanism, if any, alternates the flow from one disposal field to the other. The system is original to the school and was built in 1961 (55 years old).

4.7.3 Water Quality

Well Water

One water chemistry sample was provided (results in Appendix E). The laboratory report includes a comparison of each tested parameter with the currently accepted Guideline for Canadian Drinking Water Quality (GCDWQ) standard for that parameter (Health Canada, 2014). A "yes" is denoted when the tested parameter is higher than the GCDWQ value. A "no" indicates when the value is within the acceptable GCDWQ range. This sample represents treated (e.g. softened) water; water chemistry for a sample collected directly from the well is not available.

Microbiological parameters were tested on samples collected from the staff room tap on December 2, 2015. The results indicate that both *E. coli* and total coliform were absent and in compliance with the health objectives stipulated in the GCDWQ. These samples would be a point-of-use treated sample, and does not represent the raw groundwater.

Physical and chemical parameters were tested on a sample collected from the staff room tap on September 22, 2015. The results indicate that all parameters were in compliance (i.e., no exceedances) with the GCDWQ health and aesthetic criteria, as identified in the report. The chemistry is consistent with softened groundwater.

4.7.4 Assessment and Recommendations

Well Water

This section details our assessment and recommendations for the well noted above. All allowances for replacement and repairs have been included in Section 1.1.5 Opinion of Cost Summary.

The location of the existing well in the basement fails to meet the current Well Construction Regulations, (Sections 66 and 110 of the Environment Act) for new wells in Nova Scotia (NSE, 2013). This is because of potential issues with drainage intrusion, accessibility and contamination. An exemption can be granted by the Minister provided certain conditions can be met, including a justification for why the well must be constructed there. In consideration of the age (35 years) it is also likely that the construction of the well fails to meet current standards and best practices and the well cannot be upgraded or repaired in place due to a lack of accessibility. Thus, Stantec recommends that a new 152-mm-diameter, up to 76-m-deep well be drilled on the property as part of the immediate work, and sited and constructed according to the current Well Construction Regulations (NSE, 2013). The current standard is a well casing that is at least 6.1 m long that extends 0.6 m above surface. For public institutions, Stantec recommends that the casing be extended a minimum of 3 m into bedrock and sealed with grout from the drive shoe to the bedrock-overburden interface. A new one horsepower pump (or similar size as determined by the installer based on the pump setting) should be installed in the well and plumbed to a pitless adapter and into the building using polyethylene pipe.

The existing well must be decommissioned according to Sections 45 and 47 of the well drilling regulation (NSE, 2015). Records of all drilling, pump installation and decommissioning activities must be submitted to the Department of the Environment.

A 72-hour pumping test should be conducted on the new well to quantify the yield and water chemistry prior to service. Stantec recommends that the drilling and commissioning test be performed during summer shutdown to avoid interference with normal operations.

The recent water quality report reviewed by Stantec was for a sample collected from the staff room tap – a point in the plumbing after the water softener. In consideration of the effects of the water softening process, these results suggest that the water quality in the aquifer is suitable for use. It is expected that the water quality and quantity in a new well will be similar to the existing well, but this cannot be guaranteed. A sample of the untreated water would further

confirm this assumption. This will have to be confirmed prior to the new well being brought into service, during a pumping test. Stantec recommends that a sampling tap be installed prior to any treatment and storage equipment in the school basement, so that a "raw water" sample can be collected as part of the water quality monitoring program. This type of sample is more useful for detecting problems with a well and differentiating between source water and plumbing problems in the event of a failed water quality test.

Septic

During the system assessment, it was noted that, although there were no visible malfunctions or breaks, the system is visibly old and deteriorating (e.g. condition of concrete infrastructure at the surface). It is recommended that disposal systems over 40 years old be replaced to avoid potential malfunctions due to age. Staff reported a break 3-4 years ago which was due to students throwing debris down an access port. The break was repaired and restraints put in place to prevent future similar occurrences.

The recommended replacement system would likely be a recirculating sloping and filter.

4.7.5 OPINION OF COST SUMMARY – WELL WATER AND SEPTIC

This well water cost summary assumes that the drilling contractor/pump installer will bring the water pipe and electrical wiring from the new wellhead into the building, and a SSRSB electrician will perform the necessary connection to electrical service in the building. The cost of drilling the new well is based on an assumed depth and length of casing. The actual cost will depend on the conditions encountered during drilling.

IMMEDIATE WORK (<12 months)

- Well Water-Drilling new well (76 m deep with 15 m of grouted casing and drive shoe) $6,300
- Well Water-1 HP submersible pump with control box $1,100
- Well Water-Plumbing labour and materials $2,500
- Well Water-Decommission existing well (sand and bentonite placement by hand) $3,000
- Well Water-Commissioning test (72-hour pumping test with chemistry analysis) $7,750
- Well Water-Interpretation of testing results and letter report for records (Stantec) $1,200

SHORT TERM WORK (years 1 to 5)

- Well Water-None (continue routine water quality monitoring per current protocol)
- Septic- Replace onsite septic disposal system $60,000

INTERMEDIATE TERM WORK (years 6 to 10)

- Well Water-None (continue routine water quality monitoring per current protocol)

LONG TERM WORK (years 11 to 20)

- Well Water-Pump inspection/servicing and specific capacity test to confirm yield and determine if any additional maintenance work is required $2,000

OPINION OF TOTAL COST **$83,850**

References

Health Canada (2014). Guidelines for Canadian Drinking Water Quality. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment, October 2014.

NSE (2013). Well Construction Regulations made under Sections 66 and 110 of the Environment Act S.N.S. 1994-95, c. 1 O.I.C. 2007-483 (September 7, 2007), N.S. Reg. 382/2007. Updated October 18, 2013.

NSE (2015). On-Line Well Logs Database.
http://www.novascotia.ca/nse/welldatabase/wellsearch.asp

4.8 INTERIOR FINISHES

4.8.1 Review Criteria

Our review was based on walk-through of the interiors building spaces and of a visual nature. It was not technically exhaustive and did not involve extensive use of measurements, instruments, testing, calculations, and other means to develop scientific or engineering findings, conclusions, and recommendations. Intrusive testing and performance calculations were beyond the scope of this assignment.

4.8.2 Description

The building consists of a single storey with classrooms, offices, a staff kitchen, washrooms, and an assembly area with a small platform area used for storing gym equipment. The corridors have suspended ceiling tile and painted gypsum walls. Coat racks and benches line the corridors. Classrooms are open to the painted underside of the wood roof deck, and have a mixture of concrete block, painted gypsum and wood paneling for walls. The washrooms are also open to the painted underside of the roof deck and have painted gypsum walls. Flooring throughout the building is vinyl tile.

4.8.3 Assessment and Recommendations

The suspended ceiling tiles appeared to be in good condition. Suspended ceiling tiles have an expected useful life of twenty to twenty-five years. Typically, a full replacement does not happen but tiles are replaced as they start to fail or damaged by water. Replacement of ceiling tiles is considered part of regular maintenance.

The drywall wall finishes appeared to be in good conditions overall, however there were a few areas with localized damages.

Vertical and horizontal cracks were located in vestibule 102 above the double doors leading to the assembly area (photo 4.8.7). It is recommended that the damaged area be repaired. As this is localized, the repair is considered to be a part of regular maintenance. This repair can be done when the walls are painted.

