Exterior Facilities Study Report

Regional School District 8

RHAM High School and RHAM Middle School
Hebron, CT
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RHAM EXTERIOR FACILITIES STUDY
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1.0 Introduction

Regional School District 8 (the "District") oversees the educational needs of the Towns of Hebron, Andover, and Marlborough. The District operates two school facilities which are located in the Town of Hebron (the "Town"): RHAM High School located at 85 Wall Street and RHAM Middle School located at 25 RHAM Road.

The two schools are physically connected and are located on a single campus property ("the campus"; Figure 1). Primary access to RHAM High School is via two access drives on Wall Street (CT Route 316), to the east. Access to RHAM Middle School is via RHAM Road (to CT Route 85) to the west, or alternatively, the adjacent High School access points on Wall Street. The buildings, parking and driveways generally occupy the center of the property while athletic fields are to the north and south of the buildings. The combined middle and high schools have a student population of approximately 1,800 and a staff of approximately 178.

The campus was constructed in its current configuration in 2001-2002, which replaced the former school building and site that was formerly located on the southern portions of the existing campus. The campus currently has approximately 494 paved parking spaces, including 12 accessible parking spaces. Due to the adjacent state highways and parking capacity, the campus is a "Major Traffic Generator" and maintains Certificates Nos. 935 and 935A from the Office of the State Traffic Administration (OSTA).

Several persistent deficiencies associated with exterior facilities on the campus have caused concerns at the local, regional, and State level. The District implemented a study as presented in this report to document these conditions and to facilitate development of corrective actions and associated costs. Working with the District, The Board of Education and the Facilities Sub-Committee, BSC developed a study that included six tasks. The six tasks which comprise the study include the following:

1. Campus Traffic Review - A previous assessment report which documented traffic circulation and safety issues was reviewed and updated conceptual mitigation plans were prepared to illustrate recommendations for mitigation of ingress/egress/circulation/drop-off.

2. Sidewalk/Walkway Concrete Assessment - An exterior facility assessment was conducted to assess the condition of exterior concrete sidewalks, walkways, plazas, and stairs, document their condition and determine repair/replacement costs.

3. Bituminous Pavement Assessment - A visual inspection of the existing bituminous pavement was conducted to assess its condition and determine repair/replacement costs.

4. Exterior Handicapped Accessibility Assessment - At the high school facility, an assessment was of various site improvements relative to handicapped accessibility. Many of these were previously-identified as deficient in a State Department of Education Bureau of Accountability and Improvements (BAI) report (May 2010). At the middle school facility, an assessment was conducted to determine if accessible pathways on the Middle School site are compliant with handicapped accessibility requirements.

5. Site Landscape Assessment - Site landscaping was assessed to identify potential revisions that will reduce maintenance demand.

6. Athletic Facilities Assessment and Planning - An assessment of the existing track and field complex (game field) as well as the existing tennis courts was prepared to evaluate conditions and recommend proposed improvements based on the schools current athletics programming. A master plan was then developed to summarize potential improvements to the facilities.

The intent of this report is to summarize the deficiencies of concern, identify the scope and cost for potential actions that would be required to correct the noted deficiencies, and provide budgets and conceptual schedules for the District. In that regard, this report is compiled into three general topics: assessment methodology and scope, 2) findings and recommendations; and 3) conceptual construction costs. The photographs, tables, and figures included herein are intended to further clarify and document these three general topics.

2.0 Methodology and Scope of Existing Conditions Assessments

As indicated in Section1.0 this study was comprised of six tasks as follows:

1. Campus Traffic Review
2. Sidewalk/Walkway Concrete Assessment
3. Bituminous Pavement Assessment
4. Exterior Handicapped Accessibility Assessment
5. Site Landscape Assessment
6. Athletic Facilities Assessment and Planning

2.1 Campus Traffic Review

Traffic assessment reports have previously been prepared to investigate traffic circulation and safety issues both on the campus as well as the surrounding roadway infrastructure. The most recent report is entitled "RHAM Middle and High School Campus Traffic Assessment Supplemental Materials" dated November 20, 2014, prepared by BETA in association with Bubaris Traffic Associates. As requested by the District, this report has served as the basis for the campus traffic review presented herein.

Current site circulation is depicted on Figure 2. Some of the previously-recommended short-term improvements contained within the 2014 report have already been implemented on the campus. This task reviewed the effectiveness of those improvements, and derived additional short-term and long-term recommendations to improve the safety and function of the campus traffic circulation patterns.

It is important to note that it was not the intention of this task to duplicate the efforts completed in the previous traffic assessment. Traffic volumes and turning movement counts were not collected or analyzed as part of the study.

The Campus Traffic Review task generally included the following:

- Review of the 2014 traffic assessment report.
- A meeting with RHAM administration and maintenance staff to identify changes in operational conditions since the submission of the 2014 traffic assessment report and in order to gain an understanding of the drop-off/pick-up requirements.
- Several visits to the campus to observe the following:
    - The existing conditions relative to the layout of ingress, egress, and circulation infrastructure.
    - The morning drop-off and afternoon pick-up scenario for both schools.
    - Solicitation of feedback from the high school and middle school principals, Hebron Police staff, maintenance staff, and bus drivers in an effort to understand the various traffic issues from several different perspectives.
- Following the information review and site visits, draft conceptual mitigation plans were prepared that graphically depict recommendations for mitigation of

ingress/egress/circulation/drop-off. These plans include short-term and long-term recommendations and depict items such as revised layouts, changes in circulation patterns, signage, pavement markings, access control, etc. (refer to Section 3).

- BSC met with the Facilities Subcommittee of the Board of Education on two occasions to present the conceptual mitigation plans and discuss the review of the traffic assessment report and observations of the morning drop-off and afternoon pick-up.
- BSC met with the Town Manager, Town Planner, Parks and Recreation Representative, Town Fire Marshal, Town Engineer, Town Wetlands Agent, and Town Code Enforcement Officer to present the recommended short and long term recommended improvements and solicit additional feedback.

A summary of the traffic circulation existing conditions assessment is presented on Figure 3. Results of the assessment and presentation of the campus traffic renovations master plan are presented in Section 3.

2.2 Sidewalk/Walkway Concrete Assessment

Generally the campus exterior pedestrian facilities consists of sidewalks/walkways that are a mix of concrete, asphalt, stone dust, or gravel. In most locations where the concrete sidewalks are adjacent to vehicular areas concrete curbing is included. Stair systems are constructed exclusively with concrete.

In general, many of the concrete surfaces on the campus exhibit some form of degradation. To develop a comprehensive campus-wide understanding of existing conditions, BSC conducted a visual inspection of exterior concrete sidewalks, walkways, plazas, and stairs on the campus to classify the existing condition of the various surfaces. Existing facilities were assigned to one of three primary categories based on the observed condition of the concrete surface material:

1) “Acceptable”
2) “Repair”
3) “Replacement”

As part of this assessment, BSC reviewed each segment of sidewalk, walkway, plaza, and stair using the following visual criteria:

- Differential settling/heaving between panels or adjacent surfaces.
- Cracked panels.
- Heavily spalled panels.
- Depressions greater than one-half inch within a sidewalk panel.
- A noticeable change or distortion in the grade of a panel due to heaving or settlement.
- Panels which have been treated with temporary repairs.

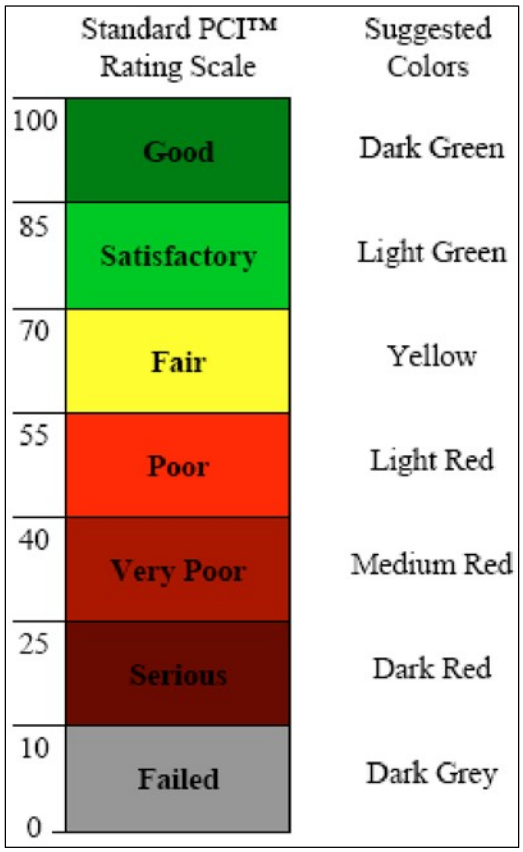
A “panel” for the purposes of the assessment was defined as that area of concrete walk between adjacent construction joints or control joints.

Results of the sidewalk/walkway concrete assessment is presented in Section 3.

2.3 Bituminous Pavement Assessment

BSC utilized a Pavement Condition Index (PCI) approach to assess the assess the existing bituminous pavement conditions of the parking and driveways on the campus. The PCI approach used ASTM D6433 (Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys) as a general guideline. A PCI analysis is a subjective observation that analyzes the pavement surface using 19 different pavement distress types combined with 3 severities (low, medium, or high) to determine a PCI value. Each type of observed pavement distress is assigned a deduct value based on the type, severity and extent of the distress.

The PCI scale is measured from zero to one hundred, with one hundred representing a pavement in perfect condition and zero describing pavement in impassable condition. The figure below depicts the PCI scale.



For clarity, the campus was delineated into sections according to usage (refer to Figure 7). Areas of parking, Parent Drop Off Loop (passenger car loading), and Bus Loop (heavy vehicle loading) were delineated and random sample areas were investigated to determine the average PCI. Approximately 50% of the pavement area of the campus was required to be investigated to obtain reliable PCI value for each section. Results of the PCI are presented in Section 3.

2.4 Exterior Handicapped Accessibility Assessment

BSC conducted an assessment of exterior handicapped accessibility on the campus. Typical accessibility items that were reviewed include slopes of walkway pavements, cross slopes, changes in grade, paving materials, accessible parking, site signage, ramps, railings, site stairways, and railings. At the high school facility, an assessment was conducted to review various site improvements relative to handicapped accessibility issues that were previously-identified as deficient in the May 2010 Connecticut State Department of Education BAI report. At the middle school facility, the assessment was specifically conducted to determine if accessible routes were compliant with handicapped accessibility requirements.

The exterior handicapped accessibility assessment included the following:

- Review of the BAI report.
- Observation and documentation of the various site improvements identified as deficient in the BAI report for the High School facility.
- Assessment of accessible routes on the Middle School site relative to Connecticut Building Code. Stairs, ramps, and walkways along each accessible route were assessed. Longitudinal and cross slopes were reviewed using a digital "smart-level."
- Photo-documentation of each improvement coupled with "in-field" measurements to support development of conceptual mitigation plans for deficient locations.

Results of the exterior handicapped accessibility assessment are presented in Section 3.

2.5 Site Landscape Assessment

BSC conducted an assessment of landscaping, lawns, and ornamental plantings on the campus with the ultimate goal of defining select landscape modifications that could reduce maintenance costs, considering that the use of pesticides and/or herbicides is not permitted. The assessment was comprised of the following:

- BSC landscape architects observed the existing landscaping to document existing conditions.
- BSC photo-documented each landscape area to support development of landscape renovation options.
- BSC assessed potential drainage issues associated with landscaped areas.

Results of the site landscape assessment are presented in Section 3.

2.6 Athletic Facilities Assessment and Planning

BSC conducted an athletic facilities evaluation that focused on the competition field, running track and tennis courts. The evaluation was comprised of the following:

2.6.1 Data Gathering and Assessment

- BSC compiled and reviewed available site data from the Town, such as survey data, site plans/maps, record utility plans, previous reports, etc. This included a review of the BAI report on accessibility.
- BSC prepared base mapping of the project area using a combination of available sources such as the Town's Geographic Information Systems (GIS) database and tax mapping, mapping available through State of Connecticut (e.g. The University of Connecticut's Center for Land Use Education and Research, the Connecticut Department of Energy and Environmental Protection, etc.), aerial photography available through internet-based sources, and on-site observations. The base mapping developed was defined as a "compilation map" and was used as the basis for all master planning. Additional survey would be required for plans suitable for construction.
- BSC conducted several visits to the high school campus to observe existing conditions, verify design constraints, and gather general site data to support the any recommendations. This included a visual assessment of the field, track and tennis courts as discussed below. No destructive testing of pavements, or geotechnical borings were performed as part of this report.

