



January 6, 2026

Mr. David Gill, Director
Concord Parks & Recreation
14 Canterbury Road
Concord, NH 03301

Sent via email: dgill@concordnh.gov

SUBJECT: Memorial Field Bleacher Assessment
Concord, New Hampshire

Dear Mr. Gill:

The Turner Group is pleased to provide the following letter report regarding the existing bleachers at Memorial Field and Doane Diamond Field, both located on South Fruit Street in Concord, New Hampshire. The scope of our work was to perform a visual assessment of the conditions of the existing bleachers at both fields.

This assessment was conducted with reference to the International Building Code (IBC), 2021 Edition, and the National Fire Protection Association (NFPA) 102, "Standard for Grandstands, Folding and Telescoping Seating, Tents, and Membrane Structures", 2016 Edition.

The Turner Group has completed similar bleacher assessments for the City in 2012 and 2019.

I. OVERVIEW

A. Football Field Main Bleachers

The main bleachers at the football field are located on the south side of the field. The bleachers consist of a steel-framed structure with wooden seating and wooden footboards. A press box is located at the upper level of the bleachers. Based on available information and observed conditions, the bleachers were likely constructed in the late 1960s or early 1970s.

Using an assumed seat width of 18 inches, the overall seating capacity of the main bleachers is approximately 1,700 spectators.

B. Doanne Diamond Bleachers

The Doanne Diamond bleachers are located at the baseball field and consist of a metal-framed structure with aluminum seats and aluminum footboards. A press box/concession building was constructed adjacent to the bleachers around 1999. The bleachers are comprised of three separate seating sections.



Using an 18-inch seat width, the approximate seating capacities are as follows:

- Section 1: 214 spectators
- Section 2: 1,473 spectators
- Section 3: 214 spectators

C. Football Field Visitor Bleachers

The visitor bleachers are located on the north side of the football field. These bleachers consist of five (5) independent, portable sections supported on sleepers. The combined seating capacity of the visitor bleachers is approximately 535 spectators based on an assumed 18-inch seat width.

II. OBSERVATIONS

A. Football Field Main Bleachers

1. Guardrails are approximately 24 inches above the top of the bench. NFPA 102 Section 5.6.1 requires guardrails to be a minimum of 36 inches above the centerline of the seat board and 42 inches above the floorboard. This condition is typical throughout the bleachers.
2. Wooden floorboards exhibit noticeable deflection in multiple locations.
3. Wooden seating and floorboards are broken or deteriorated in several areas.
4. Several stair treads are loose and deflect when stepped on.
5. Several concrete piers show significant deterioration, with exposed reinforcing steel observed.
6. Steel X-bracing members are bent and deformed in numerous locations throughout the structure.

B. Doane Diamond Bleachers

1. Chain-link fencing is loose at the edges and, in some locations, extends beyond the guardrail.
2. Chain-link fencing is broken in numerous areas, and fencing supports are deteriorated.
3. Structural framing and bracing members are bent or deformed in multiple locations throughout the bleachers.
4. Aluminum floorboards are loose and deflect when walked on; this condition occurs in multiple locations throughout the bleachers.
5. The tops of stair runs do not align with the adjacent deck surfaces due to settlement and heaving of the supporting foundations.
6. The accessible ramp exhibits significant cross-slope, creating accessibility and safety concerns.



C. Football Field Visitor Bleachers

1. Openings greater than 4 inches were observed in guardrails and seating areas across all bleacher sections. NFPA 102 Section 5.6.7 limits openings such that a 4-inch sphere may not pass through. NFPA 102 Section 5.5.6 applies similar requirements to openings between footboards and seats.
2. Guardrails do not extend low enough to meet the requirements of NFPA 102 Section 5.6.1. This condition is typical across all visitor bleacher sections.
3. Floorboard and seating edges are loose, bent, or damaged in multiple locations, with sharp edges exposed.
4. Structural framing and bracing members are bent or damaged in several locations across all sections.
5. Seating and footboards are damaged and/or bent in numerous locations throughout the bleachers.

III. RECOMMENDATIONS

A. Football Field Main Bleachers

As previously recommended in our 2019 assessment, it is our professional opinion that the main field bleachers should be removed and replaced with new, code-compliant bleachers. While the overall condition of the bleachers may be characterized as fair, there are numerous safety concerns and code deficiencies that make continued use and repair impractical.