Water damage was viewed on the ceiling in the platform area at the north east corner (photo 4.8.8). This has been painted over, and it was reported that the roof leak which had caused the damage has already been addressed. It is recommended that the damaged area be repaired. As this is localized, the repair is considered to be a part of regular maintenance.

The expected useful life of drywall walls is typically seventy-five year or more with re-coating of paint every five to seven years. Based on the observed condition, space use and estimated remaining useful life, a replacement of is not anticipated, however, it is anticipated that there will be a recoating of paint required during the intermediate term of the evaluation period.

We suspect that some of the floor tiles may be original to the building and may contain asbestos, but appeared to be in fair condition overall. The expected useful life (EUL) for vinyl tile flooring is typically twenty-five years. Based on the observed condition and EUL of the flooring, a replacement is anticipated in the intermediate term of the evaluation period. We have allocated a cost for asbestos testing to occur prior to the tile replacement. If the tiles contain asbestos, then proper abatement will have to be completed prior to the tile installation. The cost of abatement is not included as this is difficult to determine without the testing.

The interior doors and door frames appeared to be in good condition. The expected useful life for these doors is typically sixty years or more with hardware replacements throughout its useful life. Based on the observed condition and estimated remaining useful life a replacement is not anticipated.

The ceramic tiling surrounding the urinals in the boy's washroom requires repair. The grout is crumbled and the connection between the urinals and tiling is deteriorated. We have allocated a cost for this in the short term.

4.8.4 OPINION OF COST SUMMARY – INTERIOR FINISHES

IMMEDIATE WORK (<12 months)

- No repairs or replacements

SHORT-TERM WORK (years 1 to 5)

• Repairs to the tiles in the boy's washrooms	$1,500

INTERMEDIATE WORK (years 6 to 10)

• Painting of walls and ceilings	$10,500
• Replace Vinyl Tile	$42,000

LONG-TERM WORK (years 11 to 20)

- No repairs or replacements

OPINION OF TOTAL COST	**$ 54,000**

5.0 APPENDICES

APPENDIX A – OPINIONS OF PROBABLE COSTS

APPENDIX B – PHOTOS

APPENDIX C – REFERENCED DOCUMENTS

APPENDIX C – AREA AND REFERENCED DOCUMENTS

APPENDIX D – WELL RECORDS

APPENDIX E – WATER QUALITY REPORT

APPENDIX A-
OPINION OF PROBABLE COSTS TABLES

Stantec

OPINION OF PROBABLE COST

Petite Riviere Component SUMMARY As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Long Term	Long Term	Total	Annual Reserve				
	<12 months	1 -5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.1 BUILDING STRUCTURE	$ 3,750	$ 5,400	$ -	$ -	**$ 9,150**	$ 2,250	$ 3,150	$ -	$ -	$ -
4.2 BUILDING ENVELOPE	$ -	$ 78,400	$ 63,900	$ 51,850	**$ 194,150**	$ -	$ 4,200	$ -	$ 74,200	$ -
4.3 ROOFING	$ -	$ 272,250	$ -	$ 6,850	**$ 279,100**	$ -	$ -	$ -	$ -	$ 272,250
4.4 MECHANICAL	$ -	$ 12,500	$ 297,000	$ 93,800	**$ 403,300**	$ 12,500	$ -	$ -	$ -	$ -
4.5 ELECTRICAL	$ 1,000	$ 23,400	$ 87,800	$ -	**$ 112,200**	$ 2,400	$ 21,000	$ -	$ -	$ -
4.6 SITE	$ -	$ 132,000	$ -	$ -	**$ 132,000**	$ -	$ -	$ 132,000	$ -	$ -
4.7 WATER WELL & SEPTIC	$ 21,350	$ 60,000	$ -	$ 2,000	**$ 83,350**	$ -	$ -	$ -	$ -	$ 60,000
4.8 INTERIOR FINISHES	$ -	$ 1,500	$ 10,500	$ 42,000	**$ 54,000**	$ 1,500	$ -	$ -	$ -	$ -
TOTALS	**$ 26,100**	**$ 585,450**	**$ 459,200**	**$ 196,500**	**$ 1,267,250**	**$ 18,650**	**$ 28,350**	**$ 132,000**	**$ 74,200**	**$ 332,250**

All costs in 2016 dollars. Costs adjusted by 0.00%

OPINION OF PROBABLE COST

Petite Riviere **4.1 BUILDING STRUCTURE** As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Intermediate	Long Term	Total	Annual Reserve				
	<12 months	1- 5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.1.01 Allowance to Repair Concrete in Mechanical and Electrical Room	$ -	$ 3,150	$ -	$ -	$ 3,150	$ -	$ 3,150	$ -	$ -	$ -
4.1.02 Allowance to Perform Roof Assessment	$ 3,750	$ -	$ -	$ -	$ 3,750	$ -	$ -	$ -	$ -	$ -
4.1.03 Allowance to Repaint OWSJ in Boys Washroom and Repair Plank in Primary Classroom	$ -	$ 2,250	$ -	$ -	$ 2,250	$ 2,250	$ -	$ -	$ -	$ -
TOTALS	**$ 3,750**	**$ 5,400**	**$ -**	**$ -**	**$ 9,150**	**$ 2,250**	**$ 3,150**	**$ -**	**$ -**	**$ -**

All costs in 2016 dollars. Costs adjusted by 0.00%

OPINION OF PROBABLE COST

Petite Riviere **4.2 BUILDING ENVELOPE** As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Intermediate	Long Term	Total	Annual Reserve				
	<12 months	1- 5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.2.01 Paint Wood Shingles Siding and Vertical Wood Siding	$ -	$ -	$ -	$ 6,850	$ 6,850	$ -	$ -	$ -	$ -	$ -
4.2.02 Replace vinyl windows	$ -	$ -	$ -	$ 45,000	$ 45,000	$ -	$ -	$ -	$ -	$ -
4.2.03 Replace exterior doors (4 sets of double and 2 single doors)	$ -	$ -	$ 50,400	$ -	$ 50,400	$ -	$ -	$ -	$ -	$ -
4.2.04 Replace two singled glazed aluminum doors	$ -	$ -	$ 13,500	$ -	$ 13,500	$ -	$ -	$ -	$ -	$ -
4.2.05 Replace wood shingles siding and vertical wood siding	$ -	$ 74,200	$ -	$ -	$ 74,200	$ -	$ -	$ -	$ 74,200	$ -
4.2.06 Replace existing mechanical room wood door with a metal door	$ -	$ 4,200	$ -	$ -	$ 4,200	$ -	$ 4,200	$ -	$ -	$ -
TOTALS	**$ -**	**$ 78,400**	**$ 63,900**	**$ 51,850**	**$ 194,150**	**$ -**	**$ 4,200**	**$ -**	**$ 74,200**	**$ -**

All costs in 2016 dollars. Costs adjusted by 0.00%

OPINION OF PROBABLE COST

Petite Riviere **4.3 ROOFING** As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Intermediate	Long Term	Total	Annual Reserve				
	<12 months	1- 5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.3.01 Allowance for full roof replacement	$ -	$ 272,250	$ -	$ -	$ 272,250	$ -	$ -	$ -	$ -	$ 272,250
4.3.02 Allowance for roof repairs	$ -	$ -	$ -	$ 6,850	$ 6,850	$ -	$ -	$ -	$ -	$ -
TOTALS	**$ -**	**$ 272,250**	**$ -**	**$ 6,850**	**$ 279,100**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 272,250**