2.6.2 Track & Field Facility (Game Field)

BSC observed and documented the following to gather data on the existing site:

- General layout and orientation of the main field complex and adjoining facilities.
- Condition and layout of the field and supporting facilities, and appurtenances (i.e. natural grass turf, athletic equipment, walkways to the field, etc.).
- Existing drainage structures and drainage routes.
- Pedestrian access and pedestrian controls.
- Spectator seating and ticketing
- Handicap Accessibility
- Emergency and maintenance vehicle access.
- Utilities.
- Fencing.
- Opportunities for a field lighting system.

2.6.3 Running Track

BSC investigated and assessed the current condition of the running track to determine if the track can be resurfaced, if it will require full surface system rehabilitation (strip and re-

surfacing), or full depth reconstruction (replace existing asphalt base and track surfacing). BSC's assessment included the following:

- Photo-documentation of the track surface.
- Visual assessment for surface color-retention and to gauge wear.
- Visual assessment and documentation of surface repairs.
- Assessment of surfacing layer depth.
- Visual assessment of track markings to gauge wear.
- Localized settling/heaving, delamination, or peeling of rubberized surfacing.
- Significant cracks indicating pavement contraction or failure.

2.6.4 Tennis Courts

There are a total of six (6) doubles courts located on the campus. All courts are located in a north-south orientation. The existing tennis courts are a green on green color scheme over a bituminous concrete pavement base. Light green out-bounds surrounds the dark green in-bounds area. The batteries are surrounded by a 10' high chain link fence. BSC's assessment included the following:

- Photo-documentation of the court surface.
- Visual assessment for surface color-retention and wear.
- Visual assessment and documentation of surface repairs.
- Visual Assessment of asphalt base condition including settling/heaving, surface delamination, or peeling.
- Significant cracks indicating pavement contraction or failure.

Results and recommendations (master plan) associated with the Athletic Facilities Assessment & Recommendations task are presented in Section 3.

3.0 Findings and Recommendations

3.1 Campus Traffic Review

In its current configuration, campus traffic circulation is generally functional and the recent improvements implemented as a result of the 2014 traffic assessment have helped to reduce some safety concerns. However, the assessment conducted as part of the study's Campus Traffic Review task reveals that further improvements could further enhance the safety and operational efficiency of the campus.

BSC has presented both a short term improvement plan and a more extensive, long term improvement plan, for improving campus traffic circulation and safety. Specific recommendations are included in Figures 4 and 5 herein. The recommendations should be considered conceptual, as the scope and scale of the improvements will be directly dependent on the level of available funding and the success of grant applications. It is understood that the District would prefer to implement the long term improvement plan, but depending on funding may opt to perform short-term improvements that are considered interim, focusing on pedestrian safety issues.

Any improvements should include coordination with the following entities, at a minimum:

- Coordination at the District level to ensure that all concerns/needs are considered.
- Review by Hebron Town Officials to clearly establish permitting guidelines and requirements.
- ConnDOT's OSTA review for traffic impacts to state routes.
- ConnDOT District 2 Maintenance review for Encroachment Permitting for driveway egresses onto state routes.

Recommended campus improvements fall into three general categories as listed below, ordered by increasing relative cost. The most effective solution can be a single category, or a combination of two or three, to achieve the desired end result:

1. Administrative / Scheduling solutions: Reduce traffic volume and conflicts by scheduling critical events at different times, or by moving specific programs to different locations.
2. Signage and Enforcement: Attempts to change the behavior of vehicles through information, rules and enforcement of traffic flow through directional signage, pavement markings and restrictions. Enforcement is a critical piece of this solution, as the path of least resistance will be taken should enforcement not be implemented.
3. Physical Reconfiguration: Redirects traffic and traffic flow through a physical reconfiguration of traffic patterns and parking in order to reduce conflicts, improve sight lines and Improve safety.

As previously noted in Section 2, BSC has identified and summarized the campus traffic issues in graphical format on Figure 3 "Traffic Circulation Existing Conditions Assessment Plan". The most significant issues identified are listed below, however this list is not intended to be comprehensive. Please refer to Figure 3 for additional information on campus issues, as well as the short term (Figure 4) and long term (Figure 5) figures for associated recommended improvements.

3.1.1 High School Bus and Parent Drop-off

During the morning arrival period, buses enter the campus from RHAM road and follow the access road on the north side of the building where they queue for student drop off. Once the buses have been emptied, the intent is for buses to exit campus via the main entrance and onto Wall Street. In order for this to be accomplished, the buses must navigate the main entrance driveway intersection (east of the school) which serves as the entrance for high school bus and parent drop offs. The intersection lacks any clear control / right of way. Parents entering campus look to turn left into the drop off loop at the same location that buses are attempting to turn left to depart. Currently, a RHAM staff member is located at this intersection to direct traffic in an effort to minimize this conflict point. The conflicts at this intersection lead to driver confusion and safety concerns as well as travel delay for both bus and passenger car traffic.

Recommendations:

- Short Term: Improve intersection control (signage, pavement marking and traffic officers) to reduce confusion and provide clear priority to the bus lane.

- Long Term: Provide physical separation of the bus and parent drop off circulation through a reconfiguration of campus driveways and parking.

3.1.2 Middle School Bus and Parent Drop-off and Staff Parking Areas

For the Middle School Parent Drop-Off, Vehicles entering campus from RHAM Road are directed through a circuitous route that winds through the Middle School Staff parking area. This layout presents safety concerns in both the morning drop off and afternoon pick up periods for conflicts between parked & moving cars, as well as students & staff passing through parking and between parked cars..

Recommendations:

- Short Term: Improve pedestrian facilities for staff to reach the school more effectively, and remove pedestrian circulation from drive aisles to the greatest extent possible.

- Long Term: Provide improved physical separation of the parent drop off through a reconfiguration of campus driveways and parking.

3.1.3 Staff and Bus Arrival and Departure Conflicts

Bus arrival in the morning begins at approximately 6:55 a.m. and unloading begins at approximately 7:05 a.m. It was observed that high school staff arrives during the same time period as student are beginning to be unloaded from the buses. The high school staff parking lot is located on the north side of the school adjacent to the bus unloading zone. Staff exiting their vehicles must cross the bus unloading zone creating pedestrian-bus conflicts, safety concerns and delays in bus departure. This scheduling conflict creates additional traffic and

pedestrian loads as arriving staff heads to their parking areas, as well as pedestrian conflict as buses, cars, students and staff are all moving through this area at one time.

During the afternoon student loading and departure period, staff was observed exiting the school building, crossing through the bus loading zone, and attempting to depart the staff parking area before bus departure. Departing staff attempt to depart prior to the bus departure to avoid delays associated with following the bus on the local roads. This scenario leads to hurried walking and driving behavior by staff and creates safety concerns.

Recommendation: Adjust staff arrival and departure times to be outside of bus / student arrival and departure times to eliminate the conflict and alleviate traffic loading at the peak times.

3.1.4 Students Crossing Wall Street

Observations and discussions identified that some student drivers park across Wall Street in the Town of Hebron Veteran's Memorial Park Parking Lot where they must cross Wall Street to access the campus. Students have also been known to park in commercial/retail parking areas to the south of campus, along Main Street. An agreement between the district and the Town has been put in place outlining the use and maintenance of student parking at Veteran's Memorial Park. Discussion with Town representatives indicate that the Town would prefer to eliminate student parking at Veteran's Memorial Park, and that the current agreement was not intended to be a long term option.

Students crossing Wall Street do not typically use the delineated crosswalk, which is south of the parking area and out of the way, which results in students crossing Wall Street in a uncontrolled and often unsafe manner, thereby slowing southbound traffic on Wall Street. District Staff are located in the Veteran's Memorial lot in an effort to curtail this behavior but, but feedback from the District indicates it has minimal effectiveness. Ultimately, off-site parking is not a desired scenario, and students crossing Wall Street represents a hazardous condition.

Recommendations:

- Short Term: Improve pedestrian crossing through the channelization of pedestrians with plantings or fencing running parallel to the west side of Wall Street, relocate crosswalk, upgrade pedestrian signing, and consider the addition of actuated rectangular flashing beacons to alert oncoming traffic of the presence of pedestrians in the roadway. Refer to Figure 4.

- Long Term: Implement the same recommendations listed above in the short term recommendations in coordination with relocating the park driveway to be opposite of the proposed relocated campus main entrance. Refer to Figure 5. The district should investigate student parking use and demand with the goal of eliminating off-site student parking. If a shortage of student parking is determined, then consideration for a lottery or merit system for parking should be discussed to limit the parking demand on campus.

3.1.5 Additional Concerns and Recommendations

3.1.5.1 Parking Management Plan

Discussions with Town officials indicate that during large events, parking on the RHAM campus is insufficient. As is typical at most schools, large events such as graduation, school open house, concerts, and athletics regularly exceed the available parking on campus and present safety concerns because interior drives are constricted with parking and emergency access is limited. Overflow parking is not clearly identified and can lead to confusion and vehicles parking in undesirable locations such as drive lanes and fire lanes.

Recommendation:

The District should develop a Parking Management Program in order to outline measures that need to be taken when planning for large events that occur on campus. The Parking Management Plan should clearly indicate required communications that needs to occur with local emergency responders in planning for events and include provisions for additional traffic staffing, temporary traffic control measures and providing overflow parking such as parking on lawn areas or offsite parking with shuttle service. Enforcement and towing needs to be strictly implemented during these events or parking behaviors will not be altered.

3.1.5.2 Pedestrian Management

On numerous occasions, BSC observed student pedestrians on and around campus using roadways and drive lanes in an unsafe manner:

- Student walkers were observed walking in the roadways and parking lots rather than on sidewalks.
- Pedestrians exiting campus on RHAM Road were observed walking with their back to traffic while also using earbud style headphones.
- Boys cross country athletes routinely ran through parking lots as part of their practice route.

Recommendation:

The district should educate, discuss, and enforce safe pedestrian practices and routes for pedestrians, drivers, students, and staff.

3.2 Sidewalk/Walkway Concrete Conditions Assessment

As indicated in Section 1, an exterior facility assessment was conducted to assess the condition of exterior concrete sidewalks, walkways, plazas, and stairs on the campus to document their condition and determine repair/replacement costs. Since the original installation in 2002, the campus has experienced degradation of the concrete components comprising the walkways, pavements and

stairways, including localized heaving, spalling, and cracking. As pedestrian facilities, this degradation presents a safety hazard to students, staff, and visitors. The degradation has the additional impact of affecting the quality of accessible routes from a ADA standpoint. Temporary concrete repairs have been implemented at various locations, but these repairs are considered short-term, interim solutions. Several bituminous concrete sidewalks are also present on the campus, and these facilities were included in the assessment applying applicable criteria described in Section 2.2.

Typical concrete walkways are constructed in 'panels' that are delineated by a construction or expansion joint on each side. In BSC's analysis, the condition of the concrete materials was assessed on a panel-by-panel basis. Following the visual assessment, the information was compiled into a Sidewalk Condition Matrix (Table 1) in order to document and summarize the conditions observed relative to the criteria described in Section 2.2.

3.2.1 Findings

Three classifications were utilized to characterize existing conditions based on the assessment:

- Acceptable - The surface is useable and does not currently require repair or replacement.
- Repair - The surface is damaged, but with repair can be rendered useable.
- Replacement - The surface is damaged, and can only be rendered "Acceptable" by replacement (reconstruction) with new material.

Representative photographs of each grading category are included in the Photographs section of this report.

A graphical summary of the concrete assessment is presented on Figure 6. The Sidewalk Condition Matrix is included as Table 1. Table 1 represents the "raw data" based on the field observations. A Sidewalk Mitigation Matrix is included as Table 2. Table 2 presents the recommended mitigation after analyzing the raw data and making adjustments with consideration for adjacent or associated concrete replacement work to account for economies of scale and avoidance of a "patchwork" scenario where a mixture of replacement and repair may not be desirable. For example, if a "Repair" panel is located within a grouping of "Replace" panels, the "Repair" panel should be replaced. Analyzing the data and deriving the corresponding recommendations in this way is an especially important consideration because it is assumed that repaired concrete panels will continue to degrade over time.

In summary, the assessment task indicates that approximately 25% of the sidewalks, walkways, and plaza areas on the campus require some form of mitigation (repair or replacement) to restore these facilities to an "Acceptable" classification. The following table provides a summary of concrete surfaces on the campus, assigned by the categories identified in Section 2.2.