B. Doanne Diamond Bleachers

It is our opinion that the existing bleacher superstructure could be removed and reinstalled on a new, properly designed foundation system. The existing foundations should be removed and replaced. The observed settlement and heaving of the current foundations have resulted in multiple structural, accessibility, and code-compliance issues.

C. Football Field Visitor Bleachers

Given the age of the visitor bleachers, their overall condition, and the number of observed code deficiencies, it is our recommendation that these bleachers also be removed and replaced with a new, compliant seating system.



As you review this report, please do not hesitate to contact us with any questions that you may have. We would also be happy to meet with you on-site to review the findings and discuss this report in greater detail.

Sincerely,

THE TURNER GROUP

William D. Hickey
President || Principal

Paige A. Wilber, PE
Structural Group Manager || Senior Associate

Attachments: Photos
 Turner Group 2019 Report

Limitations: The Turner Group has prepared this report for the City of Concord, NH, based on visual observations only, and therefore, it did not involve destructive demolition, scientific testing, or any other tests. The information/data gathered in this report has been provided in accordance with accepted engineering/architectural consulting practices, and The Turner Group makes no warranty, either expressed or implied, on the conclusion provided.



Memorial Field Bleachers



Photo 1: Railing is 24" from the top of the bench. NFPA 102 5.6.1 says no less than 36" from the center of the seat board and 42" from the floor board, typically all around.



Photo 2: Wooden floorboards noticeably deflect.



Photo 3: Broken wood bench.



Photo 4: Broken wood footboard.



Photo 5: The stair board is loose and deflects.



Photo 6: Rebar exposed in concrete pier.



Photo 7: Rebar exposed in concrete pier.



Photo 8: X Bracing bent in many places.



Doane Diamond Baseball Bleachers



Photo 9: Chain-link is loose and extending past vertical support.



Photo 10: X Bracing is bent in many places.



Photo 11: X Bracing is bent in many places.



Photo 12: Chain-link is broken and posts are loose in many places.



Photo 13: The metal floorboard is loose and deflecting. Occurs in multiple places.



Photo 14: The metal floorboard is loose and deflecting.



Photo 15: The top of the stairs does not align with the top of the decking.



Photo 16: Ramp skews significantly to the right.



Visitor Bleachers



Photo 17: Opening larger than 4". NFPA 102 5.6.7 says no more than a 4" sphere can pass through the opening. NFPA 102 5.5.6 applies to the opening between the footboard and seats as well.



Photo 18: Railing does not extend low enough per NFPA 102 5.6.1.



Photo 19: NFPA 102 5.5.7 Openings greater than 4".



Photo 20: The edge of the floorboards and seating is loose or bent in many places.



Photo 21: Bent X Bracing, typical in many places.



Photo 22: Bent bracing. Typical in many places.



Photo 23: Bent bracing and seating.



Photo 24: Bent seating, typical in many places.

LETTER REPORT

DOANE DIAMOND & MEMORIAL FIELD **BLEACHER REPORT**

SOUTH FRUIT STREET
CONCORD, NEW HAMPSHIRE



FOR:



THE CITY OF CONCORD

41 GREEN STREET
CONCORD, NH 03301

FEBRUARY 11, 2019

TTG 4759

The H.L. Turner Group Inc.

TABLE OF CONTENTS

Cover

Letter Report

Appendix A

2012 Doane & Memorial Field Report

Appendix B

2018 Test Pit Locations

Appendix C

2018 Photographs

Appendix D

2018 Geotechnical Engineering Report

Appendix E

1999 Doane Diamond Drawings

Appendix F

Existing Memorial Field Drawing

Appendix G

IBC Section 1104.3.2 - Press Boxes

Appendix H

RPF Lead Paint Testing Report

The H.L. Turner Group Inc.