All costs in 2016 dollars. Costs adjusted by 0.00%

Stantec

OPINION OF PROBABLE COST

Petite Riviere **4.4 MECHANICAL** As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Intermediate	Long Term	Total	Annual Reserve				
	<12 months	1- 5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.4.01 Replacing Roth Tanks	$ -	$ -	$ -	$ 9,000	$ 9,000	$ -	$ -	$ -	$ -	$ -
4.4.02 Replacing baseboards, cabinet heaters and heating water distribution piping	$ -	$ -	$ 77,000	$ -	$ 77,000	$ -	$ -	$ -	$ -	$ -
4.4.03 Ventilation study	$ -	$ 5,000	$ -	$ -	$ 5,000	$ 5,000	$ -	$ -	$ -	$ -
4.4.04 Scoping sanitary piping and investigating DCW piping	$ -	$ 7,500	$ -	$ -	$ 7,500	$ 7,500	$ -	$ -	$ -	$ -
4.4.05 Allowance for repairing sanitary and DCW piping	$ -	$ -	$ -	$ 36,400	$ 36,400	$ -	$ -	$ -	$ -	$ -
4.4.06 Allowance to replace plumbing fixtures	$ -	$ -	$ -	$ 37,000	$ 37,000	$ -	$ -	$ -	$ -	$ -
4.4.07 Allowance to replace water fountains	$ -	$ -	$ -	$ 6,800	$ 6,800	$ -	$ -	$ -	$ -	$ -
4.4.08 Allowance to replace janitor's sink	$ -	$ -	$ -	$ 2,300	$ 2,300	$ -	$ -	$ -	$ -	$ -
4.4.09 Allowance to replace water treatment equipment	$ -	$ -	$ -	$ 2,300	$ 2,300	$ -	$ -	$ -	$ -	$ -
4.4.10 Allowance for a simple packaged heat recovery unit with constant volume air flow (design and build)	$ -	$ -	$ 220,000	$ -	$ 220,000	$ -	$ -	$ -	$ -	$ -
TOTALS	**$ -**	**$ 12,500**	**$ 297,000**	**$ 93,800**	**$ 403,300**	**$ 12,500**	**$ -**	**$ -**	**$ -**	**$ -**

All costs in 2016 dollars. Costs adjusted by 0.00%

OPINION OF PROBABLE COST

Petite Riviere **4.5 ELECTRICAL** As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Intermediate	Long Term	Total	Annual Reserve				
	<12 months	1- 5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.5.01 Preventive maintenance on distribution equipment	$ 1,000	$ -	$ -	$ -	$ 1,000	$ -	$ -	$ -	$ -	$ -
4.5.02 Develop single line diagram for electrical room	$ -	$ 2,400	$ -	$ -	$ 2,400	$ 2,400	$ -	$ -	$ -	$ -
4.5.03 Upgrade outdated electrical distribution equipment	$ -	$ 21,000	$ -	$ -	$ 21,000	$ -	$ 21,000	$ -	$ -	$ -
4.5.04 Upgrade exterior lighting to LED	$ -	$ -	$ 5,800	$ -	$ 5,800	$ -	$ -	$ -	$ -	$ -
4.5.05 Allowance to upgrade emergency lighting units	$ -	$ -	$ 2,000	$ -	$ 2,000	$ -	$ -	$ -	$ -	$ -
4.5.06 Overhead Primary Line extension (600m - 92m NSP allowance)	$ -	$ -	$ 27,000	$ -	$ 27,000	$ -	$ -	$ -	$ -	$ -
4.5.07 Underground primary extension from pole line to padmount xfmr - Approx. 40m distance	$ -	$ -	$ 18,000	$ -	$ 18,000	$ -	$ -	$ -	$ -	$ -
4.5.08 Padmount Transformer Pad Installation (500kVA)	$ -	$ -	$ 8,000	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -
4.5.09 Secondary buried duct installation (50 me; size not confirmed)	$ -	$ -	$ 25,000	$ -	$ 25,000	$ -	$ -	$ -	$ -	$ -
4.5.10 Revenue Metering	$ -	$ -	$ 2,000	$ -	$ 2,000	$ -	$ -	$ -	$ -	$ -
TOTALS	**$ 1,000**	**$ 23,400**	**$ 87,800**	**$ -**	**$ 112,200**	**$ 2,400**	**$ 21,000**	**$ -**	**$ -**	**$ -**

All costs in 2016 dollars. Costs adjusted by 0.00%

Stantec

OPINION OF PROBABLE COST

Petite Riviere **4.6 SITE** As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Intermediate	Long Term	Total	Annual Reserve				
	<12 months	1- 5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.6.01 Allowance to Replace Concrete Driveway/Walkway	$ -	$ 132,000	$ -	$ -	$ 132,000	$ -	$ -	$ 132,000	$ -	$ -
TOTALS	**$ -**	**$ 132,000**	**$ -**	**$ -**	**$ 132,000**	**$ -**	**$ -**	**$ 132,000**	**$ -**	**$ -**

All costs in 2016 dollars. Costs adjusted by 0.00%

Stantec

OPINION OF PROBABLE COST

Petite Riviere **4.7 WATER WELL & SEPTIC** As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Intermediate	Long Term	Total	Annual Reserve				
	<12 months	1- 5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.7.01 Drilling new well (76 m deep with 15 m of grouted casing and drive shoe)	$ 6,300	$ -	$ -	$ -	$ 6,300	$ -	$ -	$ -	$ -	$ -
4.7.02 1 HP submersible pump with control box	$ 1,100	$ -	$ -	$ -	$ 1,100	$ -	$ -	$ -	$ -	$ -
4.7.03 Plumbing labour and materials	$ 2,500	$ -	$ -	$ -	$ 2,500	$ -	$ -	$ -	$ -	$ -
4.7.04 Decommission existing well (grout placement by pump)	$ 2,500	$ -	$ -	$ -	$ 2,500	$ -	$ -	$ -	$ -	$ -
4.7.05 Commissioning test (72-hour pumping test with chemistry analysis)	$ 7,750	$ -	$ -	$ -	$ 7,750	$ -	$ -	$ -	$ -	$ -
4.7.06 Interpretation of testing results and letter report for records (Stantec)	$ 1,200	$ -	$ -	$ -	$ 1,200	$ -	$ -	$ -	$ -	$ -
4.7.07 Pump inspection/servicing and specific capacity test to confirm yield and determine if any additional maintenance work is required	$ -	$ -	$ -	$ 2,000	$ 2,000	$ -	$ -	$ -	$ -	$ -
4.7.08 Septic - Replace onsite septic disposal system	$ -	$ 60,000	$ -	$ -	$ 60,000	$ -	$ -	$ -	$ -	$ 60,000
TOTALS	**$ 21,350**	**$ 60,000**	**$ -**	**$ 2,000**	**$ 83,350**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 60,000**

