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May 2, 2007

Mr. Scott Alfonse, Director
City of New Bedford
Department of Environmental Stewardship
133 William Street
New Bedford, Massachusetts 02740

Subject: Spring 2007 Cap Inspection
Keith Middle School
New Bedford, Massachusetts

Dear Mr. Alfonse:

At the request of the City of New Bedford (City), TRC performed the first inspection of the protective cap installed at the Keith Middle School Site located at 225 Hathaway Boulevard in New Bedford, Massachusetts. A TRC engineer conducted the inspection on April 17, 2006 in accordance with the Long-term Monitoring and Maintenance Implementation Plan (LMMIP) dated October 20, 2006 prepared by the BETA Group, Incorporated (BETA). The LMMIP requires three inspections per year in April, August and November to confirm that the cap is being properly maintained to prevent exposure to the impacted fill beneath.

The inspection consisted of a walking traverse of the entire Site with visual observations of the entire cap including the first floor concrete slab of the building, the courtyard within the building footprint, and concrete, asphalt and landscaped surfaces outside the building. Access to locked rooms within the building was provided by the facility engineer, Gary Gomes and/or a school custodian. The inspection was documented in a log book. Copies of the log book pages are presented as Attachment 1. The findings of the inspection are documented in a site-specific Cap Inspection Form (Attachment 2) provided in the LMMIP. Annotated photographs taken during the inspection are presented as Attachment 3.

Based on TRC's inspection, the concrete floor within the footprint of the building is currently acting to prevent exposure to the impacted fill beneath. While several cracks or separations were observed in the concrete or between floor tiles, the cracks were either closed or did not extend through the concrete. The courtyard within the building and pavement and concrete surfaces outside the building were also acceptable.

The landscaped areas outside the building were acceptable with the exception of the following:

- Twelve erosion rills located on the steep slope at the south end of the Site property. Vegetation is also sparsely established in this location, leaving this area at risk of further erosion during significant weather events, (i.e., rain, wind).
- A slope failure located on the steep slope between the wetland to the west and the southern parking lot to the east. A photograph of the slope failure prior to the temporary repair is presented in Attachment 4. A small (approximately 3 to 4 inch) piece of the orange warning barrier was visible in the top left quadrant of the damaged area (when viewed from the wetland) during an initial damage inspection conducted on April 10, 2007. A temporary repair had been implemented at the time of the April 17, 2007 cap inspection by RC&D, Incorporated.
- Sloughing riprap stabilization stone that is undermining the concrete fence support at the top of the slope and filling the outlet of the storm water drainage culvert on the west side of the Site.

At this time the black separation fabric that demarcates the underlying contaminated fill from the clean imported fill is not visible. However, these areas should be repaired in order to prevent further erosion or cap damage that could eventually expose the separation fabric. Please refer to the attached Cap Inspection Form for additional details concerning observed conditions.

A design for the repair of the slope failure has been submitted to the City for review. Repair of the erosion rills is straight forward and would consist of filling in the rills with soil, planting grass seed and protecting the slope with mulch or erosion control mat until stabilizing vegetation is established. The soil on the south slope appeared to be low in organic material and some sort of soil amendment may be required to sustain vegetation. The slope at the culvert appears to be too steep to support the existing riprap. Larger riprap or a structural element such as a concrete headwall may be required to provide a stable culvert outlet.

If you have any questions, please contact me at 978-656-3560.

Sincerely,



Gregory A. Mischel, P.E.
Senior Geotechnical Engineer

Attachments

Attachment 1

Log Book

4/17/07

Keith Middle School
Cap Inspection

8:00 Arrived at School

8:15 Met w/ David Sullivan

8:30 Met w/ Gary Gomes

Started inspection at north
end of building Gym, locker
rooms etc.