27 Locke Road Concord, NH 03301 t: 603.228.1122 hlturner.com

February 11, 2019

Mr. Jay Burgess, Facilities Superintendent
City of Concord
125 Hall Street
Concord, NH 03301

SUBJECT: Letter Report
Doane Diamond & Memorial Field Bleachers
South Fruit Street
Concord, New Hampshire

Dear Mr. Burgess:

As a follow-up to your request, The H.L. Turner Group Inc. (Turner Group) is pleased to provide the following letter report on the bleachers at the Doane Diamond Field and at the Memorial Field both located on South Fruit Street in Concord, New Hampshire. Our base scope of work was to A.) Provide an assessment of the settling and/or heaving of the foundations at Doane Diamond and B.) Provide a recommendation for replacement of the existing bleachers at Memorial Field. As part of our scope, we are to provide an engineer's opinion of cost along with our observations, test pit results, recommendations, etc., all of which are included in the body of this letter report and summarized below.

I. EXECUTIVE SUMMARY

A. Doane Diamond Bleachers

1. Foundations behind Home Plate: Most concrete foundations are less than 4 feet in depth with high groundwater and clay/silt soils, creating a scenario for heaving and movement of bleachers which has occurred.
2. Foundations behind 1st and 3rd base: Helical/soil anchor foundations, depth was to frost, no heaving, or movement observed in bleachers – appear stable.
3. Dismantle bleacher system behind Home Plate, remove all existing concrete foundations, replace with new foundations, and reinstall the bleacher system.
4. Bleachers behind 1st and 3rd base, no work recommended at this time.
5. Dewatering in clay/silt soils will be an issue during construction.
6. Engineer's Opinions of Construction Cost **\$ 317,250**. Add **\$ 71,500**. for fencing.

B. Memorial Field Main Bleachers

1. Existing seating capacity is approximately 1,700 persons.
2. Depths of existing footings appear adequate to resist heaving and movement.
3. Existing soils can support new bleachers if foundations are designed properly and at or below 4' frost depth.
4. Handicap access (i.e. accessible route) to the press box is not required per IBC 2009, Section 1104.3.2 as long as the press box is 500 square feet (SF) or less, a minimum of 12 feet above the ground, and has point(s) of entry only at 1 level. The existing press box is approximately 500 SF and meets the other criteria.
5. Dewatering in clay/silt soils will be an issue during construction.
6. Lead paint was found on many of the structural steel framing support members.
7. Engineer's Opinion of Construction Cost to demolish existing and replace with new 2,000 person Main and Visitors Bleachers **\$ 1,280,500.**

C. Memorial Field Visitors Bleachers

1. Existing seating capacity of the Visitor's Bleachers is approximately 535 persons total.
2. There are five (5) independent sections that make up the Visitors Bleachers.
3. The bleachers are on sleepers and appear to be portable – ie. No foundations.
4. There was no lead detected on any component.
5. Engineer's Opinion of Construction Cost to demolish existing is **\$ 45,500.**
(Note: New/replacement of the Visitors Bleachers is recommended to be combined with Main Bleachers. See Section IV., C. of this report.)

Therefore the **TOTAL** Opinion of Cost for the Main AND Visitors Bleachers is **\$1,326,000.**

II. BACKGROUND

In 2012, the Turner Group submitted a letter report to the City of Concord on an assessment of Doane Diamond and the main bleachers at Memorial Field. The report dated March 27, 2012 is included in Appendix A. At that time the assessment report focused primarily on:

1. The physical condition of the concession building at Doane Diamond.
2. The site and drainage issues near the concessions building at Doane Diamond.
3. The physical condition of the main bleachers at Memorial Field.

Since the 2012 report was submitted, the Doane Diamond concessions building has been renovated, and a new underground site drainage system was installed (primarily north) of the Doane Diamond concessions building. Some improvements were also made to the wooden bleachers at Memorial Field, specifically the replacement of the wood seating planks by the City.

III. OBSERVATIONS

A. Doane Diamond Bleachers

On August 29, 2018 three test pits were excavated at or near the Doane Diamond bleachers. The location of the test pits are shown on the attached aerial photo and “Exploration Location Plan” located in Appendix B. The test pits were performed by a small excavator and by hand shovel. Engineering witnesses included Chad Michaud, Senior Geotechnical Engineer from S.W. Cole Engineering and William Hickey, Senior Structural Engineer from The H.L. Turner Group Inc.

Test pits 1, 2 and 3 were performed adjacent to three of the existing concrete foundations located under the bleachers. The locations were selected in areas where most of the foundation settling, heaving and distortion were noticed. Test pits 1, 2 and 3 were found to be at depths of 1'-8", 1'-9" and 3'-3" respectively below grade.

