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December 2, 2008

Mr. David Fredette, PE
City of New Bedford
Department of Environmental Stewardship
133 William Street
New Bedford, Massachusetts 02740

Subject: November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts

Dear Mr. Fredette:

At the request of the City of New Bedford (City), TRC performed the fourth inspection of the protective cap installed at the Keith Middle School Site located at 225 Hathaway Boulevard in New Bedford, Massachusetts. A TRC representative conducted the inspection on November 14, 2008 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. 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. The courtyard within the building and pavement and concrete surfaces outside the building were also acceptable.

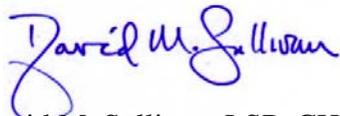
The landscaped areas outside the building were acceptable with the exception of the following:

- Sparse vegetation located on the steep slope at the southeastern corner, southern slope and southwestern corner of the Site property. The amount of vegetation remained stable since the previous inspection, however, relatively minor erosion rills are still visible in the southeastern corner, leaving this area at risk for further erosion during significant weather events (i.e., rain, wind). In addition, larger vegetation has rooted in the southwest corner of the cap. With the reduced leaf cover in the fall this area is at greater risk to erosion. It should also be noted that a perimeter security fence was installed around the Bethel A.M.E. property (immediately south of the KMS property) that tied into the existing KMS perimeter fence. There is no gate access to this new fence and therefore the southern end of KMS cap cannot be accessed and completely inspected. However, sparse vegetation is visible along portions of the top of the southern cap slope from the KMS property.
- A shallow slope failure located on the steep slope between the wetland to the west and the southern parking lot to the east has been repaired. A photograph of the slope failure prior to the temporary repair is presented in Attachment 4. A permanent repair has been implemented and should not require additional work pending the reestablishment of vegetation around the repaired area.
- The sloughing riprap 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. Design and planning of a permanent solution is currently underway.
- The cap slope (outside the perimeter fence) is becoming overgrown causing an increased potential for deep rooting vegetation and/or burrowing animals to become established. However, neither is presently an issue.

At this time the erosion rills along the southern portion of the cap and erosion riprap near the storm water drainage culvert are minor (six inches deep or less) and the orange snow fence warning layer has not been exposed. A minimum of 2.5 feet of clean imported fill remains over all areas of the black separation fabric that demarcates the underlying contaminated fill material below. 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.

If you have any questions, please contact me at 978-656-3565.

Sincerely,



David M. Sullivan, LSP, CHMM
Senior Project Manager

Attachments

Attachment 1

Log Book

"Outdoor writing products for outdoor writing people."

Keith Middle School
Cap Inspection



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11/14/08

Ravin, 403

0655 TRC onsite (J. Sanders) for

KMS Cap Inspection (part
of LTMMP). Will startwalk-through of classrooms w/
G. Grimes (KMS Plant Engineer)

When he is onsite.

0900 To start interior inspection w/o

G. Grimes

0705 G. Grimes onsite. JS to hang
onto key for today to access
rooms as needed.

- Boiler Rm (051) - primarily obs. small crack ^(SS) (051)

- Gym (024 - wood floor), keys locker rm.

- Girls locker rm (030) & storage rms = ok

- Faculty Lounge (014), copy room (017)

- and Electrical Rm (014.1) = ok

- Storage Rm (048) = ok

- Custodial Utility (049) = ✓

- Hallway along gym = small cracks at

Wall base, some as seen previously

w/ no obvious chise (see photo)

- Language Lab (142) = ok

- PT/OT (141) = settling crack in

Wall (photo) but floor is ok

- Storage Rm (141.1) = ok

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(Cont):

- Classroom (139) = ok
- Class room (131) = ok
- Class room (130) = ok
- Class room (128) = ok
- Class room (129) = ok
- Class room (127) = ok (Science)
- Preparation Room (126) = ok
- Class room (125) = ok (Science)
- Storage (123) = ok
- Small Group (121) = ok
- Class room (119) = ok
- Class room (120) = ok
- Class room (118) = ok
- Class room (117) = ok
- Office (113) = Carpet (NA)
- Health Suite (181) = ok
- Main Office (102) = ok (mainly carpet)
- Elevator Machine Room (179) = ok
- Class room (174) = ok
- Class room (175) = ok
- Class room (172) = ok
- Class room (173) = ok
- Small Group (167) = ok
- Storage (165) = ok