Grading Categories	Percentage of Site Sidewalks and Walkways
1) "Acceptable"	75%
2) "Repair Required"	14%
3) "Replacement Required	11%

3.2.2 Recommendations

Recommendations to mitigate deteriorated sidewalks, walkways, and plazas include (where indicated on plans):

- Replacement of frost-heaved portions of bituminous walkways.
- Repair of sidewalk panels that can be restored to an "Acceptable" condition. Repair approaches should consider epoxy-type patches for spalled areas, and injectable epoxy-resin for crack repairs.
- Replacement (reconstruction) of sidewalk panels that have surpassed the point of repair.
- Removal of vegetation between sections of separated or cracked walkways for the entire campus.
- Construction joint sealant replacement for the entire campus.
- Based on available funding, evaluation of concrete sealants for existing and replaced (reconstructed) concrete surfaces to minimize the intrusion of water, brine, and other deicing chemicals.

Detailed explanation of products and procedures associated with the repair and replacement of campus sidewalks and walkways, as well as location-specific recommendations for each area would be addressed under future, detailed design. It is important to note that recommendations for concrete repairs should be coordinated with 1) the recommendations of other improvement as presented herein to prevent duplication of work, or the repair of work that may ultimately be removed for another purpose (e.g. repair of walkways where driveway is being relocated anyway), and 2) adjacent or associated concrete replacement work to account for economies of scale and avoidance of a "patchwork" scenario as discussed above.

3.3 Bituminous Pavement Assessment

As indicated in Section 1, a visual inspection of the existing bituminous pavement was conducted to assess its condition and determine repair/replacement costs. BSC utilized a PCI approach to assess the assess the existing bituminous pavement conditions of the parking and driveways on the campus.

3.3.1 Findings

Overall, the pavement condition on the campus can be classified in the "Satisfactory" rating, with a PCI Rating of 70 – 85, with the exception of "Section 3" (Middle School Drop Off Loop) which is rated as "Fair" with a PCI Rating of 59. Figure 7 depicts the various areas included in the assessment. Figure 8 presents the findings of the assessment in graphical form. Table 3 presents the PCI summary.

To-date, pavement on the campus does not appear to have received any preventative maintenance since it was originally installed (2001-2002). The pavement currently exhibits signs of weathering (loss of asphalt binder material over time) and localized deterioration. Several isolated areas on the campus where the pavement rates as "Poor" would benefit from localize, or "spot" repairs. Additionally, transverse cracking is frequently present in the pavement, which is a common occurrence as pavement systems age. "Section 3" (Middle School Drop Off) exhibits more extensive cracking, notably at the cold joint between the parking area and the driveway area (Staff Parking Spaces 66-74).

3.3.2 Recommendations

The following actions are recommended to monitor and maintain the pavement systems on the campus to extend the useful life of these facilities to the extent practicable. The PCI summary provided in the Table 3 provides a priority ranking for each section of pavement on campus. A lower PCI ranking correlates with a pavement system in a more deteriorated condition.

- A PCI Analysis should be completed on a reoccurring schedule (typically annually) to monitor pavement conditions and aid in the prioritization of maintenance, repair, or rehabilitation efforts.

- A Routine Maintenance Program should be implemented immediately and revisited on (at least) an annual basis. This maintenance program should incorporate monitoring of cracks, frequent and consistent removal of vegetation and debris from cracks, removal of debris (sand, etc.) from the pavement surface, crack sealing, surface sealing, and localized repairs (removal and patching). The primary goal of these maintenance tasks is to minimize the infiltration of water into the pavement base material. Cracks offer numerous routes for water entry into the base section. In general, water will flow directly into cracks that are over 1/8-inch in width. Cracks below this width also allow water intrusion, primarily through a "pumping" mechanism, that is essentially created when water is forced into the cracks by the passage of vehicle tires. Once water enters the pavement base, freeze-thaw cycles impose stresses on the pavement matrix that result in additional crack formation.

- A more intensive Renovation Program should be considered for pavement areas rated as "Fair". Pavement in these areas should rehabilitated by milling off the top 1-inch of the pavement section followed by a new bituminous pavement overlay. Renovated areas would be included in the Routine Maintenance Program. It should be noted that milling can only occur when pavement is in relatively good conditions, with few significant surface cracks.

- If pavement areas fall below the "Fair" rating (PCI of 55 of less) then a full-depth pavement rehabilitation should be considered. Full-depth pavement rehabilitation includes either, 1) removal of the bituminous pavement layer (approximately 3" depth) with subsequent re-paving, or 2) removal of the bituminous pavement layer and underlying base material followed by installation of new base material with subsequent

re-paving. The specific approach to full-depth pavement rehabilitation is considered on a case-by-case basis. The cost associated with this type of rehabilitation is considerably higher than routine or preventative maintenance efforts and should be avoided if possible.

- Another option for pavement rehabilitation when full-depth options are considered is in-place reclamation, sometimes called cold in-place recycling. This technique employs a reclaiming machine that pulverizes the existing bituminous pavement layer and mixes it with the existing base to a pre-determined depth. This technique is a dynamic process, as the pulverizing and mixing process occurs in-place as the machine moves over the work area. The resulting mixture is then re-graded as required, compacted, and a new bituminous pavement layer is installed. In-place reclamation for pavement rehabilitation can be an option to accommodate specific schedule, budget, or logistical constraints while considering factors such as the physical nature (quality) of the existing base material, area of rehabilitation, and other project-specific parameters.

- Coordination with the recommendations of other aspects of this study should be noted to avoid expending maintenance efforts on pavement areas that may be subject to reconfiguration or replacement as a result of other repair or mitigation efforts.

3.3.3 Service Life

In general, with a consistent maintenance program and ongoing monitoring of pavement conditions, the pavement system on the campus can be expected to have a remaining service life that exceeds five years. In those areas on campus where the pavement rates as "Poor", the remaining service life is expected to be lower. If maintenance measures are not undertaken, a noticeable acceleration in pavement deterioration will likely occur within the next two to three years as water penetrates the cracks and freeze-thaw cycles accelerate pavement deterioration.

Well-constructed asphalt pavement can typically last 20 years before requiring a major rehabilitation or full-depth reconstruction. However, surface treatments or thin overlays every 7-10 years can extend a pavement system well beyond that range.

3.4 Exterior Handicapped Accessibility Assessment

As indicated in Section 1, BSC conducted an assessment of exterior handicapped accessibility on the campus. At the high school facility, an assessment was conducted to review various site improvements relative to handicapped accessibility issues that were previously-identified as deficient in the May 2010 Connecticut State Department of Education BAI report. At the middle school facility, the assessment was specifically conducted to determine if accessible routes were compliant with handicapped accessibility requirements.

The Assessments included visual observation of accessibility issues such as assessable routes, cross-slopes, ramps, amount of accessible parking, signage, stairways, and railings. Since an instrumented land survey was not included in the scope of the study, grade changes/slopes were assessed with a

digital level. Therefore, the data obtained should be considered within the degree of accuracy that can be obtained with these types of tools. Criteria for the assessment was from the perspective of the Connecticut Building Code (the "Code"), which incorporates references to the 2003 International Building Code (2003 IBC) and ICC/ANSI A117.1, "Accessible and Usable Buildings and Facilities", 2009 (as amended) and the ADA references cited in the May 2010 Connecticut State Department of Education BAI report. It should be clarified that the assessment did not include inspection of any interior spaces, interior routes, interior signage, etc.

3.4.1 High School

3.4.1.1 Findings

Figure 9 provides a graphical summary of the assessment focusing on the BAI report. Generally, issues identified in the BAI report pertaining to exterior accessibility were confirmed during the assessment. Significant portions of accessible routes to the building entrance from designated handicapped parking spaces were determined to be non-compliant. This is due to grading within the parking space, excessive cross-slopes on accessible routes, and changes in grade on walkways (accessible routes) caused by frost heaving or settling of pavements.

3.4.1.2 Recommendations

All non-compliance items should be brought into compliance. Given the nature of the improvements, this would require reconstruction of these facilities.

3.4.2 Middle School

3.4.2.1 Findings

Figure 10 provides a graphical summary of the assessment superimposed onto the data from Figure 9, summarized as follows:

- The accessible parking spaces and loading zone on the south side of the school were noted as being non-compliant due to cross slopes and the layout of parking spaces.

- Portions of walkways from building entrances to the public way were found to be non-compliant relative to both cross-slopes and longitudinal slopes.

- The accessible route from the school building to the baseball/multi-use field in the northwest area of campus utilizes a combination of bituminous sidewalk and gravel walkway. The slopes of the bituminous sidewalk were found to be generally acceptable, but similar to the high school, the pavement has localized changes in grade, is uneven, and presents numerous tripping hazards. The route then transitions to a gravel pathway which proceeds northerly, in a downgradient (down-slope) manner towards the field.

3.4.2.2 Recommendations

- All non-complainant walkways, curb ramps, parking spaces, etc. should be re-graded and reconstructed to eliminate non-compliant changes in grade in order to be made compliant with applicable codes. In addition, a new paved drive or walkway should be installed to the baseball/multi-use field to provide consistent access.
- The gravel walkway from the access drive to the baseball/multi-use field in the northwest area of campus should be finished with bituminous pavement or similar stabilized surface. Although some granular surfaces can be maintained as handicapped accessible, maintenance of these materials can be problematic, especially on sloped surfaces.

3.5 Site Landscape Assessment

As indicated in Section 1, site landscaping was assessed to identify potential revisions that will reduce maintenance demand. This assessment included a review of the condition of lawn areas, plant beds, and ornamental trees and shrubs on the campus between the school buildings and adjacent driveways. Landscape plantings within parking areas were not reviewed.

3.5.1 Findings

A graphical summary of the site landscape assessment is presented on Figure 12. Foot traffic has damaged many lawn areas associated with walkways. Plant beds appear to be under-maintained and exhibit extensive weed growth, plants that are not growing as vigorously as would be expected, lack of mulch and edging, and damage caused by plowing operations or pedestrian 'short cuts'. In general, the landscape plantings (ornamental trees and shrubs) that exist on the campus were found to be in poor condition, with the exception of a few species that typically grow vigorously or thrive in poor soils such as junipers, yews and the border forsythia found on the slope between the two schools. A lack of pruning to remove overgrowth was also noted.

3.5.1.1 Lawn Areas

Areas highlighted in green on Figure 12 were identified as areas of lawn that show signs of heavy foot traffic where the soil has become compacted and grass cover is poor to non-existent. These wear conditions are generally found at tight radii at the intersection of walkways (where students "short-cut" over the lawn), adjacent to the walkway leading to the gym entrance and, more generally, wherever walkway widths are too narrow for the volume of pedestrian traffic. These conditions are chronic, are caused by repeated pedestrian foot traffic, and can lead to tripping hazards, the puddling of water, and mud being tracked into the school.

Recommendations:

- The most permanent solution, with the least maintenance, would be to install walkways, or add pavement width in areas where pedestrian circulation wear patterns cut across lawn areas.

- Distressed these lawn areas can be restored through maintenance to de-compact, amend and re-seed or sod lawn areas. Existing foot-traffic patterns will likely persist, and the worn condition will reappear in a short period of time.

3.5.1.2 Plant Beds

Plant beds highlighted in yellow on Figure 12 are in poor condition due to lack of maintenance, weeds, lack of mulch and edging, damage caused by plowing operations or pedestrian 'short cuts', needed pruning to remove overgrowth, and planting beds or plant species that are not growing as vigorously. These areas also include plant beds adjacent to stairs and ramps that are overgrown to the point where they interfere with the use of adjacent walkways and affect the safety and usability by the public.

Plant beds highlighted in red on Figure 12 were identified as plant beds that are beyond simple restoration efforts and can be removed in their entirety to reduce maintenance. These areas can simply be converted to lawn space. Where trees are located in these areas, the trees could remain and be protected from damage during removal. A 4 foot diameter mulch ring should be maintained around each tree to prevent mechanical damage from mowing operations.
Refer to the detailed recommendation shown on the Site Landscape Assessment Fig. 12 of this report. Generally the recommended treatment for landscaped areas include:

Recommendations:

- Maintain planting beds: Restore edging, restore mulch, prune trees above walking and vehicle height, prune shrubs away from walkways, cull excess plantings from overgrown planting beds, fertilize and de-compact where appropriate, repair and maintain ornamental landscape irrigation.
- Replace dead or missing plantings, or replant beds to match existing species to fill in the gaps and prevent weed growth and unsightly appearance.
- Consider removing some plant beds or plantings in their entirety and seed as lawn to reduce maintenance. Or replace underperforming plantings with a different species that has cultural needs that best fits the location.
- Shrub overgrowth should be pruned a minimum of 3 feet horizontal from all handrails, treads, walking surfaces etc.