Most of the foundations behind Home Plate were constructed out of what appeared to be precast concrete manhole segments filled with cast-in-place concrete. See Photo #1 in Appendix C. These concrete filled 5'± diameter manholes were obviously too shallow to resist the differential movements and heaving due to frost action which can approach 4' in depth in the Concord, New Hampshire area.

The underlying soils in these test pits behind Home Plate were found to be loose silts and clays which are highly susceptible to frost. The backfill material around the perimeter of these foundations is also silts and clays. Groundwater was at or near the surface of the ground. All of these factors will cause the foundations to heave and list seasonally through various frost cycles over multiple years. This is also confirmed in Section 4.1 of the geotechnical report located in Appendix D. Of note is that the foundations with most of the settling, heaving, and displacement issues are those behind Home Plate. Another observation made at the site is that some of the sidewalks and many of the chain link fence foundations (Appendix C, Photos #2 & #3) have also heaved, some significantly.

Included in Appendix E are the 1999 Doane Diamond bleacher drawings from “E&D Specialty Stands, Inc. from North Collins, New York”. Drawings “3731-13-14 and -15 show the foundation plan, and pier details for the portion behind Home Plate. The foundations are clearly shown on the drawings to be from 4'-0" minimum to 5'-6" below finished grade. As stated previously the three (3) foundations at Test Pits 1, 2 and 3 were found to be 1'-8", 1'-9" and 3'-3" respectively below grade. The foundations that were installed behind Home Plate were nowhere near the required depths. These were therefore susceptible to the heaving, movement, and distortion issues that were observed at the site. Photo #4 in Appendix C shows one of the worse locations where the foundation issues has

caused a significant deflection at the bleacher walkway. In Photo #5 a large dimension between the sidewalk and the steps to the bleachers can be seen.

Based on our observations, nearly all of the foundations behind Home Plate have suffered some degree of settling, movement, listing, heaving or distortion. Of note is that the bleachers behind first and third base have a different foundation system. The original construction Drawing “3731-11” of Appendix E clearly shows helical anchor type foundations (i.e. soil anchors) supporting the bleachers behind first and third base. The helical anchor foundations were likely installed as there are essentially no issues with the bleachers behind the first and third base lines heaving or moving. Helical anchors require a specialty contractor to install, in this case to support the 1,500 lb design load identified on the drawings and are all likely 4' deep or more below the existing grade as no discernable movement was detected.

One can only surmise that the concrete filled, precast, round “manhole” type foundations behind Home Plate could have been installed shallow so as not to deal with groundwater control during construction or other possibly reason(s). With helical anchors, groundwater is not an issue as they are rotated into place with drill rigs until the soil resistance in the ground provides the 1,500 pound rating identified on drawing “3731-11” (Appendix E).

B. Memorial Field Main Bleachers

Test pits TP 4 and 5 were also performed on August 29, 2018 in the locations shown in the aerial photo and “Exploration Location Plan” located in Appendix B. In those test pits approximately 2 feet of loose native soils were encountered on top of stiff, native silts and clays with fine sand lenses along with high groundwater. The bottom of the existing concrete foundations were at least 4' below grade and there was no obvious distortion, heaving or settling of the foundations, nor in the plane of the bleachers seats indicating a stable foundation system. The native soils encountered approximately 2' below the finish grade were sufficiently dense such that the geotechnical engineering report recommended that the native soils could support new bleachers. See Appendix D for additional information in the geotechnical engineering report.

In Appendix F, we have inserted an existing conditions drawing of the Memorial Field bleachers that was developed for the 2012 report. From those existing conditions and dimensions and applying an 18" wide “seat” for a typical event attendee, we estimate a seating capacity of approximately 1,700 persons. As discussed and for information and budget purposes, a 2,000 person bleacher system was utilized for the Opinion of Cost in this report.