All costs in 2016 dollars. Costs adjusted by 0.00%

OPINION OF PROBABLE COST

Petite Riviere **4.8 INTERIOR FINISHES** As of Jan. 20, 2016	Estimated Costs					Short Term Repair/Replacement Analysis				
	Immediate	Short Term	Intermediate	Long Term	Total	Annual Reserve				
	<12 months	1- 5 years	6 -10 years	11 -20 years		Year 1	Year 2	Year 3	Year 4	Year 5
4.8.01 Painting of walls and ceilings	$ -	$ -	$ 10,500	$ -	$ 10,500	$ -	$ -	$ -	$ -	$ -
4.8.02 Replace Vinyl Tile	$ -	$ -	$ -	$ 42,000	$ 42,000	$ -	$ -	$ -	$ -	$ -
4.8.03 Repairs to the tiles in the boy's washrooms	$ -	$ 1,500	$ -	$ -	$ 1,500	$ 1,500	$ -	$ -	$ -	$ -
TOTALS	**$ -**	**$ 1,500**	**$ 10,500**	**$ 42,000**	**$ 54,000**	**$ 1,500**	**$ -**	**$ -**	**$ -**	**$ -**

All costs in 2016 dollars. Costs adjusted by 0.00%

APPENDIX B-
SITE PHOTOS

PETITE RIVIERE ELEMENTARY SCHOOL

4.1 BUILDING STRUCTURE

Photo 4.1.1 – Crack in foundation on south side of school

Photo 4.1.2 – Corrosion on windscreen support on east side of building

Photo 4.1.3 – Corrosion on column at northwest entry

Photo 4.1.4 – Crack in west wall of mechanical room

Photo 4.1.5 – Chip in stair nosing leading to mechanical room

Photo 4.1.6 – Deteriorated bottom stair leading to mechanical room

PETITE RIVIERE ELEMENTARY SCHOOL

4.1 BUILDING STRUCTURE

Photo 4.1.7 – Crack in east wall of electrical room

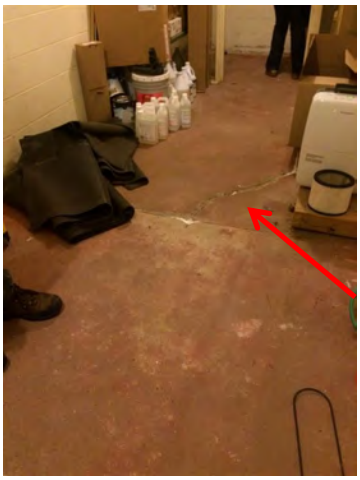


Photo 4.1.8 – Gouge in electrical room floor to be repaired.

Photo 4.1.9 – Gaps in ceiling planks in room 111 (library)

Photo 4.1.10 – Cracks in ceiling planks in room 120 (resource)

Photo 4.1.11 – Transverse crack in ceiling plank in room 114 (primary)

photo 4.1.12 – Bent web members in OWSJ in room 112

PETITE RIVIERE ELEMENTARY SCHOOL

4.1 BUILDING STRUCTURE

Photo 4.1.13 – OWSJ with bottom chord laterally deflected in room 119

photo 4.1.14 – Corrosion on OWSJ and bracing in room 127 (boys washroom)

PETITE RIVIERE ELEMENTARY SCHOOL

4.2 CLADDING

Photo 4.2.1 – West elevation. Front entry

Photo 4.2.2 – North-west entrance

Photo 4.2.3 – North elevation

Photo 4.2.4 – East elevation

Photo 4.2.5 – North–east primary classroom sheltered exit

Photo 4.2.6 – South-east teacher's room sheltered exit

4.2 CLADDING

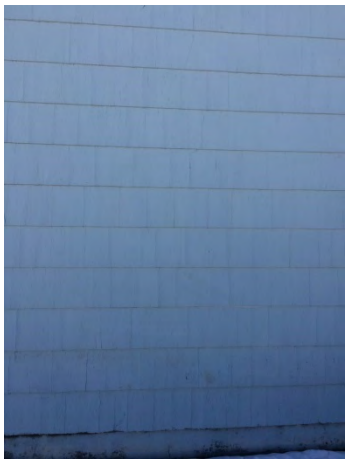


Photo 4.2.7 – Example of painted wood shingle wall cladding in fair condition overall

Photo 4.2.8 – Example of painted wood siding in fair condition overall

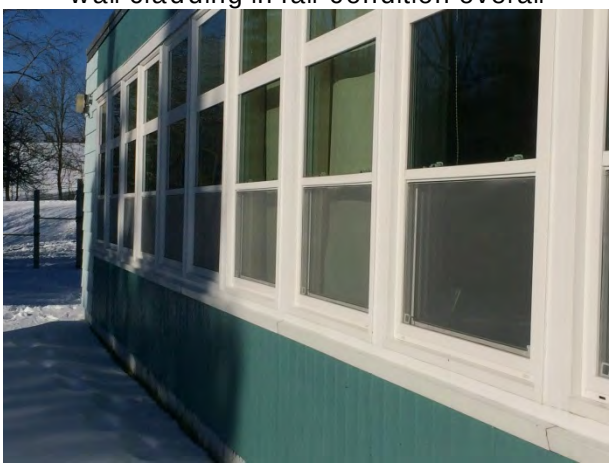


Photo 4.2.9 – Typical window construction.

Photo 4.2.10 – North elevation

PETITE RIVIERE ELEMENTARY SCHOOL

4.3 ROOFING

Photo 4.3.1 – Example of roof (snow covered) looking north

Photo 4.3.2 – View of chimney looking north. Located above offices at west of school.

PETITE RIVIERE ELEMENTARY SCHOOL

4.4 MECHANICAL

Photo 4.4.1 – The fuel storage tank for the building's heating system.