3.5.1.3 Trees

Several trees where noted to be in poor health and may pose a safety hazard to the public from falling limbs etc. It was also noted that several trees around the campus

require pruning to improve sight-lines and access for pedestrian safety at crosswalks and intersections.

Recommendations:

- Damaged trees should be pruned to remove deadwood or removed completely, as appropriate.
- Prune limbs to improve sight-lines and access for pedestrian safety at crosswalks and intersections.
- Remove overhanging branches to a minimum 8 feet above adjacent walking surfaces, and 12 feet above parking and driveways.

3.6 Athletic Facilities Assessment and Planning

3.6.1 Track & Field Facility (Game Field)

The track & field facility is located in the southern portion of the campus, directly south of the middle school building (Figure 13). The facility is generally comprised of a natural turf field surrounded by a running track. The facility has the preferred north-south Orientation, and is not fitted with a field lighting system.

Spectator seating consists of a single set of prefabricated aluminum 'angle frame' style bleachers on the east side of the field. Capacity of the bleacher system is approximately 750-800 spectators. Access to handicapped spectator seating is provided by a ramp on the north side of this bleacher system. There is currently no press box.

The track & field facility is enclosed by a 4 foot high galvanized steel chain link fence. The fence appears to have the preferred separation of 30 inches or more from the outside lane line of the running track. Maintenance access to the track & field is via double swing gates located to the north of the facility, generally centered on the track and at the end of the straight. Supporting infrastructure adjacent to the field includes paved parking, electrical supply, water supply, and the adjacent school. The track & field facility is not equipped with permanent sanitary facilities.

A scoreboard is located on the northern end of the field. A newer wood-frame concession building is located north of the home bleacher. The facility does not have storage buildings, filming platforms, or public address system. The facility also is not provided with an outer 'security' fence that would allow ticketing for larger events.

The interior width of the track (distance between the inside edges across the field) is an important consideration for a multi-use facility of this type. The interior width determines what sports can be played on the interior field. With an existing width of 232 feet, there is sufficient room to accommodate a preferred-width soccer field (230 feet minimum: 210 foot wide field plus 10 feet of "runout" on either side). This width also accommodates boys and girls lacrosse, field hockey, and football. Figure 13 graphically summarizes the track & field assessment discussed below.

3.6.1.1 Running Track

The existing running track facility consists of an all-weather (rubberized surface), 8-lane oval with one eight lane straight. The track is red in color and appears to be an NFHS regulation 400 meter track layout. Roughly, the track has 116-foot interior radius (or 232 feet from interior edge of pavement to interior edge of pavement on the track interior). Long and triple jump runways and a pole vault are located behind the north end-zone in the "D-area" of the facility. High Jump is located behind the south end-zone in the "D-Area" of the facility.

The rubberized track surface itself is in generally fair condition. The red surfacing is generally worn with the underlying black surface showing through in a number of locations. The planarity and grading of the track surfacing is within regulation, with some cracking and heaving of perimeter fence posts.

The asphalt base is thought to be 10 years old and the rubberized surface is believed to be a paved urethane base mat system with a red structural spray with roughly 5/8" depth of rubber. The surfacing was originally installed in 2004 and, to the District's knowledge, has never been resurfaced. There are a number of small patches on the surfacing, and areas at the edge of the surfacing that have been chipped, or have become delaminated from the underlying asphalt. Smaller expansion cracks were observed along the edge between the rubberized surfacing and exposed asphalt.

The asphalt base shows some larger (typical) contraction cracking that was observed in the asphalt base at the edge of the surfacing in some locations. These cracks likely continue under the rubber surface, however this is not observed on the finished surface. These cracks are normal in older asphalt and do not indicate pavement failure. The asphalt base actually appears to be in good, re-usable, condition.

<u>Recommendations:</u>

Resilient track surfacing should be re-coated roughly every 5 years to preserve appearance, resist UV degradation and maintain structural integrity. The existing track has experienced wear beyond 5 years, and given the cracks and the amount of wear in the current surfacing, re-coating would only be a short-term solution and is not recommended. The substrate will continue to age and contract, and the surface will continue to wear through to the black surfacing below, requiring spot-patching and repair.

The track surfacing should be completely removed and reapplied within the next 5 years. This replacement should include removal of the entire rubber track surfacing system, milling of the top 1-inch of bituminous pavement, installation of a new 1-inch layer of bituminous pavement, and installation of a new rubberized surfacing system. Renovation of the track in this manner will "re-start" the life-cycle of the track. Subsequently, the school should anticipate re-coating the new surface every 5 years

regardless of condition. This will take advantage of the full life-cycle of the surfacing system, maintain performance, and maintain appearance.

3.6.1.2 Field

Condition of the "game field" is generally typical of a public secondary school in Connecticut, especially in the fall after the football season. Vegetative coverage is generally good, with heavy wear evident (poor grass cover and soil compaction) between the hash marks and at goal creases. Areas of over-compaction of the soil surface are present where exposed. The field exhibits extensive weed growth (especially white clover and crabgrass). These plants are aggressive and undesirable as they represent significant competition to the turf grasses and have an adverse effect on playability.

The field is properly crowned, sloped, and drained to accommodate normal use. There are several depressions at the area drains along the field sidelines and adjacent to the track perimeter. It appears that theses drains are located within the recommended minimum safety zone for soccer (not a preferred condition). The field is currently provided with an automatic irrigation system, which benefits growth of turf grasses, but is also very beneficial to the growth/spread of white clover. As a natural turf game field, use of this field has restricted scheduling to preserve its quality and playability.

Recommendations:

- Without the use of synthetic chemicals, a vigorous turf stand is the best defense against the proliferation of undesirable plant species such as white clover and crabgrass. An integrated turf management program should be developed that includes monitoring/control of irrigation, organic methods for fertilizing and pre-emergent control, careful attention to mowing schedule and mowing heights, periodic aeration, periodic over-seeding, and periodic top-dressing.
- If the intent is to maintain the field status as a 'game' field in "better" condition, the use restrictions on the field should be maintained. Typical municipal-type maintenance will not enable the school to utilize the field under a high-use scenario without compromising its quality. No natural turf field (other than those with significant maintenance budgets/programs) can withstand constant, high-demand use and remain in safe, playable condition.
- Due to the current restricted use, athletic lighting would not be recommended for this field due to a prohibitive cost-to-use ratio.

3.6.1.3 Field Events

Interior field events (long/triple jump, pole vault, high jump) appear to be of the same construction as the track: rubberized surface with an asphalt base, and are generally in the same condition as noted above. At the long/triple jump the jump lines are inlaid. The take-off boards are in poor condition, are delaminated, and are depressed in several locations. The concrete curbs at the sand pits for the long jump are spalling and

cracked.

A shotput throwing circle and sector is located to the SE of the track. The throwing circles, and sectors appear properly laid out. A discus pad was not located within the facility.

Recommendations:

- Renovate interior field events concurrent with any track renovation.
- Repair or replace concrete curbs concurrent with any track renovation.
- Replace all take-off boards.

3.6.2 Tennis Courts

The tennis courts were constructed in 2002, and are approximately 13 years old. The facility consist of two banks of three courts enclosed with a 10 foot high galvanized chain link fence. The number and arrangement of the courts is adequate for typical high school tennis coaching and events. There is no spectator seating, player seating or scoring amenities provided. The general construction of the courts is an asphalt base, with an acrylic color/surface coat. In general, the orientation, layout, and amenities of the courts are typical for a public high school. Figure 14 graphically summarizes the assessment of the tennis court facilities.

The surrounding galvanized chain link fencing is in good condition. The fence is galvanized and has little to no rusting. The fence fabric and rails are also in good condition, with little need of repairs. The mid-rail is located in the middle of the 10' high fencing. This means the rail is at head height for many players and creates an unsafe condition for players should players run into the fencing. Currently school staff reports that the main issue with the tennis courts are stray balls from the adjacent softball field.

Although well-maintained, and in good condition, the courts show signs of wear deterioration typical for their age. When installed, the courts were saw-cut to control the location of expected cracking to the sidelines, and very little cracking was observed other than at the saw-cuts. Cracking and separation of the asphalt base can be seen at these saw-cut joints both longitudinally between courts and latitudinal across the courts at the net posts. These cracks are part of the design of the courts and will continue to expand and require repair as the courts continue to age. There is evidence of wear (thin spots and wear marks) on the tennis court surfacing, however no significant blistering or delamination of the surface was observed. Several of the court netting posts have begun to lean.

Recommendations:

- Given the current age and condition of the tennis courts, a new color coat/surfacing should be installed within the next two years. As part of, but prior to, the resurfacing program, the asphalt cracks should be repaired, and all net posts should be reset or replaced with new posts.

- By repairing and resurfacing the existing asphalt base, the courts could expect another 5 to 10 years of use. However, it should be expected that the existing cracks, at the saw cut joints (which are off of the main area of play) even if patched, will continue to expand and require maintenance over the remaining life of the courts. Resurfacing and major crack repair should be planned for every 5 years until the pavement reaches the end of its lifespan, after which time repairs will not be sufficient and reconstruction of the courts will be required.

- A ball nettings system between the adjacent softball field and courts is also recommended to prevent stray balls coming onto the courts. A netting system of 30 feet in height or greater will be most effective. At the time of this report a netting system was in the process of bidding for construction.

3.6.3 Track & Field Facility Master Plan

BSC developed a master plan for the track & field facility as part of the study. As part of this master planning effort, BSC worked closely with the District, the Athletic Director, and key stakeholders in order to define the specific scope of desired improvements through an analysis of existing athletic facilities as well as working with District athletics staff to define a detailed athletics program for the facilities. This "programming" considered the "needs" for maintaining the existing facility in its current, or better condition. The programming exercise also established the "wants" of the District with the goal of defining the desired scope and performance goals for any new athletic facilities or site amenities. This process helped to match existing sports programming and scheduling (e.g. soccer, lacrosse, football, field hockey) with available facilities, as well as with title IX equity and accessibility requirements. Information gathered during this programming process with school staff was used to make scope/budget decisions as the planning process moved forward.

BSC worked-through the initial stages of the planning design process by performing a series of "test-fit" and "best-fit" exercises for proposed new facilities. During this process, the viability of field layouts were assessed relative to parameters such as dimensional suitability, general topography, accessibility, security, and available utility connections. The cost and maintenance requirements of renovating the existing natural grass field or converting the field to synthetic turf were assessed. Potential effects on traffic, parking and circulation associated with the revised facilities were also considered. This process included meetings with the Athletic Director and coaching staff to discuss their needs. Out of this process, a draft planning concept was prepared for review and is attached as Figure 15 of this report.

The result of that process resulted in the list of the following desired improvements to the track & field facility in order to accommodate current school athletics programming, allow better event scheduling, eliminate usage restrictions, improve school image and branding, and allow a lower cost-per-use ratio for the facility. The proposed improvements generally include the following items:

- Convert the natural grass field to an all-weather, synthetic surface.
- Rehabilitate the running track and associated events.

- Reconfigure field events for better event programming and usage.
- Renovate the existing home bleacher system and add a new press box.
- Add a new prefabricated 250 seat visitors bleacher system.
- Add a new combination restroom/concession building.
- Plan for the future addition of athletic field lighting to allow for night games.

In addition, BSC met with Town staff, including the Planning Department, Town manager and Parks and Recreation to discuss the potential upgrades to the athletic facilities (including lighting) to identify the applicable zoning considerations and permitting requirements for any proposed improvements. These improvements would be subject to the Town of Hebron Zoning Regulations.

4.0 Cost Estimates

4.1 Methods

Opinion of budget cost estimates were prepared on the material types and quantities considered for the various activities specific to each study task discussed in Section 3.0. These costs are conceptual, as they are based on conceptual plans which will require further development and detail as the scope is defined and the design process proceeds. The estimates are also time-sensitive, and escalation costs accounting for inflation and market variations should be incorporated for every year beyond the date of this report. In general, the estimates were derived using the Unit Quantity Method in four steps as described below.

1. Develop Project Model - To develop the project model, each of the operations or materials included in the various tasks were compiled. An appropriate unit of measurement was then assigned to each Item based on its specific nature (e.g. linear-foot, square-foot, etc.).

2. Assign Quantities - Once the Items and units were assigned, the quantity of each of item was estimated.

3. Assign Unit Prices - Unit prices were assigned to each of the individual Items in the Project Model using data from ConnDOT, similar projects, industry inquiries, and BSC's in-house cost library.