The configuration of the bleachers, condition of the wood seating, and the poor condition of the press box at the top of the main bleachers are at or near their useful life. It is estimated that the original construction of the Memorial Field bleacher

system occurred in the late 1960's/early 1970's, and therefore is nearly 50 years old. Though a handicap accessible ramp was installed approximately 15-20 years ago, the bleacher system's low level walkway is barely wide enough for a wheelchair attendee to watch an event, and does not allow anyone to pass by during the event. This is of course cumbersome for the wheelchair occupant and the passersby, as the wheelchair needs to rotate 90° to allow someone to pass by. This condition also blocks the exit egress path to the bottom of the bleachers.

As part of developing this report we watched a video presented by Samuel Habib when he made a presentation to the City Council's Finance Committee on June 7, 2018 clearly explaining and depicting the issues at the bleacher's low/first level walkway. (See [Samuel Habib Council Presentation.mp4](#)) Also see Photo 6 in Appendix C for a visual depiction of how a wheelchair or motorized vehicle bound occupant and passersby are hampered by the existing Memorial Field Bleachers. Contemporary bleachers now provide for sufficient depth at the low/first level walkway for wheelchairs/motorized personal vehicles to be able to face the event, provide adjacent seating for family member(s)/caretaker, and still allow the public to walk by the wheelchair/motorized vehicle bound person without having them rotate or otherwise move out of the way (see Appendix C Photo 7).

With respect to handicap accessibility to a press box, Section 1104.3.2 of the 2009 International Building Code (IBC) does not require handicap access (i.e. accessible route) as long as the press box is 500 square feet in size or less, a minimum of 12 feet above the ground, and has the point(s) of entry only at one level. This is why most contemporary bleacher systems, in particular at the high school level in New Hampshire, do not have elevators or lifts to the press box level. See Appendix G for the IBC Section 1104.3.2 as well as the IBC Commentary on that section of the building code. Note that a brief review of the "Principles of Universal Design – United States Access Board" was performed and it is our opinion that contemporary bleacher designs and the IBC adequately address the spirit of the Universal Design principles.

Testing for the existence of lead paint was performed by RPF Associates on January 9, 2019. (See Appendix H for report). The testing was performed to confirm if demolition of the Main Bleachers would need to deal with lead paint as part of the demolition construction process and for waste disposal screening purposes only. The testing revealed that lead paint was present above the required thresholds at various locations on the surface of the structural framing members supporting the Main Bleachers. See "Recommendations" Section IV., B. bottom of page 8, for the requirements on demolition of the Main Bleachers with respect to lead paint.

Testing of the soil immediately under the Main Bleachers where lead paint was detected on the overhead steel did not reveal levels of concern in the soil.

C. Memorial Field Visitors Bleachers

The supports for the Visitors Bleachers consist of closely spaced, hot dipped galvanized steel angle posts resting on continuous sleepers at grade. All of the structural support members of the bleachers are constructed with bolted, hot dipped, galvanized steel angles. The continuous seat and footboard members are made of baked enamel/painted rectangular box steel shapes. (Appendix C, Photos 8 and 9)

The continuous sleepers have sunk in the ground about 3 inches, however the bleachers are reasonably level. There are five (5) individual, independent sections of bleachers. Each bleacher section is 16' wide x 19' deep with each segment having ten (10) rows of seating. Utilizing an 18" tributary width per person, the available seating is approximately 107 persons per section or approximately 535 persons total. The Visitors Bleachers are not handicap accessible and appear to be at least 1970's vintage.

There was no lead detected in any of the seat boards, footboards or steel frame. See RPF Associates Report in Appendix H for additional information.

IV. RECOMMENDATIONS

A. Doane Diamond Bleachers

Based on the comments identified in "Observations", Section III., A. it is our recommendation to catalogue, number and appropriately mark all superstructure components (seating and steel support frame) at the bleacher system behind Home Plate of Doane Diamond. The next recommendation is to remove all of these components and save them for re-installation. Following dismantling, we recommend that all existing precast/cast in place foundation be removed and properly discarded. The existing foundations behind Home Plate should be replaced with properly designed and detailed, cast in place concrete spread footings and piers with proper frost protection depth and supported by adequate soil density. New anchor bolts will be needed to support the existing base plates along with new bolts, nuts and washers for all of the critical structural connections and seating. Any bleacher component that cannot be re-used due to unrepairable distortion should be replaced. The bleacher system behind Home Plate should then be re-installed.