8:45 Inspected Boiler Room

Photos 1-5two minor cracks, not open.
All pipe penetrations through
floor are tight.Rm 067 small crack in
between tile does not
appear to go through
floor. Photo 6Keith Middle School 4/17/07³

9:00 Music Room 027 OK

9:05 Community Room OK

Auditorium OK

9:10 Caf

Photo 7 small crack in
north wall at Kitchen 060
entrance. Does not go thru floor.
No key for Kitchen

9:15 148 Computer Lab OK

9:20 Classroom 162/164 OK

9:30 SW corner of building OK

No key for Health Suite 181
or Main Office 102. or
Office 1139:35 Bathrooms in SE corner
of building OK

9:45 Hall outside of Auditorium OK

9:50 Rm 141 OT/PT OK

9:55 Rm 142 Language Lab OK

Keith Middle School 4/17/07

10:00 Courtyard Photo 8 OK

Completed inspection of building interior.

Photo 9 South entrance to school

10:10 Inspect concrete walk way at entrance (south) to school OK

Start inspection of south parking area OK
Photo 1010:20 Start inspection of west side of building OK
Photo 11 Bike rack

Photo 12 west side of building

10:30 Inspect north parking area OK

Photo 13 North parking area

Photo 14 outdoor courtyard

Keith Middle School 4/17/07⁵10:35 Soft wet area in grass near NE corner of property possible broken water line for sprinkler system.
"YardWorx" work crew on site testing system.

Photo 15 wet area

10:45 Completed inspection of east side of building OK

10:50 Start inspection of slope along wetland. Starting at south end.

Photos 16 & 17 erosion at SE corner of property.
4" - 6" deep.Photo 18 erosion @ south slope
12 Erosion rills along South slopePhoto 19 Erosion @ SW corner
Photo 20 Top of slope, south end

6 Keith Middle School 4/17/07

Photo 24²⁴ ^{6AM} Poor vegetation
Photo 22 slope failure

No further erosion ~~for~~
slumping observed at location
of failure.

Poor vegetation along top of
slope to about the bike rack

Photo 23 rip up falling
down slope covering outlet
of culvert and undermining
concrete fence support.
(fourth south of oil tank)

11:20 Completed outdoor inspection

11:25 Met Gary Gower he has
key to kitchen, inspected
kitchen area OK.

Photos 23 & 24 ²⁵ ^{6AM} Kitchen &
Dishwashing room

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11:30 Inspected Health Site OK

11:35 Inspected Main office OK
Mostly carpet on floor.

11:45 Left Site for day.

Attachment 2

Cap Inspection Form



CAP INSPECTION FORM KEITH MIDDLE SCHOOL

Use this inspection form to document cap inspections. If unacceptable conditions are observed, complete an additional form immediately after repairs are completed.

Inspection Date: April 17, 2007 Inspection by: Greg Mischel

A. ASPHALT AND CONCRET PAVING – observe asphalt and concrete paving for cracking, holes, asphalt removed during construction, other damage.

All Asphalt and concrete paving acceptable? ☒ YES ☐ NO

If no, attach photograph ☐

If no, describe unacceptable condition:

Location

Condition

Describe any repairs to asphalt and/or concrete paving conducted since previous inspection

All repairs adequate ☐ YES ☐ NO Photograph of repair attached ☐

B. INTERIOR CONCRETE FLOORS – observe concrete for cracking, holes, concrete removed during construction, other damage.

All interior concrete floors acceptable? ☒ YES ☐ NO

Two cracks in the boiler room floor were not open to expose the subgrade. Small cracks or separations between floor tiles did not appear to go through the concrete floor. A crack at the wall separating the kitchen from the cafeteria did not appear to go through the floor.

If no, attach photograph ☐

If no, describe unacceptable condition:

Location

Condition

Describe any repairs to interior concrete floors conducted since previous inspection

All repairs adequate ☐ YES ☐ NO Photograph of repair attached ☐

C. LANDSCAPING – observe landscaping for erosion animal holes, excavation, erosion control vegetation health.

All landscaped areas acceptable? ☐ YES ☒ NO

If no, attach photograph ☒

If no, describe unacceptable condition:

Location: The south end of the school property outside of the fence and the steep slope just above the wetland and to the west of the southern parking lot and school.