4. Calculation - Once the cost estimate was populated with items, quantities, and unit prices, the estimated cost was calculated.

4.2 Estimated Costs

The total cost of the various elements addressed by this study was calculated at $5,557,000. This cost estimate is generally segregated as follows:

1. Campus Traffic Renovations
   - Short Term Conceptual Plan *$150,000*
   - Long Term Conceptual Plan **$1,375,000**

2. Sidewalk/Walkway Concrete Mitigation
   - Repair/Replace Only **$240,000**
   - Repair/Replace, Combined w/ADA Mitigation ... *$520,000*

3. Bituminous Pavement, Initial Maintenance **$160,000**

4. Exterior Handicapped Accessibility
   - High School Only *$200,000*
   - Campus **$480,000**

5. Site Landscaping Improvements **$35,000**

6. Track & Field Facility Conceptual Improvements
    - All-Weather (Synthetic) Turf Field *$925,000*
    - Track, Fencing, and Walkways *$675,000*
    - 750 Seat Home Bleachers and Press Box *$225,000*
    - 250 Seat Visitor Bleachers *$75,000*
    - Scoreboard *$35,000*
    - Restroom, Concessions, and Storage Building *$450,000*
    - Sports Field Lighting *$350,000*

    Total **$2,735,000**

7. Athletic Facilities, Tennis Court Rehabilitation **$82,000**

8. New Multi-Use Athletic Field (2001 Concept) **$450,000**

    Total **$5,557,000**

PHOTOGRAPHS

Traffic/Circulation and Pedestrian Conditions

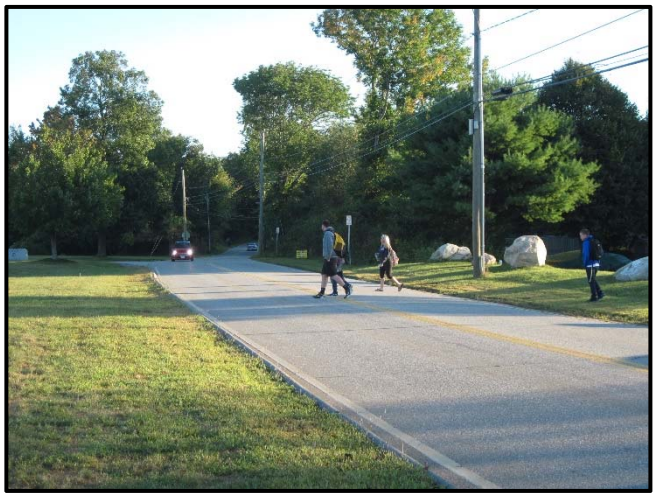


Photo 1 – Students crossing Wall Street

Photo 2 – Obscured Main Entrance

Photo 3 – Poor Sight Lines at Crosswalk

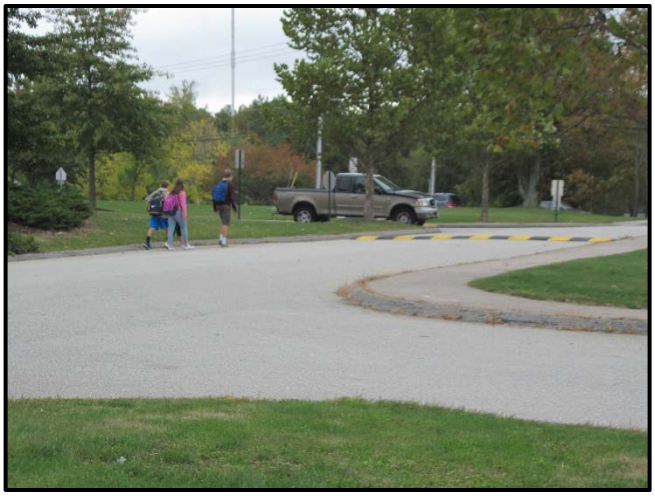


Photo 4 – Poor Sight Lines at Crosswalk

Photo 5 – Main Entrance – Poor Radius for Bus

Photo 6 – Main Entrance - Lack of Intersection Control

Photo 7 – High School Drop Off Loop
cles Parked in Opposite Direction

Photo 8 – High School Drop Off Loop
Poor Layout of Parking vs. Stop Bar

Photo 9 – Excessive Sign Information

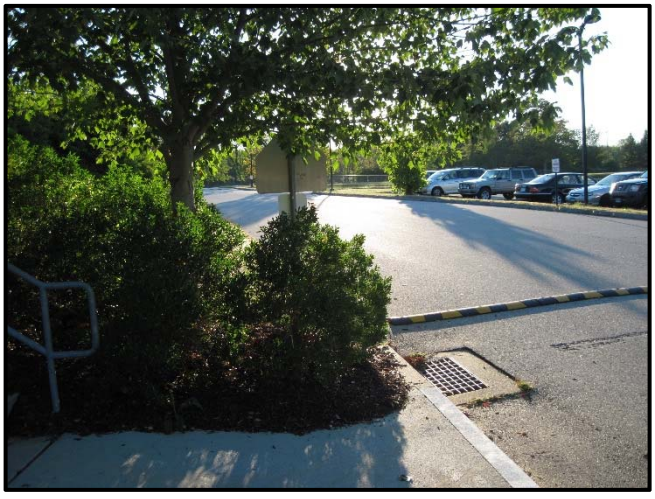
Photo 10 – Excessive Sign Information

Photo 11 – Crosswalk leads to Planting Bed

Photos 12 and 13 – Signs on Wall Street Direct Traffic to School Secondary Entrance

Photo 14 – Poor Delineation of Parking

Photo 15 – Poor Delineation of Parking



Photos 16 and 17 – Poor Sight Lines Crosswalks

Bituminous Pavement Conditions

Photo 1 - Example of Debris Along Curb

Photo 2 - Example of Debris Along Curb

Photo 3 - Example of Patching

Photo 4 - Example of Patching

Photo 5 - Example of Edge Cracking

Photo 6 - Example of Slippage Cracking

Photo 7 - Example of Debris Along Curb

Photo 8 - Example of Debris Along Curb

Photo 9 - Example Transverse Cracking

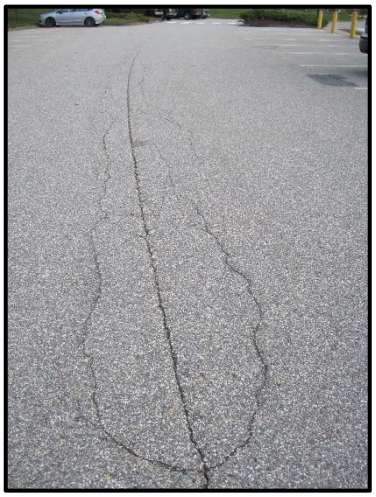


Photo 10 - Example of Longitudinal Cracking

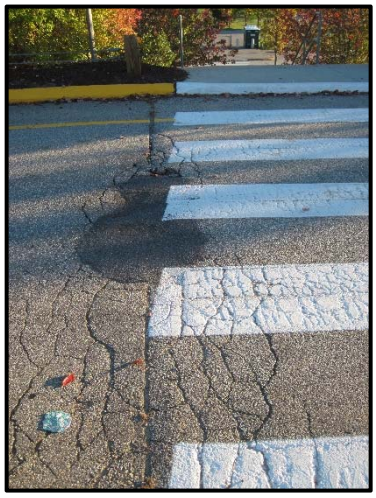


Photo 11 - Example of Alligator Cracking

Photo 12 - Example of Block Cracking

Sidewalk/Walkway Conditions

Photo 1 – Panel with Grade of "Acceptable"

Photo 2 – Panel with Grade of "Repair Required"

Photo 3 – Panel with Grade of "Replacement Required"

Photo 4 – Typical Panel with "Repairable" Crack

Photo 5 – Typical Vegetation in Joint

Photo 6 – Typical Bituminous Replacement Area

Site Landscape Assessment

Photo 1 – Vegetation encroaching on stairs

Photo 2 – Typical poor lawn area

Photo 3 – Inconsistent shrub plantings

Photo 4 – Poor lawn area under trees

Photo 5 – Gym Entrance – Poor lawn area

Photo 6 – Reduced visibility at crosswalk

Track & Field Facility Conditions

Photo 1 – Typical worn track surfacing

Photo 2 – Close-up of track surfacing

Photo 3 – Natural grass infield

Photo 4 – Close-up of grass condition

Photo 5 – Typical cracking in track surfacing

Photo 6 – Typical area drain in field

Tennis Court Conditions

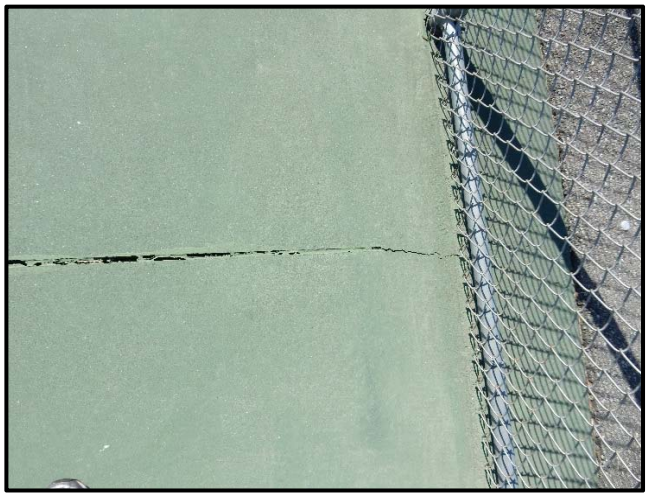


Photo 1 – Typical cracking at perimeter fence

Photo 2 – Typical cracking between courts

Photo 3 – Typical cracking between court batteries

Photo 4 – Court condition around net post

Photo 5 – Typical cracking

Photo 6 – Cracking between net posts

TABLES

Table 1: SIDEWALK CONDITION MATRIX
RHAM EXISTING FACILITIES STUDY
RHAM MIDDLE AND HIGH SCHOOL | 85 WALL STREET | HEBRON CT 06248

Area Designation	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	Drives
Area (sf)	499	1,758	2,079	4,268	637	1,045	303	308	140	571	200	760	1,806	2,368	533	997	1,424	2,019
Panel #	1 2	1 1	1 3	1 2 40 1	1 1	1 2	1 1	3	3	1 2	1 3	1 2	10 panels	1 2 40 3	1 2	1 1	1 1	Drive 1
	2 2	2 1	2 2	2 2 41 1	2 1	2 1	2 2			2 2	2 3	2 2		2 2 41 2	2 1	2 1	2 1	11 2
	3 2	3 1	3 3	3 2 42 1	3 1	3 1	3 1			3 1	3 2	3 2		3 3 42 2	3 1	3 1	3 1	12 2
	4 3	4 2	4 2	4 1 43 1	4 2	4 2	4 1			4 1	4 1	4 2		4 1 43 2	4 1	4 1	4 1	Drive 2
	5 3	5 3	5 3	5 1 44 1	5 1	5 1	5 1			5 1	5 1	5 3		5 3 44 2	5 1	5 2	5 1	1 1
	6 3	6 3	6 2	6 1 45 1	6 2	6 1	6 1			6 1	6 1	6 3		6 2 45 1	6 1	6 3	6 1	2 2
	7 3	7 1	7 3	7 2 46 2	7 2	7 1				7 1	7 2	7 3		7 2 46 1	7 1	7 1	7 1	3 2
	8 2	8 1	8 2	8 2	8 2	8 1				8 1		8 1		8 2 47 1	8 1	8 1	8 2	4 2
	9 1	9 1	9 2	9 1	9 3	9 1				9 1		9 1		9 1 48 1	9 1	9 2	9 1	5 2
	10 2	10 1	10 1	10 2	10 3	10 1				10 1		10 1		10 1 49 1	10 1	10 1	10 2	6 1
	11 1	11 1	11 2	11 1	11 3	11 1				11 1		11 3		11 1 50 1	11 1	11 2	11 1	7 1
	12 1	12 1	12 2	12 2	12 2	12 2				12 1		12 1		12 1 51 1	12 1	12 2	12 1	8 1
	13 2	13 1	13 2	13 2	13 2	13 1				13 1		13 1		13 1 52 1	13 1	13 1	13 1	9 1
	14 2	14 2	14 2	14 2	14 2	14 1				14 1		14 1		14 2 53 1	14 1	14 1	14 1	10 1
	15 2	15 2	15 2	15 1	15 1	15 1						15 1		15 1 54 1	15 1	15 1	15 1	11 1
	16 2	16 1	16 1	16 1	16 2	16 1						16 1		16 1 55 1	16 2	16 1	16 1	12 1
	17 2	17 1	17 2	17 2	17 1	17 1						17 1		17 1 56 1	17 1	17 1	17 1	Drive 3
	18 2	18 1	18 2	18 2	18 2	18 2						18 1		18 2 57 1	18 1	18 2	18 2	1 2
	19 2	19 1	19 2	19 1	19 2	19 1						19 1		19 2 58 3	19 1	19 2	19 1	2 1
		20 1	20 1	20 1	20 2	20 1						20 1		20 2 59 2	20 1		20 2	3 1
		21 2	21 2	21 1	21 1	21 1								21 2 60 3			21 1	4 1
		22 2	22 1	22 1	22 2	22 1								22 2 61 2			22 2	5 1
		23 2	23 3	23 1		23 1								23 2				6 1
		24 2	24 3	24 1		24 1								24 2				7 1
		25 2	25 2	25 1		25 1								25 3				8 1
		26 1	26 1	26 1		26 2								26 3				
			27 3	27 1		27 1								27 3				
			28 3	28 2		28 1								28 3				
			29 1	29 1		29 1								29 2				
			30 2	30 2		30 1								30 3				
			31 1	31 1		31 1								31 1				
			32 1	32 1		32 1								32 3				
			33 1	33 1		33 1								33 2				
				34 1		34 1								34 3				
				35 1		35 2								35 2				
				36 2		36 2								36 3				
				37 1		37 1								37 2				
				38 1		38 2								38 3				
				39 1		39 2								39 2				
						40 2												