Groundwater control will need to be dealt with during the replacement of the bleachers behind Home Plate. According to Section 4.3 of the geotechnical engineering report, "Site soils (at the Memorial Field Area) undergo strength loss when subjected to construction traffic and excavation activities, particularly during and following periods of precipitation. Care must be exercised during construction to reduce disturbance of the bearing soils. Should the subgrade become yielding or difficult to work, disturbed areas should be excavated and backfilled with compacted Structural Fill or Crushed Stone. We (geotechnical engineer) recommend that excavations be made with a smooth-edge

excavator bucket to reduce the potential for soil disturbance. The contractor will need to anticipate dewatering excavations, particularly during and following periods of precipitation. Excavations must be properly shored and/or sloped in accordance with OSHA trenching regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways as needed. The contractor is responsible for selection, design, and implementation of the excavation and dewatering program.”

The bleachers behind first and third base do not appear to have suffered objectionable movement, distortion or settlement therefore our recommendation is to restore the walkway connection between the Home Plate and the 1st and 3rd base bleachers. Other than restoring the walkway connection at these locations, no work is recommended to be performed at the 1st and 3rd base bleachers at this time. As stated previously, the foundations behind the 1st and 3rd base were installed on helical pile foundations, likely driven to below the water table to support the design load of 1,500 lbs per pile and therefore did not suffer the same fate as those behind Home Plate.

It is recommended that the chain link fencing system be entirely removed from the perimeter of all of the bleachers at the Doane Diamond Field. The chain link “fabric” can be salvaged and used for re-installation if the City sees the need to reinstall the fence at this time. All of the support posts from the chain link fencing system and their foundations need to be removed and properly discarded. If the fencing system needs to be replaced, the concrete foundations should be smooth around the exterior perimeter so that the frost cannot heave the concrete by attaching itself to an irregular surface. Round “Sonotube” type foundation forms are recommended as long as the foundations are advanced to below the frost line a minimum of 4’ below finish grade. Since the existing soils are silts and clays, the individual foundations for the fence posts should be able to be advanced with power auger(s) and of the augered holes should remain vertical and not collapse once the auger is extracted. Dewatering should not be necessary to install new concrete foundations for the chain link fencing support posts as long as the concrete is placed inside Sonotubes in one continuous lift.

B. Memorial Field Main Bleachers

Based on the observations identified in “Observations”, Section III., B. it is our recommendation to replace the Memorial Field Bleacher system with new, contemporary, aluminum bleachers that meet current handicap accessibility codes and regulations as well as provide safe egress. This type of structure is shown in Appendix C, Photo No. 7. The final size is yet to be determined, however our opinion of cost is for a 2,000 person bleacher system. Due to the poor condition of the press box it is also recommended that the existing press box be replaced with a press box that meets Section 1104.3.2 of the 2009 IBC. This section of the code does not require handicap access (i.e. accessible route) as long as the press box is 500 square feet in size or less, a minimum of 12 feet above the ground, and has the point(s) of entry only at one level. See Appendix G for IBC section and commentary. Note that a brief review of the

“Principles of Universal Design – United States Access Board” was performed and it is our opinion that contemporary bleacher designs and the IBC adequately address the spirit of the Universal Design principles.

A separate opinion of construction cost has been provided in Section V., A., page 11 of this report in case the City wishes to entertain elevator access to the press box. Please note that the press box floor will be approximately 20 feet above the existing grade and need at a minimum, an enclosure for the elevator shaft and cab, an elevator machine room for the hydraulic power unit and controls, an entrance lobby or covered entry as well as a significant amount of electrical power to operate the elevator systems.

Section 4.2 of the geotechnical engineering report located in Appendix D states that “The site soils at the football bleachers are suitable for support of the structure,” (i.e. new bleachers), “however have similar frost heaving characteristics as the soils causing problems for the baseball bleachers. We recommend new foundations consist of cast-in-place concrete spread footings and piers or pre-cast concrete “bigfoot” type (Trapezoidal shaped precast concrete) foundations sized for a net allowable soil bearing capacity of 4.0 ksf placed at least 4 feet below finish grade.”