Photo 4.4.2 – Elkay refrigerated water fountain found in the hallways

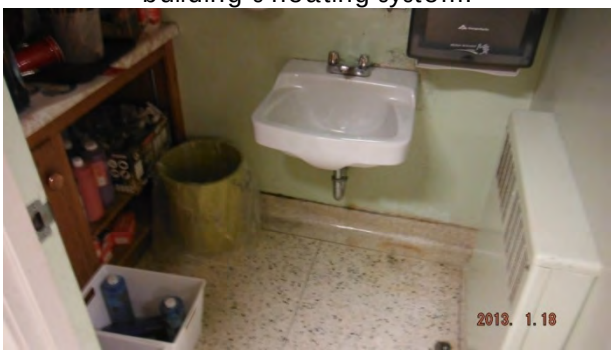


Photo 4.4.3 – Typical original sink

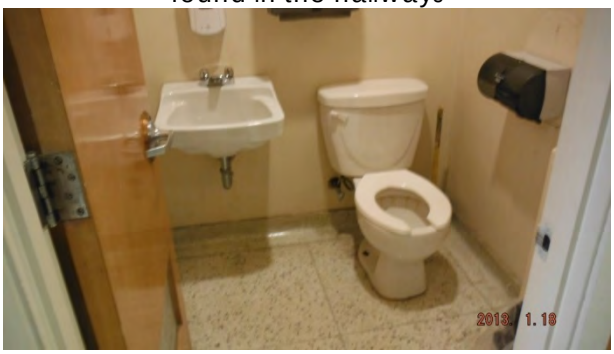


Photo 4.4.4 – Typical of water closet

Photo 4.4.5 – Typical cabinet heater

Photo 4.4.6 – Typical hot water baseboard heaters

PETITE RIVIERE ELEMENTARY SCHOOL

4.4 MECHANICAL

Photo 4.4.7 – Typical exhaust fan with original housing

Photo 4.4.8 – Water treatment, filter and disinfecting equipment

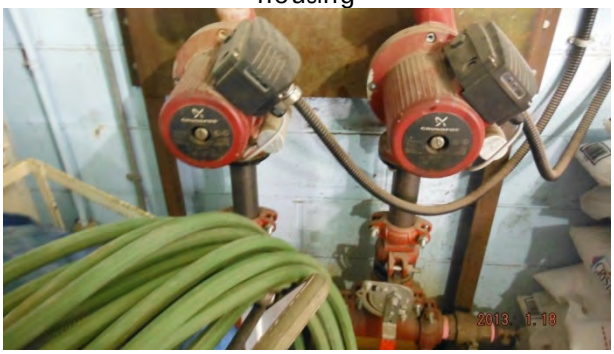


Photo 4.4.9 – Heating circulation pumps

Photo 4.4.10 – Electric domestic hot water tank

Photo 4.4.11 – Well Pressure Tank

Photo 4.4.12 – Well pump

PETITE RIVIERE ELEMENTARY SCHOOL

4.4 MECHANICAL

Photo 4.4.13 – Unit heater within the boiler room

Photo 4.4.14 – New compressor for controls

PETITE RIVIERE ELEMENTARY SCHOOL

4.5 ELECTRICAL

Photo 4.5.1 – Main Electrical Service and Distribution

Photo 4.5.2 – Pole-mounted utility transformer

Photo 4.5.3 – Access to Electrical Room Located under stage

Photo 4.5.4 – 200A, 120/240V Distribution Panel

Photo 4.5.5 – 100A, 120/240V panel in the Principal's Office

Photo 4.5.6 – 100A, 120/240V panel in Corridor 110

PETITE RIVIERE ELEMENTARY SCHOOL

4.5 ELECTRICAL

Photo 4.5.7 – 100A, 120/240V panel in Corridor 116

Photo 4.5.8 – 100A, 120/240V panel in the Kitchen

Photo 4.5.9 – 200A, 120/240V panel in the Boiler Room

Photo 4.5.10 – Typical wiring strapped to ceiling of classroom for projector

Photo 4.5.11 – Typical wiremold installation

Photo 4.5.12 – Typical 1'x4' surface mounted fluorescent luminaires in corridors

4.5 ELECTRICAL

Photo 4.5.13 – Typical 1'x4' surface-mounted fluorescent luminaires in Classrooms

Photo 4.5.14 – 2'x4' surface-mounted fluorescent luminaires in the gymnasium

Photo 4.5.15 – Recessed pot lights at the stage

Photo 4.5.16 – Incandescent lighting in the storage room

Photo 4.5.17 – Typical 1'x4' surface-mounted fluorescent washroom luminaires

Photo 4.5.18 – Exterior wall-mounted luminaires over front entrance doors

PETITE RIVIERE ELEMENTARY SCHOOL

4.5 ELECTRICAL

Photo 4.5.19 – 1'x4' vaportight luminaires at front entrances

Photo 4.5.20 – Surface-mounted HID luminaire at west entrance

Photo 4.5.21 – Surface-mounted compact fluorescent luminaire at east entrance

Photo 4.5.22 – Wall-mounted HID luminaire for perimeter lighting

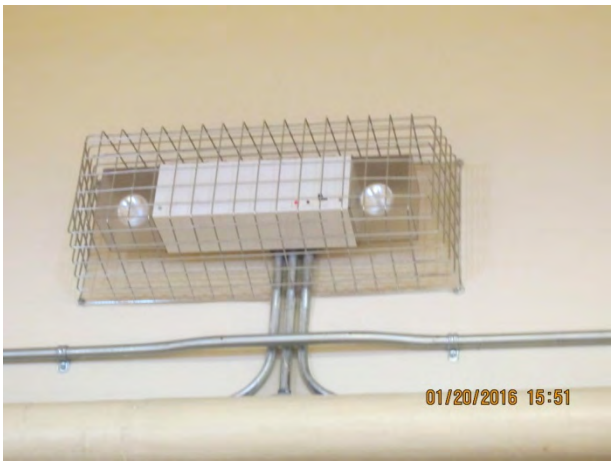


Photo 4.5.23 – Emergency lighting unit complete with wireguard

Photo 4.5.24 – Single remote head emergency lighting

PETITE RIVIERE ELEMENTARY SCHOOL

4.5 ELECTRICAL

Photo 4.5.25 – Typical exit sign

Photo 4.5.26 – GE- FireShield Main Fire Alarm control panel

Photo 4.5.27 – Security system control panel in electrical room

Photo 4.5.28 – Security keypad at main entrance

Photo 4.5.29 – Typical wall-mounted security motion sensor

PETITE RIVIERE ELEMENTARY SCHOOL

4.6 SITE FINISHES

Photo 4.6.1 – Walkway on south side of school

Photo 4.6.2 – Deteriorated asphalt at northwest entrance

Photo 4.6.3 – Front asphalt driveway showing areas of deterioration

Photo 4.6.4 – Crack in concrete pad at north exit

PETITE RIVIERE ELEMENTARY SCHOOL

4.8 INTERIOR FINISHES

Photo 4.8.1 – View of assembly hall. Vinyl tile floor, painted concrete block walls

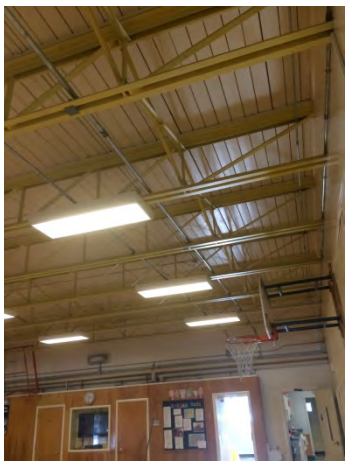


Photo 4.8.2 – View of assembly hall, underside of roof

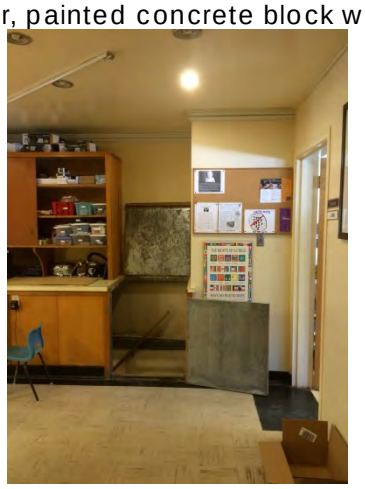


Photo 4.8.3 – View of access to electrical room. View from platform area

Photo 4.8.4 – Office typical finishes

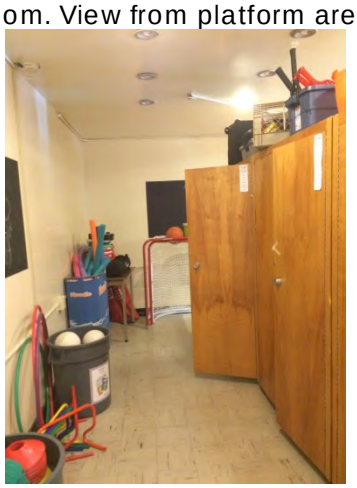


Photo 4.8.5 – Platform area, looking north.