"1" Freq. | % of total	3 15.8	16 61.5	9 27.3	31 67.4	7 31.8	30 75	5 83.3	0 0	0 0	12 85.7	3 42.9	12 60	0 0	23 37.7	18 90	12 63.2	17 77.3	15 68.2
"2" Freq. | % of total	12 63.2	8 30.8	16 48.5	15 32.6	12 54.5	10 25	1 16.7	0 0	0 0	2 14.3	2 28.6	4 20	0 0	24 39.3	2 10	6 31.6	5 22.7	7 31.8
"3" Freq. | % of total	4 21.1	2 7.69	8 24.2	0 0	3 13.6	0 0	0 0	1 100	1 100	0 0	2 28.6	4 20	0 100	14 23	0 0	1 5.26	0 0	0 0

"Acceptable" area (S.F.)	79	1,082	567	2,876	203	784	253	0	0	489	86	456	0	893	480	630	1,100	1,377
"Repair" area (S.F.)	315	541	1,008	1,392	347	261	51	0	0	82	57	152	0	932	53	315	324	642
"Replacement" area (S.F.)	105	135	504	0	87	0	0	308	140	0	57	152	382	543	0	52	0	0

Table 1: SIDEWALK CONDITION MATRIX (CONTINUED)
RHAM EXISTING FACILITIES STUDY
RHAM MIDDLE AND HIGH SCHOOL | 85 WALL STREET | HEBRON CT 06248

C18	C19				C20	C21		C22		C23	
2,214	**2,226**				**1,018**	**1,853**		**1,461**		**1,723**	
plaza area	1	3	40	1	Repar last 3	1	1	1	1	1	1
Repair 10	2	2	41	1		2	2	2	2	2	1
	3	2	42	2		3	1	3	1	3	2
	4	3	43	1		4	2	4	1	4	3
	5	3	44	1		5	1	5	2	5	1
	6	2	45	2		6	1	6	1	6	1
	7	2				7	1	7	2	7	1
	8	2				8	1	8	2	8	1
	9	3				9	1	9	1	9	1
	10	3				10	2	10	1	10	1
	11	3				11	2	11	2	11	1
	12	3				12	1	12	1	12	1
	13	3				13	1	13	2	13	1
	14	3				14	1	14	1	14	2
	15	3				15	1	15	2	15	2
	16	3				16	2	16	1	16	1
	17	1				17	1	17	1	17	1
	18	1				18	2	18	1	18	1
	19	1				19	2	19	1	19	1
	20	1				20	2	20	1	20	1
	21	1				21	1	21	1	21	1
	22	1				22	2	22	1	22	1
	23	1				23	2	23	1	23	2
	24	1				24	2	24	1	24	1
	25	1				25	2	25	1	25	1
	26	1				26	2	26	1	26	2
	27	1				27	1	27	1	27	2
	28	1				28	1	28	1	28	1
	29	1				29	1	29	1	29	1
	30	1				30	2	30	2	30	1
	31	1				31		31	2	31	2
	32	1				32	1	32	1	32	2
	33	1				33	2	33	1	33	2
	34	1				34	1	34	1	34	1
	35	2				35	2	35	2	35	1
	36	2				36	1				
	37	1				37	1				
	38	1				38	1				
	39	1				39	1				

C24		C25		C26		C27				C28		C29	
655		**898**		**927**		**1,252**				**296**		**1,107**	
1	3	1	3	1	2	1	1	40	1	1	2	1	2
2	3	2	3	2	2	2	2	41	2	2	2	2	2
3	3	3	2	3	2	3	2	42	1	3	2	3	2
4	3	4	1	4	2	4	1	43	1	4	2	4	2
5	3	5	1	5	2	5	1	44	1	5	2	5	2
6	3	6	2	6	2	6	2	45	2	6	1	6	2
7	3	7	2	7	2	7	2			7		7	2
8	3	8	3	8	2	8	2					8	1
9	3	9	2	9	1	9	2					9	1
10	3	10	1	10	2	10	2					10	1
11	3	11	1	11	2	11	2					11	1
12	3	12	1	12	2	12	2					12	1
13	2	13	1	13	2	13	3					13	1
14	1	14	1	14	1	14	3					14	1
15	2	15	1	15	1	15	1					15	2
16	3	16	1	16	2	16	3					16	2
17	3	17	1	17	2	17	3					17	1
18	3	18	1	18	2	18	2					18	1
19	2	19	2	19	2	19	3					19	1
20	3	20	1	20	1	20	3					20	1
		21	1	21	1	21	2					21	1
		22	1	22	1	22	2					22	1
		23	1	23	1	23	2					23	1
				24	1	24	1					24	1
						25	2						
						26	2						
						27	1						
						28	2						
						29	1						
						30	2						
						31	2						
						32	1						
						33	1						
						34	1						
						35	1						
						36	1						
						37	1						
						38	1						
						39	1						

C30								C31		C32		C33	
7,273								**856**		**2,072**		**990**	
1	3	40	2	79	1	118	1	1	2	1	1	1	2
2	1	41	2	80	3	119	1	2	2	2	1	2	1
3	1	42	2	81	2	120	1	3	2	3	1	3	1
4	2	43	1	82	1	121	2	4	2	4	1	4	1
5	2	44	1	83	1	122	1	5	3	5	1	5	1
6	1	45	1	84	2	123	1	6	2	6	1	6	1
7	1	46	1	85	3	124	1	7	1	7	1	7	1
8	1	47	1	86	3	125	1	8	1	8	2	8	1
9	1	48	1	87	2	126	1	9	3	9	1	9	1
10	1	49	1	88	2	127	1	10	3	10	2	10	1
11	2	50	1	89	2	128	2	11	3	11	1	11	1
12	2	51	1	90	1	129	1	12	2	12	1	12	1
13	2	52	1	91	1	130	1			13	1	13	1
14	2	53	1	92	2	131	1			14	1	14	1
15	1	54	2	93	2	132	2			15	1	15	2
16	1	55	1	94	2	133	2			16	1	16	1
17	1	56	1	95	1	134	1			17	1	17	1
18	1	57	1	96	2	135	1			18	2	18	1
19	1	58	2	97	1	136	2			19	1	19	1
20	1	59	1	98	1	137	2			20	2	20	1
21	2	60	1	99	1	138	1			21	1	21	1
22	2	61	1	100	2	139	1			22	1	22	1
23	2	62	2	101	3	140	2			23	2	23	1
24	2	63	2	102	1	141	3			24	2	24	1
25	1	64	1	103	2	142	2			25	1	25	1
26	1	65	1	104	3	143	2			26	2	26	1
27	1	66	1	105	3	144	2			27	1	27	1
28	2	67	1	106	1	145	2			28	1	28	1
29	1	68	2	107	1	146	1			29	1	29	3
30	2	69	2	108	2	147	2			30	2		
31	2	70	3	109	3	148	2			31	2		
32	2	71	1	110	1	149	2			32	2		
33	1	72	3	111	1	150	2			33	1		
34	1	73	3	112	2					34	2		
35	1	74	1	113	2					35	2		
36	1	75	1	114	1					36	2		
37	1	76	2	115	1								
38	1	77	3	116	2								
39	2	78	2	117	2								

C18		C19		C20		C21		C22		C23		C24		C25		C26		C27		C28		C29		C30		C31		C32		C33	
0	0	25	55.6	0	0	22	57.9	25	71.4	25	71.4	1	5	15	65.2	8	33.3	19	42.2	1	16.7	15	62.5	80	53.3	2	16.7	23	63.9	26	89.655
0	100	9	20	0	100	16	42.1	10	28.6	9	25.7	3	15	5	21.7	16	66.7	20	44.4	5	83.3	9	37.5	57	38	6	50	13	36.1	2	6.8966
0	0	11	24.4	0	0	0	0	0	0	1	2.86	16	80	3	13	0	0	6	13.3	0	0	0	0	13	8.67	4	33.3	0	0	1	3.4483

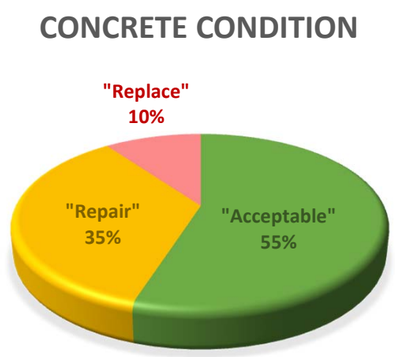
C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32	C33
0	1,237	0	1,073	1,044	1,231	33	586	309	529	49	692	3,879	143	1,324	888
640	445	144	780	417	443	98	195	618	556	247	415	2,764	428	748	68
0	544	0	0	0	49	524	117	0	167	0	0	630	285	0	34

Table 1: SIDEWALK CONDITION MATRIX (CONTINUED)
RHAM EXISTING FACILITIES STUDY
RHAM MIDDLE AND HIGH SCHOOL | 85 WALL STREET | HEBRON CT 06248

C34						C35		C36		C37		C38		C39				C40					
4,502						369		1,064		1,030		401		1,434				3,695					
1	2	40	1	79	3	1	1	1	2	1	2		1	1	2	40	2	1	1	40	2	79	1
2	1	41	1	80	3	2	1	2	1	2	2			2	1	41	1	2	2	41	2	80	2
3	2	42	2	81	3	3	1	3	1	3	1			3	1	42	1	3	1	42	2	81	1
4	1	43	2	82	2	4	1	4	1	4	2			4	1	43	1	4	1	43	1	82	1
5	1	44	1	83	2	5	1	5	1	5	2			5	1	44	1	5	1	44	1	83	1
6	1	45	1	84	3	6	1	6	1	6	2			6	1			6	1	45	1	84	1
7	2	46	1	85	3	7	1	7	1	7	2			7	1			7	1	46	1	85	1
8	1	47	1	86	3	8	2	8	1	8	3			8	1			8	1	47	2	86	1
9	1	48	1	87	2	9	2	9	1	9	3			9	1			9	1	48	2	87	2
10	2	49	2	88	1	10	2	10	1	10	3			10	1			10	1	49	1	88	1
11	2	50	1	89	2	11	1	11	1	11	2			11	2			11	1	50	2	89	2
12	2	51	1	90	2	12	2	12	1	12	2			12	1			12	1	51	1	90	1
13	2	52	1	91	1	13	3	13	1	13	2			13	1			13	1	52	1	91	1
14	2	53	1	92	1	14	2	14	1	14	3			14	1			14	1	53	1	92	1
15	2	54	2			15	2	15	1	15	2			15	1			15	1	54	1	93	1
16	1	55	1			16	3	16	1	16	2			16	1			16	1	55	1	94	1
17	1	56	2					17	1	17	2			17	1			17	1	56	1	95	1
18	1	57	2					18	1	18	3			18	1			18	1	57	1	96	1
19	2	58	2					19	1	19	3			19	2			19	1	58	1	97	1
20	2	59	1					20	1	20	1			20	3			20	2	59	1	98	1
21	2	60	2					21	2					21	2			21	1	60	1	99	1
22	2	61	2					22	1					22	2			22	1	61	1	100	1
23	2	62	2					23	2					23	2			23	1	62	1	101	1
24	2	63	2					24	2					24	1			24	1	63	1	102	1
25	2	64	2					25	2					25	1			25	1	64	2	103	1
26	2	65	2					26	2					26	2			26	2	65	1	104	1
27	2	66	2											27	1			27	1	66	1	105	1
28	3	67	2											28	1			28	1	67	2	106	1
29	3	68	2											29	2			29	1	68	1	107	1
30	2	69	2											30	2			30	1	69	1	108	1
31	2	70	2											31	2			31	1	70	1		
32	1	71	1											32	2			32	1	71	1		
33	3	72	2											33	1			33	1	72	1		
34	3	73	2											34	1			34	1	73	1		
35	2	74	1											35	1			35	1	74	2		
36	2	75	1											36	1			36	1	75	2		
37	1	76	2											37	1			37	1	76	1		
38	2	77	1											38	2			38	1	77	2		
39	2	78	2											39	2			39	2	78	1		

		31	33.7	8	50	20	76.9	2	10	1	100			29	65.9			90	83.3				
		51	55.4	6	37.5	6	23.1	12	60	0	0			14	31.8			18	16.7				
		10	10.9	2	12.5	0	0	6	30	0	0			1	2.27			0	0				

								Total Conc (s.f.):	Conc %:
1,517	185	818	103	401	945	3,079	31,415	55	
2,496	138	246	618	0	456	616	20,049	35	
489	46	0	309	0	33	0	5,695	10	



Bituminous Analysis

Total Amout: 59,000 s.f.