As mentioned in previous sections of this report, groundwater control will need to be dealt with during the construction of the bleachers. Silts and clays subjected to high groundwater “...can undergo strength loss when subjected to construction traffic and excavation activities, particularly during and following periods of precipitation. Care must be exercised during construction to reduce disturbance of the bearing soils. Should the subgrade become yielding or difficult to work, disturbed areas should be excavated and backfilled with compacted Structural Fill or Crushed Stone.” See Section 4.3 of the geotechnical engineering report for this statement as well as other issues dealing with construction in the in situ soils and groundwater located in the Memorial Field area.

Our scope as part of this letter report is to determine the feasibility of installing new bleachers in the general location of the existing bleachers at Memorial Field. It therefore does not include attempts to re-use the existing bleachers as the 50 year old bleacher system does not meet current handicap requirements and codes, the wood seating is at or near its safe allowable support load (Appendix A), the support steel frame is rusting badly in various locations, the steel rod diagonal bracing is damaged or bent in many locations, the space between the seat and the foot board exceeds the 4” “sphere” required by the IBC. Attempting to upgrade a 50 year old bleacher system would not be recommended due to financial, code and logistical reasons.

On the existence of lead paint that was found on the surface of some of the steel members supporting the Main Bleachers (See Appendix H), proper awareness of the existence of lead paint and the proper methods of disposal of the steel will need to part of the construction demolition documents. Though not a significant issue for the demolition or disposal of the Main Bleachers, the fact that lead paint exists will require the involvement of an Environmental, Health & Safety (EH&S) Consultant to

participate in the development of the construction documents specific to lead paint along with the City's Engineering Consultant for the overall demolition documents. Field testing, review of the demolition contractor's lead paint/demolition work plan and air clearances will also be required by the EH&S Consultant during the construction demolition phase.

C. Memorial Field Visitors Bleachers

Based on the observations identified in Section III.C., it is our recommendation that the Memorial Field Visitors Bleacher system should be part of the new Main Bleacher System. As such, it should be included as part of the new, contemporary, aluminum bleachers that are being recommended in Section IV., B. of this report. Since the current Main Bleacher system has a capacity of approximately 1,700 persons and the current Visitors Bleachers has a capacity of approximately 535 persons, the 2,000 person bleacher system recommended in Section IV., B. should provide a more economical solution to the old and outdated bleacher sets at Memorial field. Due to the cost of contemporary bleachers, many venues now combine the home and visitors bleachers into the same system. Since the existing Visitors Bleachers are not handicap accessible and due to their age, combining the Visitors Bleachers with the Home Bleachers as part of a new fully accessible system in our opinion is an appropriate solution to both bleacher systems.

A final note for the new combined, 2,000 person, Main Bleachers and Visitors Bleachers – Large portable and handicap accessible bleacher systems are available in the marketplace. Due to the soft soils on the surface at the location of the existing Main Bleachers as well as the high groundwater with the susceptibility for freezing and heaving, those types of systems would likely require special supporting slabs, likely groundwater controls to prevent heaving and also require soil mitigation to prevent future listing, and differential settlement. This type of large bleacher system is not recommended as a portable system for a 2,000 seat system with an upper level press box for Memorial Field due to significant costs to support the "on slab" system and the potential for issues similar to that which was experienced at Doane Diamond. Therefore, we recommend a more traditional foundation system that is supported by concrete spread footings a minimum of 4' below grade with concrete piers above.

IV. OPINION OF CONSTRUCTION COST

A. Doane Diamond Bleachers

(Behind Home Plate only. See Section IV., A. of this report)

- | | |
|---|------------|
| 1. Catalogue, mark, dismantle bleacher seats | \$ 35,000. |
| 2. Catalogue, mark, dismantle steel support frame | \$ 25,000. |
| 3. Remove and properly dispose concrete foundations | \$ 30,000. |
| 4. Excavate & dewater for new foundations | \$ 35,000. |

5. Place new concrete footings and piers	\$ 40,000.
6. New anchor bolts and fasteners	\$ 15,000.
7. Re-assemble bleachers	<u>\$ 55,000.</u>

Sub-Total \$ 235,000.

10% General Conditions	\$ 23,500.
10% Overhead & Profit	\$ 23,500.
15% Contingency	<u>\$ 35,250.</u>
(15% recommended due to greater risk of unknowns)	
Sub-Total	\$ 82,250.

TOTAL Opinion of Construction Cost Home Plate Bleachers \$ 317,250.