(Cont):

- Class room (169) = ok (Science room and prep. room)
- Class room (171) = ok
- Class room (162) = ok
- Class room (164) = ok
- Class room (177/163) = ok
- Class room (161) = ok
- Custodial Closet (157) = ok
- Class room (153) = ok (Art)
- Class room (150) = ok (Technology)
- Class room (148) = ok (Carpet or Cos.)
- Custodial Closet (145) = ok
- Small Group (071) = ok
- Custodial Closet (070) = ok
- Music (077) = ok
- Stage-Craft (067) = small tile separation as seen previously (no doors chaises). Dressing rooms (068 & 069) = ok
- Band (022) = ok
- Stage (007) = Wood/Raised (NA)
- Auditorium (006) = ok (mainly has carpet)
- Kitchen (060) = ok
- Chair Storage (074) = ok

11/10/05

(Cont):

- o Cafeteria (073) = minor cracks (settling) along wall base & minor tile separation in SW corner (both all previously observed w/ no obvious changes) (see photos)
 - o Storage (067) = ok
 - o All Bathrooms = ok (throughout 1st floor)
 - o Stair walls = #4 & 2 have minor tile separations near exterior doors (previously observed / minor issue) (see photos). Others = ok / rubber floor
 - o Hallways = minor separations all wall base at various locations. Redo floor to settling & is a surficial issue (see photos). Some cracks in wall in middle of bldg due to settling (see photos). All previously observed & surficial. Cracks in tile in Auditorium hall is primarily observed & surficial (see photos).
 - o Courtyard = ok
- 1055 Finished w/ interior walk-through.
(Moved b/t cap inspection and

11/14/05

dilling at Keith Junior High property to help E. Wadital (Tree) so time has been split thus far. Will continue w/ exterior areas (inside fence) next.

- o Access road west of KMS & loading dock are in good shape. Grass means look good, few spots of v. minor stress. (photos)
- o Parking / Flagpole south of school in good condition. Very minor spots of stressed grass (photos)
- o Still no gate access to southern cap slope. Vegetation is somewhat sparse, but in place. Minor erosion v. US at SE corner (see photos). No obvious erosion along SE length of slope (parallel to Hathaway Blvd)
- o East side of school looks good, minor crack at foot of northern - west stairs (previously identified) - Asphalt concrete & vegetation in good shape. (photos)

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- Northern parking area is in good condition (asphalt, concrete and vegetation) (photos)
- Faculty courtyard = ok (photos)
- Perimeter fence is all in good condition.

1155 Finished w/ area inside fence. JS to enable areas of top slope that are accessible via Summit Street.

- Slope = south of Summit St. land bridge to SW toe of cap in good condition. Covered in long grass w/ no obvious signs of rodent holes. Slope failure has been fixed (see photos) w/ mesh/bay, rip-rap stone & hay bails.

Some relatively minor erosion rills in SW corner. Cart got a good look due to fence & no gate. Grass is stressed due to overhang of larger bush/shrubs in this area (see photo).

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(cont):

- North of land bridge/along western slope:

- First outfall north of land bridge is eroding up towards street, but not yet undercutting. Outfall mouth is open.

- Next outfall (north) is still denuded. Undercutting road and collapsing. Will need repair (see photos).

- Next outfall (north) in good condition, but large shrub growing nearby which may need to be cut. Same w/ fifth outfall moving north (fourth is in good condition). Slope along this stretch of outfalls is also in good condition. Some stressed grass near tanks (AST) w/ exposed surficial wash, but no obvious erosion (photo). Slope is generally covered in tall grass w/ no obvious rodent holes.

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(cont):

• Slope north of KMS is in good condition w/ tall grass/ small shrubs and no obvious erosion. A ~~Ⓟ~~ or rodent holes. (see photos).