Photo 4.8.6 – View of platform area, looking west

PETITE RIVIERE ELEMENTARY SCHOOL

4.8 INTERIOR FINISHES

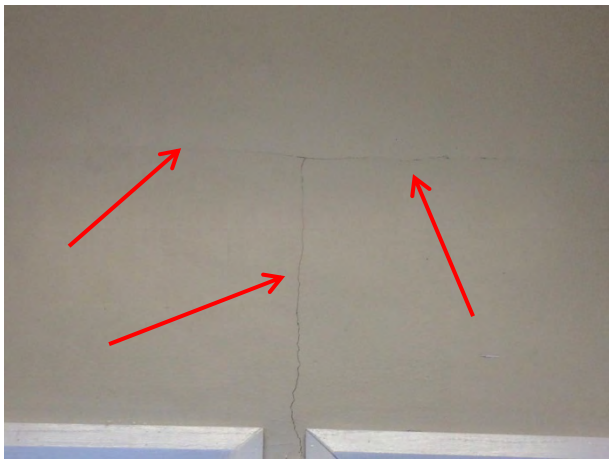


Photo 4.8.7 – Llarge vertical and horizontal cracks on wall above vestibule 102 doors. Looking east from inside vestibule.

Photo 4.8.8 – Old water damage at north east corner of platform area

Photo 4.8.9 – View of typical classroom finishes

Photo 4.8.10 – Open to underside of roof in classroom areas. Painted wood

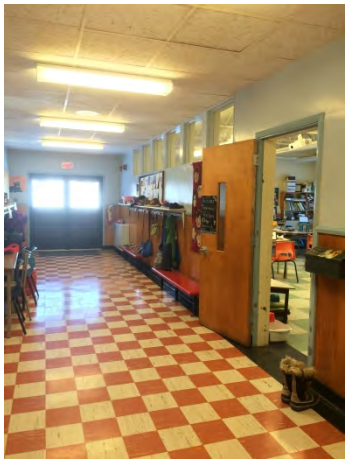


Photo 4.8.11 – View of corridor with painted gypsum walls, suspended ceiling tiles, vinyl tile flooring

Photo 4.8.12 – Sap appears to be seeping from the roof boards. Noticed in serval classrooms

PETITE RIVIERE ELEMENTARY SCHOOL

4.8 INTERIOR FINISHES

Photo 4.8.13 – Discoloration / staining noted on the roof joists and roof boards. Moisture buildup in the washrooms / humidity suspected.

Photo 4.8.14 – View of assembly hall, underside of roof

Photo 4.8.15 – View of assembly hall. Vinyl tile floor, painted concrete block walls

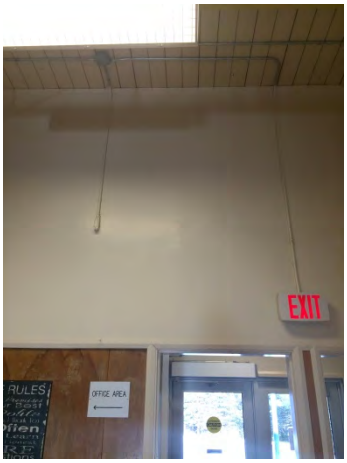
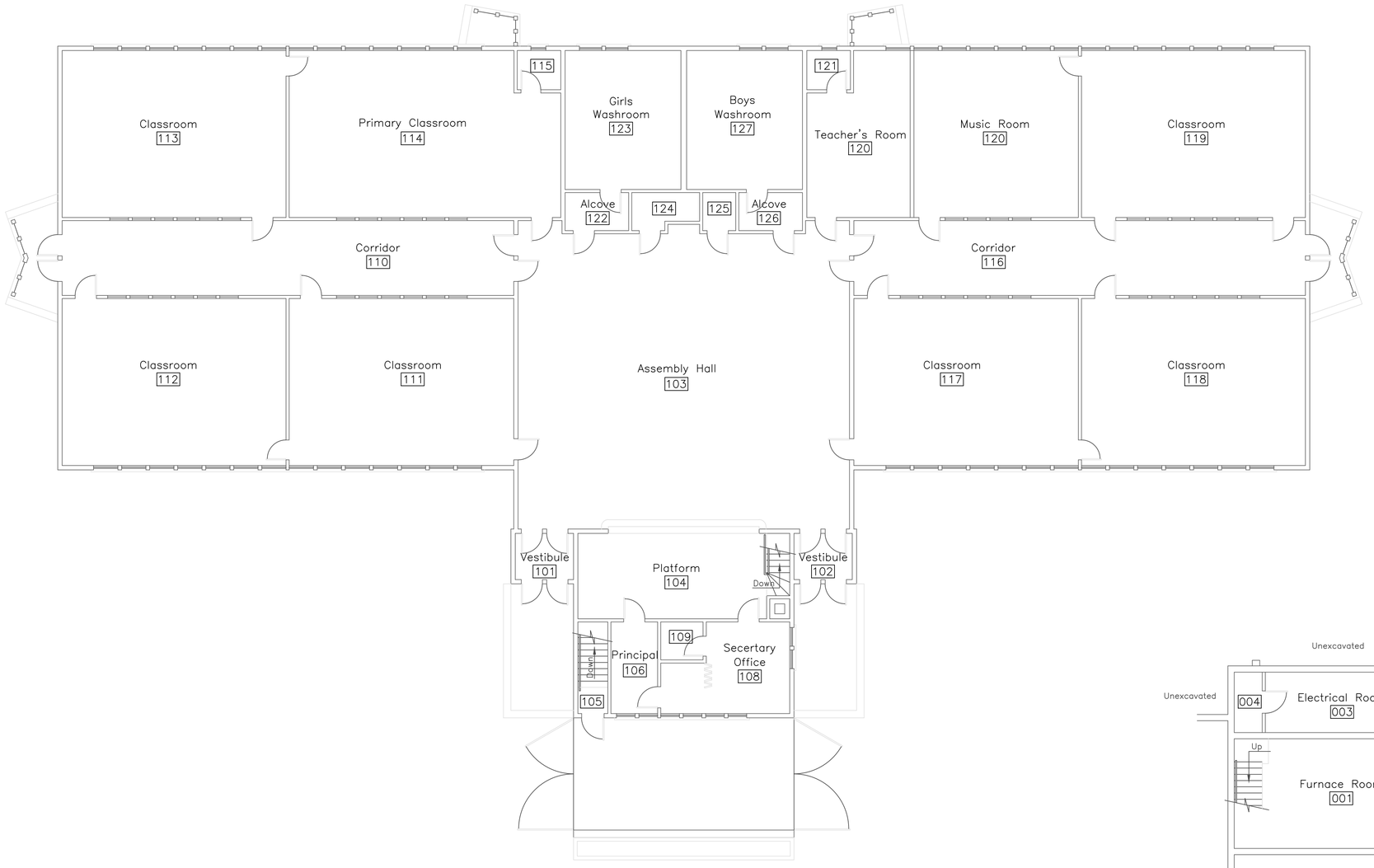


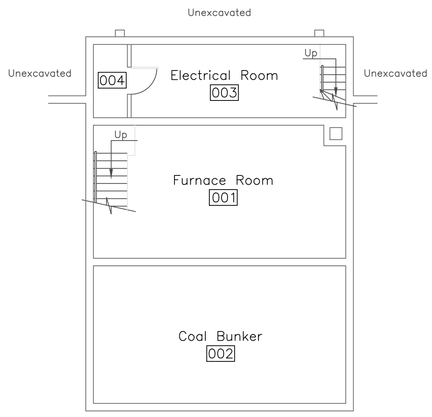
Photo 4.8.16 – Vertical and horizontal cracking noted above doors to vestibule 101. Image is looking west from assembly hall