(Assumptions: Public bid process, bleachers can be stored on site, concrete can be disposed at Ft. Eddy Road, environmental permits will not be required and hazardous materials, if any, are not in the opinion of cost.)

FENCING:

1. Remove chain link "fabric"	\$ 5,000.
2. Remove and properly dispose posts and concrete	\$ 10,000.
3. Excavate/auger for post foundations	\$ 15,000.
4. Place concrete and insert posts	\$ 15,000.
5. Re-install chain link "fabric", connectors and accessories	<u>\$ 10,000.</u>

Sub-Total \$ 55,000.

10% General Conditions	\$ 5,500.
10% Overhead & Profit	\$ 5,500.
10% Contingency	<u>\$ 5,500.</u>

Sub-Total \$ 16,500.

TOTAL Opinion of Construction Cost Fencing \$ 71,500.

(Assumptions: Public bid process, chain link "fabric" can be stored on site, concrete can be disposed at Ft. Eddy Road, environmental permits will not be required, no dewatering and hazardous materials, if any, are not in the opinion of cost.)

B. Memorial Field Main Bleachers

1. Demolish and properly dispose bleachers & Press Box	\$ 80,000.
2. Demolish and properly dispose steel superstructure	\$ 55,000.
3. Additional costs due to lead paint in steel	\$ 20,000.
4. Demolish and properly dispose foundations	\$ 60,000.
5. Excavate and dewater for new foundations to frost	\$ 60,000.
6. Install new from Gallivan Company Inc. (GCI) Estimate	<u>\$ 710,000.</u>
(GCI budget includes foundations)	

Sub-Total \$ 985,000.

10% General Conditions	\$ 98,500.
10% Overhead & Profit	\$ 98,500.
10% Contingency	<u>\$ 98,500.</u>
Sub-Total	\$ 295,500.

C. Memorial Field Visitors Bleachers

Demolish and properly dispose bleacher system **\$ 35,000.**

10% General Conditions	\$ 3,500.
10% Overhead & Profit	\$ 3,500.
10% Contingency	<u>\$ 3,500.</u>
Sub-Total	\$ 10,500.

TOTAL Opinion of Constr. Cost Memorial Field Bleachers \$1,326,000.

(Assumptions: Public bid process, concrete can be disposed at Ft. Eddy Road, environmental permits will not be required and hazardous materials, if any, are not in the opinion of cost.)

Add for Memorial Field Elevator to Press Box:

1. One stop elevator w/ penthouse	\$ 95,000.
2. Elevator shaft (CMU), w concrete fdn. and pit	\$ 75,000.
3. Elevator entrance lobby (CMU walls)	\$ 40,000.
4. Elevator machine room (CMU walls)	\$ 20,000.
5. Electrical power budget (3 phase)	<u>\$ 75,000.</u>
Sub-Total	\$ 305,000.

10% General Conditions	\$ 30,500.
10% Overhead & Profit	\$ 30,500.
10% Contingency	<u>\$ 30,500.</u>
Sub-Total	\$ 91,500.

TOTAL Opinion of Constr. Cost Mem. Field Elevator \$ 396,500.

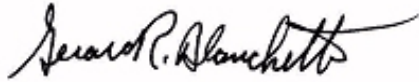
(Assumptions: Foundation piles will not be required, 3 phase electrical power is available within 250 feet, environmental permits not required)

We recommend that if soft costs for Engineering need to be determined by the City on any of the tasks identified in the Opinion of Construction Cost, that a range of 10-15% of the construction cost be utilized for budget estimating purposes.

It has been a pleasure providing the City of Concord with this letter report. Please feel free to contact me if you should have any questions.

Sincerely,

THE H.L. TURNER GROUP INC.



Gerard R. Blanchette, P.E., NCEES, LEED® AP
Senior Vice President ~ Principal

GRB/bg
Attachments

LIMITATIONS: The H.L. Turner Group Inc. (TTG) has prepared this report for The City of Concord, NH based on visual observations only and therefore it did not involve destructive demolition, scientific testing (other than lead paint) or any other tests. The information/data in this report has been provided in general accordance with accepted Engineering/Architectural consulting practices and TTG makes no warrantee, either expressed or implied on the conclusions or cost estimates/opinions of cost provided.