1210 JS finished w/ KMS (op

Inspection. Will go to Keith

Junior High (Lorimer) to check

on progress of E. Wechtel (TREE)

1400 JS office

~~APJ~~
 11/14/65

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: November 14, 2008 Inspection by: Jeff Saunders

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

The two cracks in the boiler room floor are still less than ¼-inch wide. The majority of interior concrete floors are covered with tiles or other type of flooring material. Based on visual inspection and conversations with current employees, there are no breaches or other significant damage or deterioration of the interior surficial flooring materials or, where visible, concrete floors. Minor cracking along base of hallway walls and tile separations (e.g., cafeteria, Room 067 (Stagecraft), Stairwell #2 and Stairwell #4) appear to be surficial and related to the settling of the building. No construction was occurring within the building at the time of the inspection and no access limitations were encountered.

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 southern end of the school property (including the southeastern and southwestern corners of the cap slope), the steep slope just above the wetland and to the west of the southern parking lot and school.

Condition:

1. The ground surface at the southeastern and southwestern corners of the school property, as well as along the southern cap slope, though starting to establish vegetation is sparsely vegetated. Some larger vegetation has begun to establish in the southwestern corner of the cap as well. See Photograph #7 and #8.
2. The slope failure in the steep slope between the wetland to the west and the southern parking lot to the east has been repaired. New hay bales, silt fence, geotextile filter fabric and rip-rap stone have been installed and were all in good condition at the time of the inspection. No slumping was observed. This should act as a permanent repair pending the establishment of vegetation surrounding the riprap stone. See Photograph #9 and #10.
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. A permanent repair is required and is in the process of being designed. See Photographs #11 and #12.
4. The cap slope (outside the perimeter fence) is becoming somewhat overgrown with vegetation. This is not currently causing any issues with the cap integrity, however, the potential for deep rooting vegetation and/or burrowing animals to become established is increased. See Photograph #13.

Describe any repairs to landscaping since previous inspection:

This is the fourth cap inspection to be completed as required by the December 2006 Long-term Monitoring Plan. Repairs to the slope failure (i.e., Condition #2) have been completed, however repairs to the falling riprap (i.e., Condition #3) reported during the Spring 2007, Spring 2008 and Fall 2008 Cap Inspections, were not made at the time of this inspection.

All repairs adequate YES NO Photograph of repair attached

Those repairs which have been completed (i.e., Condition #2) are adequate. Additional repairs (i.e., Condition #3) are still pending design and approval.

D. Areas Not Inspected:

Access was not restricted in any way to the interior of the building, surrounding parking and grassed areas and the majority of the cap slope. The one area in which access was restricted was the southern toe, including southeast and southwest corners, of the cap slope.

Reason:

A recently installed fence surrounding the adjacent Bethel A.M.E. property has no gate access. Because the new fence ties into the existing KMS perimeter fence this area cannot be readily accessed and therefore not inspected properly. Gate access to this new fence will be installed at a yet to be determined later date.

Additional Notes:

Although this area cannot be accessed, most of this portion of the cap slope is visible from the KMS property and, therefore, a relatively good determination of the cap condition can be made. Any large-scale erosion or failure would be visible under the current conditions.

Attachment 3
Site Inspection Photographs

SITE PHOTOGRAPHS
November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts



1) Example of pipe penetrations in boiler room.



2) Minor crack in boiler room (051) floor.

SITE PHOTOGRAPHS
November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts



3) Courtyard looking north.



4) Community Room/Faculty Lounge (014) courtyard facing east.

SITE PHOTOGRAPHS
November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts



5) West side of school looking south.



6) Southern parking lot looking northwest.

SITE PHOTOGRAPHS
November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts



7) Southern slope looking west with minor erosion in southeast corner.



8) Minor erosion in southwest corner of cap slope facing south.

SITE PHOTOGRAPHS
November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts



9) Condition of slope repair in southwest portion of cap facing southeast.



10) Condition of slope repair along western fence facing north.

SITE PHOTOGRAPHS
November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts



11) Undercutting of fenceline at culvert outlet facing southeast.



12) Sloughing of riprap at culvert outfall facing southeast.

SITE PHOTOGRAPHS
November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts



13) Example of larger vegetation growth near culvert outfall facing north.



14) Condition of vegetation in northeast portion of cap facing north.

SITE PHOTOGRAPHS
November 2008 Cap Inspection
Keith Middle School
New Bedford, Massachusetts



15) Vegetation near northeast corner of cap slope facing west.



16) Vegetation on northern portion of cap slope facing north.

Attachment 4
Slope Failure Photograph