APPENDIX C-
AREA AND REFERENCED DOCUMENTS

Petite Riviere Elementary School Room Areas				
Room #	Room Name	length	width	area (sq ft)
101	Vestibule 101	7.66	6.13	46.96
102	Vestibule 102	7.66	6.13	46.96
103	Assembly Hall	44.3	39.05	1729.92
104	Platform	25.11	11.5	288.77
105	Stair for Exterior Mechanical Room	-	-	-
106	Principal's Office / now Copy Room	6.14	12.35	75.83
107	Janitor's Closet	-	-	-
108	Secretary Office	16.91	7.66	104.38
109	Teacher's Washroom	5.03	5	25.15
110	Corridor 110	60.29	9.45	569.74
111	Classroom 111	29.9	22.57	674.84
112	Classroom 112	29.9	22.39	669.46
113	Classroom 113	29.9	22.3	666.77
114	Classroom 114	36.4	22.57	789.79
115	Primary Washroom	5.97	5.32	31.76
116	Corridor 116	60.26	9.47	570.66
117	Classroom 117	29.8	22.53	671.39
118	Classroom 118	29.8	22.53	671.39
119	Classroom 119	29.8	22.36	666.33
120	Classroom 120	18.37	22.42	411.86
120	Teacher's Room	17.58	22.38	362.18
121	Teacher's room washroom	5.92	5.28	31.26
122	Alcove	4.28	5.21	22.30
123	Girl's Washroom	14.58	18.52	270.02
124	Storage	13.04	5.21	67.94
125	Janitor's Closet	-	-	-
126	Alcove	4.26	5.21	22.19
127	Boy's Washroom	17.58	22.38	393.44
Total:				9881.2795



Ground Floor Layout



Basement Floor Layout

NORTH

Additional Noted Areas

004	Panel Room
105	Stairwell
107	Janitor's Closet
109	Teacher's Washroom
115	Primary Washroom
121	Kindergarten Washroom
124	Storage
125	Janitor's Closet

MacDonnell Group

MacDonnell Group Consulting Ltd
1505 Barrington Street
Halifax, Nova Scotia
Canada B3J 3K5
Phone: 902.425.3999
Fax: 902.423.7593

CLIENT

SOUTHWEST CENTRAL SCHOOL BOARD

PROJECT TITLE

PETITE RIVIERE ELEMENTARY SCHOOL

LUNENBURG COUNTY NOVA SCOTIA

DRAWING TITLE

EXISTING GROUND & BASEMENT FLOOR LAYOUTS

DATE	02-04-23
CHECKED	JF
DRAWN	MT
DESIGNED	--
SURVEYED	--
SCALE	NTS

STAMP

APPROVED 20 _____

APPROVED 20 _____

JOB NO. 1022

SHEET SK1

APPENDIX D-
WELL RECORDS

Well Log Record

Well Log Record: # 600192

Go Back

Well Number: 600192
Type: Drilled
Date Well Completed (mm-dd-yyyy): 12-31-1960

Well Owner/Contractor and Location

Well Drilled for: SCHOOL
or Contractor/Builder/Consultant: n/a

Civic Address of Well: n/a
Lot #: n/a
Subdivision: n/a
County: Lunenburg
Postal Code: n/a
Nearest Community in Atlas/Map Book: n/a

Certified Well Contractor

Driller Name: FANCY, WILLIAM
Certificate No: 14
Company: MARITIME WELL DRILLING CO. LTD.

Well Status / Water Use

Final Status of Well: Water Supply Well
Water Use: Public (not municipal)
Method of Drilling: Cable Tool

Well Location

Nova Scotia Atlas or Map Book Reference

Atlas or Map Book: NTS
Map Page No.: n/a
Reference Letter: n/a
Reference Number: n/a
Roamer Letter: n/a
Roamer Number: n/a

Grid pak

N Reference

Map Sheet: 21A1
Reference Map: C
Tract No.: 106
Claim: F

GPS (WGS84 UTM)

Northing (m): 4899699
Easting (m): 384178
Property (PID): n/a
Well Location Sketch Available: n/a

Stratigraphy Log

Geology	Colour	Description	Lithology	Water Found
From (depth in ft): 0 to: 42				
Primary Geology	n/a	n/a	Gravel	n/a
Secondary Geology	n/a	n/a	n/a	
From (depth in ft): 42 to: 218				
Primary Geology	Gray	Hard	Slate	n/a
Secondary Geology	n/a	n/a	n/a	

Well Construction Information

Total Depth Below Surface (ft): 218
Depth to Bedrock (ft): 42
Water Bearing Fractures Encountered at (ft): n/a
Outer Well Casing: From (ft): n/a To: n/a
Diameter (in): n/a
Length of Casing Above Ground (ft): n/a and (in): n/a
Driveshoe Make: n/a

Water Yield

Estimated Yield (igpm): n/a
Method: n/a
Rate (igpm): n/a
Duration (hrs): n/a
Depth to Water at end of Test (ft): n/a
Total Drawdown (ft): n/a
Water Level Recovered to (ft): n/a
Recovery Time (hrs): n/a

Depth to Static Level (ft): n/a
Overflow: n/a

Comments

n/a

Go Back

APPENDIX E-
WATER QUALITY REPORT

AQUA-CHECK

Water Sample Results Report
CONFIDENTIAL

Aqua-Check
1801 Hollis Street, Suite 1220
Halifax, NS, B3J 3N4
p. (902) 423-6030
p. (866) 423-6030 (Toll free)
f. (902) 423-6047

Test Name: P/A

Company: **South Shore Regional School Board**
69 Wentzell Drive
Bridgewater, NS, B4V0A2

Registration No. 2001-018440

Sample ID: AC 55760
Sample Location staffroom tap
Sample Date: 2 Dec 2015
Sample Time: 13:15:00

Building: **Petite Rivière Elementary**
123 Wentzell Road
Petite Rivière, NS, B0J2P0

Company Contact: **Fred Conrad**
p. 902-542-3081
f. 902-541-3049

Building Contact: DOE- Bridgewater
p. 902-543-4685
f. 902-527-5480
e.

This sample meets the health objective guidelines for Canadian Drinking Water Quality for the parameters below. (See **Exceeds** column below)

Parameter	Value	Units	Exceeds	GCDWQ Level	Health Objective
E Coli	ABSENT	p/a	No		MAC
Total Coliform	ABSENT	p/a	No		MAC

GCDWQ = Guidelines for Canadian Drinking Water Quality
MAC = Maximum Allowable Concentration, IMAC = Interim Maximum Allowable Concentration, AO = Aesthetic Objective

PRIVATE RESIDENCE

1. If any COLIFORMS (E.coli or Total) are present, water source should be disinfected or water boiled prior to consumption. Health Canada recommends that water contaminated with any coliforms be maintained at a rolling boil for at least 1 minutes prior to being consumed.

2. Refer to the provided information regarding suggested safety measures. After disinfection, resample at all regular sampling locations as soon as possible.

3. Contact the NS Department of Health or the NS Department of Environment for additional information, including disinfection instructions or check their website (http://www.gov.ns.ca/nse/water/privatewells.asp).

NSDE REGISTERED PUBLIC DRINKING WATER SOURCES

1. Owners of Registered public drinking water supplies are required to immediately report positive results to their local Department of Environment (NSDE) office. If the local office cannot be reached, the NSDE Environmental toll free number is 1-877-936-8476. Registed public drinking water sources are also required to resample withing 24-hours of receiving notification of presence of any coliforms and forward results immediately to NSDE.