	Total Bit (s.f.):	Bit %	TOTAL (s.f.):	TOTAL %
"Acceptable"	56,500	96	87,915	76
			20,049	17
"Replacement"	2,500	4	8,195	7

Table 2: SIDEWALK MITIGATION MATRIX
RHAM EXISTING FACILITIES STUDY
RHAM MIDDLE AND HIGH SCHOOL | 85 WALL STREET | HEBRON CT 06248

Area Designation	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	Drives
Area (sf)	499	1,758	2,079	4,268	637	1,045	303	308	140	571	200	760	1,806	2,368	533	997	1,424	2,019
Panel #	1 3	1 1	1 3	1 2 40 1	1 1	1 2	1 2	3	3	1 2	1 3	1 3	10 panels	1 2 40 3	1 2	1 1	1 1	Drive 1
	2 3	2 1	2 3	2 2 41 1	2 1	2 1	2 2			2 2	2 3	2 3		2 2 41 2	2 1	2 1	2 1	11 2
	3 3	3 1	3 3	3 2 42 1	3 1	3 1	3 2			3 1	3 2	3 3		3 3 42 2	3 1	3 1	3 1	12 2
	4 3	4 2	4 3	4 1 43 1	4 2	4 2	4 2			4 1	4 1	4 3		4 3 43 2	4 1	4 1	4 1	Drive 2
	5 3	5 3	5 3	5 1 44 1	5 1	5 1	5 3			5 1	5 1	5 3		5 3 44 2	5 1	5 2	5 1	1 1
	6 3	6 3	6 3	6 1 45 1	6 3	6 1	6 3			6 1	6 1	6 3		6 3 45 1	6 1	6 3	6 1	2 2
	7 3	7 1	7 3	7 2 46 2	7 3	7 1				7 1	7 1	7 3		7 2 46 1	7 1	7 1	7 1	3 2
	8 3	8 1	8 3	8 2	8 3	8 1				8 1		8 1		8 2 47 1	8 1	8 1	8 2	4 2
	9 1	9 1	9 3	9 1	9 3	9 1				9 1		9 1		9 1 48 1	9 1	9 2	9 1	5 2
	10 1	10 1	10 1	10 2	10 3	10 1				10 1		10 1		10 1 49 1	10 1	10 1	10 2	6 1
	11 1	11 1	11 2	11 1	11 3	11 1				11 1		11 2		11 1 50 1	11 1	11 2	11 1	7 1
	12 1	12 1	12 2	12 2	12 2	12 2				12 1		12 1		12 1 51 1	12 1	12 2	12 1	8 1
	13 2	13 1	13 2	13 2	13 2	13 1				13 1		13 1		13 1 52 1	13 1	13 1	13 1	9 1
	14 2	14 2	14 2	14 2	14 2	14 1				14 1		14 1		14 2 53 1	14 1	14 1	14 1	10 1
	15 2	15 2	15 2	15 1	15 1	15 1						15 1		15 1 54 1	15 1	15 1	15 1	11 1
	16 2	16 1	16 1	16 1	16 2	16 1						16 1		16 1 55 1	16 2	16 1	16 1	12 1
	17 2	17 1	17 2	17 2	17 1	17 1						17 1		17 1 56 1	17 1	17 1	17 1	Drive 3
	18 2	18 1	18 2	18 2	18 3	18 2						18 1		18 3 57 1	18 1	18 2	18 2	1 2
	19 2	19 1	19 2	19 1	19 3	19 1						19 1		19 3 58 3	19 1	19 2	19 1	2 1
		20 1	20 1	20 1	20 3	20 1						20 1		20 3 59 3	20 1		20 2	3 1
		21 3	21 2	21 1	21 1	21 1								21 3 60 3			21 1	4 1
		22 3	22 1	22 1	22 2	22 1								22 3 61 3			22 2	5 1
		23 3	23 3	23 1		23 1								23 3				6 1
		24 3	24 3	24 1		24 1								24 3				7 1
		25 3	25 3	25 1		25 1								25 3				8 1
		26 1	26 3	26 1		26 2								26 3				
			27 3	27 1		27 1								27 3				
			28 3	28 2		28 1								28 3				
			29 1	29 1		29 1								29 3				
			30 2	30 2		30 1								30 3				
			31 1	31 1		31 1								31 3				
			32 1	32 1		32 1								32 3				
			33 1	33 1		33 1								33 3				
				34 1		34 1								34 3				
				35 1		35 2								35 3				
				36 2		36 2								36 3				
				37 1		37 1								37 3				
				38 1		38 2								38 3				
				39 1		39 3								39 3				
						40 3												

"1" Freq. | % of total	4 21.1	16 61.5	8 24.2	31 67.4	7 31.8	30 75	0 0	0 0	0 0	12 85.7	4 57.1	12 60	0 0	21 34.4	18 90	12 63.2	17 77.3	15 68.2
"2" Freq. | % of total	7 36.8	3 11.5	10 30.3	15 32.6	6 27.3	8 20	4 66.7	0 0	0 0	2 14.3	1 14.3	1 5	0 0	9 14.8	2 10	6 31.6	5 22.7	7 31.8
"3" Freq. | % of total	8 42.1	7 26.9	15 45.5	0 0	9 40.9	2 5	2 33.3	1 100	1 100	0 0	2 28.6	7 35	0 100	31 50.8	0 0	1 5.26	0 0	0 0

"Acceptable" area (S.F.)	105	1,082	504	2,876	203	784	0	0	0	489	114	456	0	815	480	630	1,100	1,377
"Repair" area (S.F.)	184	203	630	1,392	174	209	202	0	0	82	29	38	0	349	53	315	324	642
"Replacement" area (S.F.)	210	473	945	0	261	52	101	308	140	0	57	266	382	1,203	0	52	0	0

Table 2: SIDEWALK MITIGATION MATRIX (CONTINUED)
RHAM EXISTING FACILITIES STUDY
RHAM MIDDLE AND HIGH SCHOOL | 85 WALL STREET | HEBRON CT 06248

C18	C19				C20	C21		C22		C23		C24		C25		C26		C27				C28		C29		C30						C31		C32		C33		C34			
2,214	2,226				1,018	1,853		1,461		1,723		655		898		927		1,252				296		1,107		7,273						856		2,072		990		4,502			
plaza area	1	3	40	1	Repar last 3	1	1	1	1	1	1	1	3	1	3	1	2	1	1	40	1	1	2	1	2	1	3	40	2	79	3	118	1	1	2	1	1	1	3	1	2	40	1	79	3
Repair 10	2	3	41	1		2	2	2	2	2	1	2	3	2	3	2	2	2	2	41	2	2	2	2	2	2	1	41	2	80	3	119	1	2	2	2	1	2	1	2	1	41	1	80	3
	3	3	42	2		3	1	3	1	3	2	3	3	3	3	3	2	3	2	42	1	3	2	3	2	3	1	42	2	81	3	120	1	3	2	3	1	3	1	3	2	42	2	81	3
	4	3	43	1		4	2	4	1	4	3	4	3	4	3	4	2	4	1	43	1	4	2	4	2	4	2	43	1	82	1	121	2	4	2	4	1	4	1	4	1	43	2	82	3
	5	3	44	1		5	1	5	2	5	1	5	3	5	3	5	2	5	1	44	1	5	2	5	2	5	2	44	1	83	1	122	1	5	3	5	1	5	1	5	1	44	1	83	3
	6	3	45	2		6	1	6	1	6	1	6	3	6	3	6	2	6	2	45	2	6	1	6	2	6	1	45	1	84	3	123	1	6	3	6	1	6	1	6	1	45	1	84	3
	7	3				7	1	7	2	7	1	7	3	7	3	7	2	7	2			7		7	2	7	1	46	1	85	3	124	1	7	1	7	1	7	1	7	2	46	1	85	3
	8	3				8	1	8	2	8	1	8	3	8	3	8	2	8	2					8	1	8	1	47	1	86	3	125	1	8	1	8	2	8	1	8	1	47	1	86	3
	9	3				9	1	9	1	9	1	9	3	9	3	9	1	9	2					9	1	9	1	48	1	87	3	126	1	9	3	9	1	9	1	9	1	48	1	87	2
	10	3				10	2	10	1	10	1	10	3	10	1	10	2	10	2					10	1	10	1	49	1	88	3	127	1	10	3	10	2	10	1	10	2	49	2	88	1
	11	3				11	2	11	2	11	1	11	3	11	1	11	2	11	2					11	1	11	2	50	1	89	3	128	2	11	3	11	1	11	1	11	2	50	1	89	2
	12	3				12	1	12	1	12	1	12	3	12	1	12	2	12	3					12	1	12	2	51	1	90	1	129	1	12	3	12	1	12	1	12	2	51	1	90	2
	13	3				13	1	13	2	13	1	13	3	13	1	13	2	13	3					13	1	13	2	52	1	91	1	130	1			13	1	13	1	13	2	52	1	91	1
	14	3				14	1	14	1	14	2	14	3	14	1	14	1	14	3					14	1	14	2	53	1	92	3	131	1			14	1	14	1	14	2	53	1	92	1
	15	3				15	1	15	2	15	2	15	3	15	1	15	1	15	1					15	2	15	1	54	2	93	3	132	2			15	1	15	2	15	2	54	2		
	16	3				16	2	16	1	16	1	16	3	16	1	16	2	16	3					16	2	16	1	55	1	94	3	133	2			16	1	16	1	16	1	55	1		
	17	1				17	1	17	1	17	1	17	3	17	1	17	2	17	3					17	1	17	1	56	1	95	3	134	1			17	1	17	1	17	1	56	2		
	18	1				18	2	18	1	18	1	18	3	18	1	18	2	18	2					18	1	18	1	57	1	96	3	135	1			18	2	18	1	18	1	57	2		
	19	1				19	2	19	1	19	1	19	3	19	2	19	2	19	3					19	1	19	1	58	2	97	1	136	2			19	1	19	1	19	2	58	2		
	20	1				20	2	20	1	20	1	20	3	20	1	20	1	20	3					20	1	20	1	59	1	98	1	137	2			20	2	20	1	20	2	59	1		
	21	1				21	1	21	1	21	1			21	1	21	1	21	2					21	1	21	2	60	1	99	1	138	1			21	1	21	1	21	2	60	2		
	22	1				22	2	22	1	22	1			22	1	22	1	22	2					22	1	22	2	61	1	100	3	139	1			22	1	22	1	22	2	61	2		
	23	1				23	2	23	1	23	2			23	1	23	1	23	2					23	1	23	2	62	2	101	3	140	3			23	2	23	1	23	2	62	2		
	24	1				24	2	24	1	24	1					24	1	24	1					24	1	24	2	63	2	102	3	141	3			24	2	24	1	24	2	63	2		
	25	1				25	2	25	1	25	1							25	2							25	1	64	1	103	3	142	2			25	1	25	1	25	2	64	2		
	26	1				26	2	26	1	26	2							26	2							26	1	65	1	104	3	143	2			26	2	26	1	26	2	65	2		
	27	1				27	1	27	1	27	2							27	1							27	1	66	1	105	3	144	2			27	1	27	1	27	2	66	2		
	28	1				28	1	28	1	28	1							28	2							28	2	67	1	106	1	145	2			28	1	28	1	28	3	67	2		
	29	1				29	1	29	1	29	1							29	1							29	1	68	3	107	1	146	1			29	1	29	3	29	3	68	2		
	30	1				30	2	30	2	30	1							30	2							30	2	69	3	108	3	147	2			30	2			30	3	69	2		
	31	1				31		31	2	31	2							31	2							31	2	70	3	109	3	148	2			31	2			31	3	70	2		
	32	1				32	1	32	1	32	2							32	1							32	2	71	3	110	1	149	2			32	2			32	3	71	1		
	33	1				33	2	33	1	33	2							33	1							33	1	72	3	111	1	150	2			33	1			33	3	72	2		
	34	1				34	1	34	1	34	1							34	1							34	1	73	3	112	3					34	2			34	3	73	2		
	35	2				35	2	35	2	35	1							35	1							35	1	74	1	113	3					35	2			35	2	74	1		
	36	2				36	1											36	1							36	1	75	1	114	1					36	2			36	2	75	1		
	37	1				37	1											37	1							37	1	76	3	115	1									37	1	76	2		
	38	1				38	1											38	1							38	1	77	3	116	3									38	2	77	1		
	39	1				39	1											39	1							39	2	78	3	117	3									39	2	78	3		