Condition:

1. The ground surface outside the fence at the south end of the school property is not vegetated, and as a result, 12 erosion rills have developed in the steep slope. The maximum depth of the erosion rills ranged between four and six inches.
2. In a separate area, a slope failure had developed in the steep slope between the wetland to the west and the southern parking lot to the east. A targeted inspection of the slope failure was conducted by TRC on April 10, 2007 after it was discovered on April 5, 2007. The slope failure measured approximately seven feet wide by eight feet tall and was located at the bottom of the steep slope. Only the top six-inch topsoil layer slumped exposing the clean granular fill soil layer below. A small three to four inch piece of the orange snow fence warning barrier was exposed. Contaminated soil was not exposed by the slope failure. Based on TRC's recommendations, a temporary repair was made the week ending April 13, 2007 which included two rows of hay bales and silt fence, and the placement of a geotextile filter fabric directly over the exposed soils. The hay bales, silt fence and geotextile filter fabric were all in good condition at the time of the inspection and no further slumping was observed. A permanent repair is required and is in the process of being designed.
3. Riprap stabilization rock placed around the outlet of one of the storm water drainage culverts is falling down the slope and filling the end of the culvert. The outlet in question is the fourth outlet south of the above ground oil storage tank. The falling riprap has undermined the concrete fence support at the top of the slope and the deposited rock is impeding the flow of water from the culvert. The structural integrity of the fence may be compromised if the sloughing of the riprap continues. The cap soils beneath the riprap may also become exposed and susceptible to erosion.
4. A small area of soft wet soil (approximately two feet in diameter) was observed in the grassy slope at the northeast corner of the property. A landscaping contractor was testing the sprinkler system in that area and the wet spot may have been related to the sprinkler system test. While the integrity of the cap has not been compromised at this time, this area should be monitored in the future to ensure that the wet area does not result in damage that could expose underlying cap layers.

Describe any repairs to landscaping since previous inspection: This is the first cap inspection to be completed as required by the December 2006 Long-term Monitoring Plan.

All repairs adequate ☒ YES ☐ NO Photograph of repair attached ☒

D. Areas Not Inspected:

All areas outside the building were inspected, including the courtyard within the building footprint. All rooms and hallways inside the first floor of the building were inspected. Small areas of the floor were obscured by shelves and large equipment and were not visible for inspection.

Reason:

Additional Notes:

Attachment 3

Site Inspection Photographs



SITE PHOTOGRAPHS
April 2007 Cap Inspection
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1) Boiler in Boiler Room.



2) Boiler Room.

SITE PHOTOGRAPHS
April 2007 Cap Inspection
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3) Pipe penetrations in Boiler Room.



4) Other pipe penetrations in Boiler Room.

SITE PHOTOGRAPHS
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5) Crack in floor of Boiler Room.



6) Separation between tiles in Room 067.

SITE PHOTOGRAPHS
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7) Crack at wall between Cafeteria and Kitchen.



8) Courtyard looking North.

SITE PHOTOGRAPHS
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9) South entrance to School.



10) South parking lot looking South.

SITE PHOTOGRAPHS
April 2007 Cap Inspection
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11) Bike rack looking West.



12) West side of School looking South.

SITE PHOTOGRAPHS
April 2007 Cap Inspection
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13) North parking lot looking West.



14) Community Room courtyard.

SITE PHOTOGRAPHS
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15) Wet area near Northeast corner of property.



16) Erosion at Southeast corner of property.

SITE PHOTOGRAPHS
April 2007 Cap Inspection
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17) Additional erosion at Southeast corner.



18) Erosion on slope, Southern property line.

SITE PHOTOGRAPHS
April 2007 Cap Inspection
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19) Erosion at Southwest corner of property.



20) Unstabilized ground surface, Southern property line.

SITE PHOTOGRAPHS
April 2007 Cap Inspection
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21) Poor growth of vegetation at top of slope above slope failure.



22) Temporary slope failure repair.

SITE PHOTOGRAPHS
April 2007 Cap Inspection
Keith Middle School
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- 23) Sloughing rip rap at culvert outlet. Note undermining of fence support and filled in culvert.**

SITE PHOTOGRAPHS
April 2007 Cap Inspection
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New Bedford, Massachusetts



24) View of Kitchen.



25) View of Dishwashing area.

Attachment 4

Slope Failure Photograph





TRC -E-2004