2. If any COLIFORMS (E.coli or Total) are present initiate a BOIL WATER ADVISORY. Health Canada recommends that water contaminated with any coliforms be maintained at a rolling boil for at least 1 minutes prior to being consumed.

3. Contact the NS Department of Health or the NS Department of Environment for additional information, including disinfection instructions or check their website (http://www.gov.ns.ca/nse/).

----------END OF REPORT----------

Maxxam Job #: B5O8403
Report Date: 2015/12/04

Aqua-Check Inc
Sampler Initials: GS

MICROBIOLOGY COLILERT (DRINKING WATER)

Maxxam ID		BLO943
Sampling Date		2015/12/02 13:15
COC Number		193246
Registration #		2001-018440
	UNITS	**AC55760**
Microbiological		
Escherichia coli	P-A/100mL	ND
Total Coliforms	P-A/100mL	ND
ND = Not detected		

Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com

AQUA-CHECK

Aqua-Check
1801 Hollis Street, Suite 1220
Halifax, NS, B3J 3N4
p. (902) 423-6030
p. (866) 423-6030 (Toll free)
f. (902) 423-6047

Water Sample Results Report
CONFIDENTIAL

Test Name: Full Chemical

Company: **South Shore Regional School Board**
69 Wentzell Drive
Bridgewater, NS, B4V0A2

Registration No. 2001-018440

Sample ID: AC 55363
Sample Location staffroom tap
Sample Date: 22 Sep 2015
Sample Time: 12:35:00

Building: **Petite Rivière Elementary**
123 Wentzell Road
Petite Rivière, NS, B0J2P0

Company Contact: **Fred Conrad**
p. 902-542-3081
f. 902-541-3049

Building Contact: DOE- Bridgewater
p. 902-543-4685
f. 902-527-5480
e.

This sample meets the health objective guidelines for Canadian Drinking Water Quality for the parameters below. (See **Exceeds** column below)

Parameter	Value	Units	Exceeds	GCDWQ Level	Health Objective
Sodium	69000	ug/L		0.000 to 200000.000 ug/L	AO
Potassium	<100	ug/L		n/a	n/a
Calcium	<100	ug/L		n/a	n/a
Magnesium	<100	ug/L		n/a	n/a
Alkalinity (as CaCO3)	45	mg/L		n/a	n/a
Sulfate	17	mg/L		0.000 to 500.000 mg/L	AO
Chloride	91	mg/L		0.000 to 250.000 mg/L	AO
Reactive Silica (as SiO2)	16	mg/L		n/a	n/a
Ortho Phosphate (as P)	0.023	mg/L		n/a	n/a
Nitrite (as N)	<0.010	mg/L		n/a	n/a
Nitrate + Nitrite (as N)	<0.050	mg/L		0.000 to 10.000 mg/L	n/a
Nitrate (as N)	<0.050	mg/L		0.000 to 10.000 mg/L	MAC
Ammonia (as N)	0.26	mg/L		n/a	n/a
Color	<5.0	TCU		0.000 to 15.000 TCU	AO
Turbidity (at tap)	1.8	NTU		0.000 to 5.000 NTU	AO
Conductance (RCAp)	400	uS/cm		n/a	n/a
pH	6.89	pH		6.500 to 8.500 pH	AO
Hardness (as CaCO3)	<1.0	mg/L		n/a	n/a
Bicarbonate (as CaCO3)	45	mg/L		n/a	n/a
Carbonate (as CaCO3)	<1.0	mg/L		n/a	n/a
TDS (Calculated)	220	mg/L		0.000 to 500.000 mg/L	AO
Cation Sum	3.04	me/L		n/a	n/a
Anion Sum	3.86	me/L		n/a	n/a
Ion Balance (% difference)	11.9	%		n/a	n/a
Langlier Index (@ 4C)	NC	N/A		n/a	n/a
Langlier Index (@ 20C)	NC	N/A		n/a	n/a
Saturation pH (@ 4C)	NC	N/A		n/a	n/a
Saturation pH (@20C)	NC	N/A		n/a	n/a
Fluoride (F-)	0.61	mg/L		0.000 to 1.500 mg/L	MAC

Aluminum	<5.0	ug/L	0.000 to 100.000 ug/L	OGV
Antimony	<1.0	ug/L	0.000 to 6.000 ug/L	IMAC
Arsenic	1.3	ug/L	0.000 to 10.000 ug/L	IMAC
Barium	<1.0	ug/L	0.000 to 1000.000 ug/L	MAC
Beryllium	<1.0	ug/L	n/a	n/a
Bismuth	<2.0	ug/L	n/a	n/a
Boron	<50	ug/L	0.000 to 5000.000 ug/L	IMAC
Cadmium	<0.010	ug/L	0.000 to 5.000 ug/L	MAC
Chromium	<1.0	ug/L	0.000 to 50.000 ug/L	MAC
Cobalt	<0.40	ug/L	n/a	n/a
Copper	17	ug/L	0.000 to 1000.000 ug/L	AO
Iron	130	ug/L	0.000 to 300.000 ug/L	AO
Lead	<0.50	ug/L	0.000 to 10.000 ug/L	MAC
Manganese	<2.0	ug/L	0.000 to 50.000 ug/L	AO
Molybdenum	<2.0	ug/L	n/a	n/a
Nickel	<2.0	ug/L	n/a	n/a
Selenium	<1.0	ug/L	0.000 to 10.000 ug/L	MAC
Silver	<0.10	ug/L	n/a	n/a
Strontium	<2.0	ug/L	n/a	n/a
Thallium	<0.10	ug/L	n/a	n/a
Tin	<2.0	ug/L	n/a	n/a
Titanium	<2.0	ug/L	n/a	n/a
Uranium	<0.10	ug/L	0.000 to 20.000 ug/L	IMAC
Vanadium	<2.0	ug/L	n/a	n/a
Zinc	<5.0	ug/L	0.000 to 5000.000 ug/L	AO
Phosphorus	170	ug/L	n/a	n/a
Total Organic Carbon	<0.50	mg/L	n/a	n/a

For further information, please check the Nova Scotia Department of Environment Water website or contact your closest Department of Environment office.
http://www.gov.ns.ca/nse/water

1 mg/L = 1000 µg/L 1µg/L = 0.001 mg/L

PARAMETER = indicates which chemicals your water was analyzed for.

VALUE = indicates the analyzed result for your water.

REPORTED UNITS= concentration unit for chemical analyzed. mg/L = parts per million.

µg/L = parts per billion.

EXCEEDS STANDARD = "Yes" indicates the tested parameter was higher than currently accepted GCDWQ standard for that parameter. "No" indicates result within accepted GCDWQ standard.

GCDWQ LEVEL = Identified Standard for that parameter under Guidelines for Canadian Drinking Water Quality.

**Health Objectives identified in the GCDWQ include:
MAC = Maximum Allowable Concentration
IMAC = Interim Maximum Allowable Concentration
AO = Aesthetic Objective
OGV = Operational Guideline Value

When analytical results for chemical parameters exceed the quoted MAC or IMAC GCDWQ standard, the owner of a Registered water supply is responsible to immediately notify NSDE and forward copies of these results to the local NSDE office. http://www.gov.ns.ca/nse/

----------END OF REPORT----------