0	0		25	55.6	0	0	22	57.9	25	71.4	25	71.4	0	0	13	56.5	8	33.3		19	42.2	1	16.7	15	62.5		76	50.7	2	16.7	23	63.9	26	89.7			30	32.6		
0	100		4	8.89	0	100	16	42.1	10	28.6	9	25.7	0	0	1	4.35	16	66.7		19	42.2	5	83.3	9	37.5		36	24	4	33.3	13	36.1	1	3.45			46	50		
0	0		16	35.6	0	0	0	0	0	0	1	2.86	20	100	9	39.1	0	0		7	15.6	0	0	0	0		38	25.3	6	50	0	0	2	6.9			16	17.4		

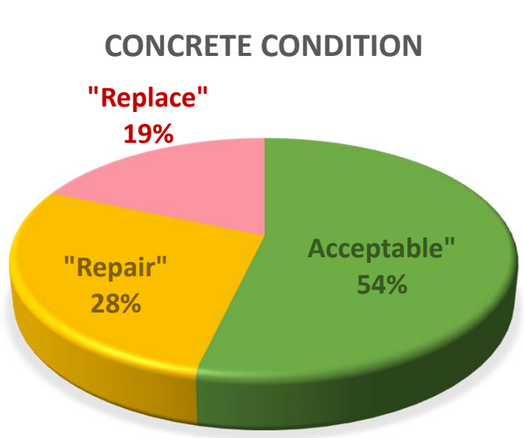
0	1,237		0	1,073	1,044	1,231	0	508	309	529	49	692	3,685	143	1,324	888	1,468																							
640	198		144	780	417	443	0	39	618	529	247	415	1,746	285	748	34	2,251																							
0	791		0	0	0	49	655	351	0	195	0	0	1,842	428	0	68	783																							

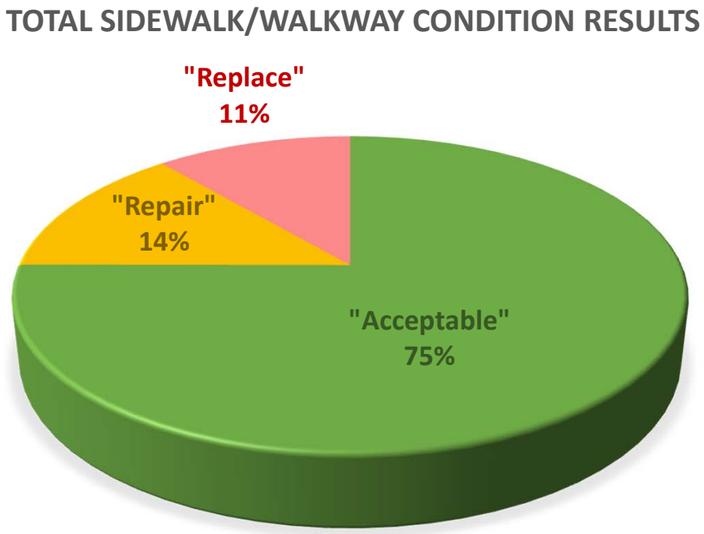
Table 2: SIDEWALK MITIGATION MATRIX (CONTINUED)
RHAM EXISTING FACILITIES STUDY
RHAM MIDDLE AND HIGH SCHOOL | 85 WALL STREET | HEBRON CT 06248

C35		C36		C37		C38		C39				C40					
369		1,064		1,030		401		1,434				3,695					
1	1	1	2	1	2		1	1	2	40	2	1	1	40	2	79	1
2	1	2	1	2	2			2	1	41	1	2	2	41	2	80	2
3	1	3	1	3	1			3	1	42	1	3	1	42	2	81	1
4	1	4	2	4	2			4	1	43	1	4	1	43	1	82	1
5	1	5	1	5	2			5	1	44	1	5	1	44	1	83	1
6	1	6	1	6	2			6	1			6	1	45	1	84	1
7	1	7	1	7	2			7	1			7	1	46	1	85	1
8	2	8	1	8	3			8	1			8	1	47	2	86	1
9	2	9	1	9	3			9	1			9	1	48	2	87	2
10	2	10	1	10	3			10	1			10	1	49	1	88	1
11	1	11	1	11	3			11	2			11	1	50	2	89	2
12	2	12	1	12	3			12	1			12	1	51	1	90	1
13	3	13	1	13	3			13	1			13	1	52	1	91	1
14	3	14	1	14	3			14	1			14	1	53	1	92	1
15	3	15	1	15	3			15	1			15	1	54	1	93	1
16	3	16	1	16	3			16	1			16	1	55	1	94	1
		17	1	17	3			17	1			17	1	56	1	95	1
		18	1	18	3			18	1			18	1	57	1	96	1
		19	1	19	3			19	3			19	1	58	1	97	1
		20	1	20	1			20	3			20	2	59	1	98	1
		21	2					21	3			21	1	60	1	99	1
		22	1					22	2			22	1	61	1	100	1
		23	3					23	2			23	1	62	1	101	1
		24	3					24	1			24	1	63	1	102	1
		25	3					25	1			25	1	64	2	103	1
		26	3					26	2			26	2	65	1	104	1
								27	1			27	1	66	1	105	1
								28	1			28	1	67	2	106	1
								29	2			29	1	68	1	107	1
								30	2			30	1	69	1	108	1
								31	2			31	1	70	1		
								32	2			32	1	71	1		
								33	1			33	1	72	1		
								34	1			34	1	73	1		
								35	1			35	1	74	2		
								36	1			36	1	75	2		
								37	1			37	1	76	1		
								38	2			38	1	77	2		
								39	2			39	2	78	1		

8	50	19	73.1	2	10	1	100		29	65.9		90	83.3
4	25	3	11.5	6	30	0	0		12	27.3		18	16.7
4	25	4	15.4	12	60	0	0		3	6.82		0	0

						Total Conc (s.f.):	Conc %:
185	778	103	401	945	3,079	30,682	54
92	123	309	0	391	616	15,890	28
92	164	618	0	98	0	10,587	19





Bituminous Analysis

Total Amout: 59,000 s.f.

	Total Bit (s.f.):	Bit %	TOTAL (s.f.):	TOTAL %
"Acceptable"	56,500	96	87,182	75
			15,890	14
"Replacement"	2,500	4	13,087	11

Table 3:
BITUMINOUS PAVEMENT ASSESSMENT - SUMMARY OF FINDINGS
RHAM EXISTING FACILITIES STUDY

Section	Description	PCI Rating	PCI
1	Main Bus Loop	79	Satisfactory
2	Late Bus / Middle School Loop	71	Satisfactory
3	Middle School Drop Off	59	Fair
4	High School Drop Off	81	Satisfactory
5	Middle School Staff Parking Lot	74	Satisfactory
6	Lower Student Parking Lot	83	Satisfactory
7	Upper Student Parking Lot	72	Satisfactory
8	High School Staff Parking Lot	79	Satisfactory
9	Maintenance Driveway	71	Satisfactory
10	Pre-School Drop Off	76	Satisfactory
11	Handicap Parking Loop	77	Satisfactory

FIGURES

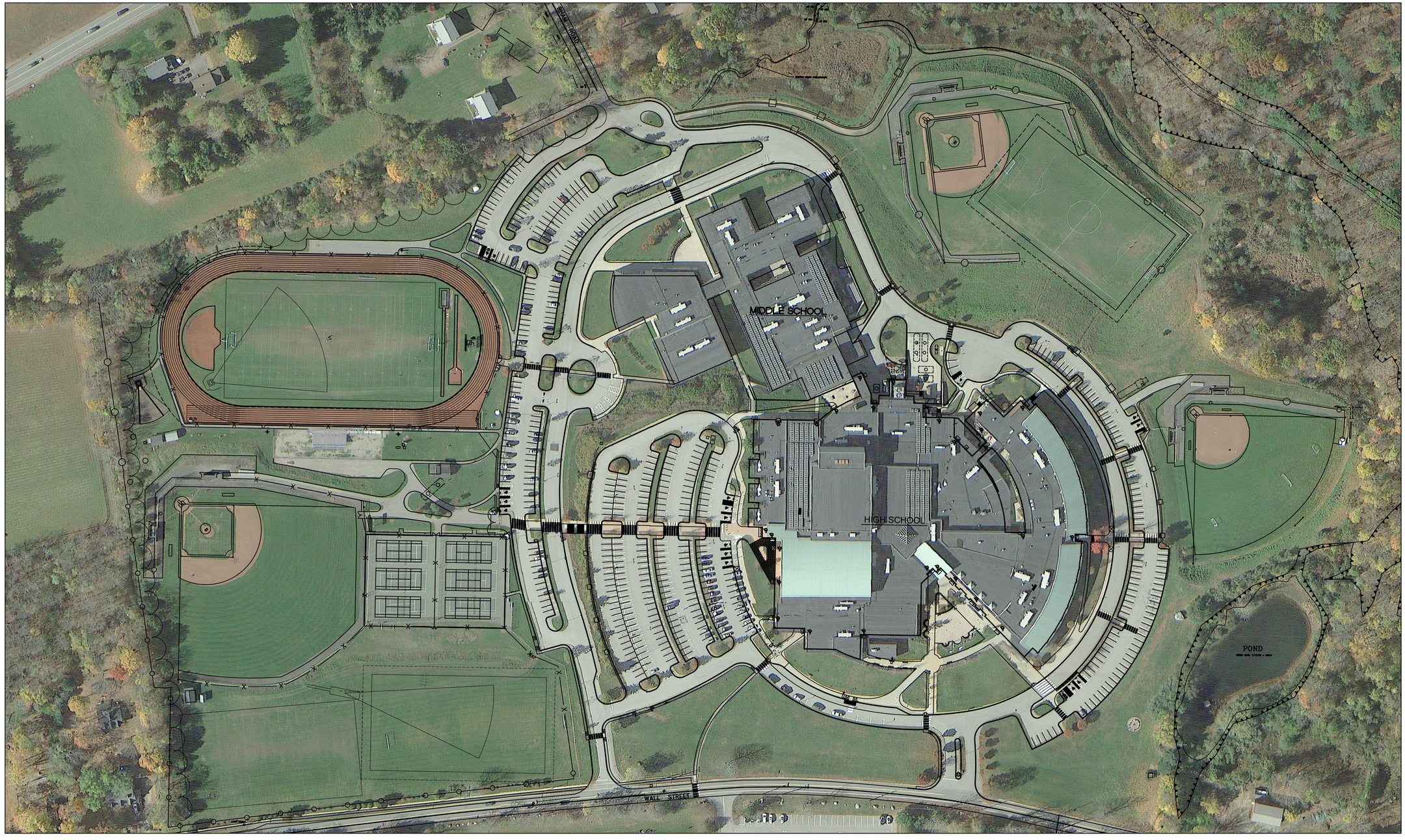


Figure 1 - Project Area Map

RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=80'-0"	DATE 11/9/2015	North	PRJ. NO. 83623.00

BSC GROUP
300 WINDING BROOK DRIVE, GLASTONBURY, CT 06033
(860) 652-8227
CIVIL ENGINEERING, LANDSCAPE ARCHITECTURE, SURVEYING, PLANNING, GIS, AND ECOLOGICAL SCIENCES

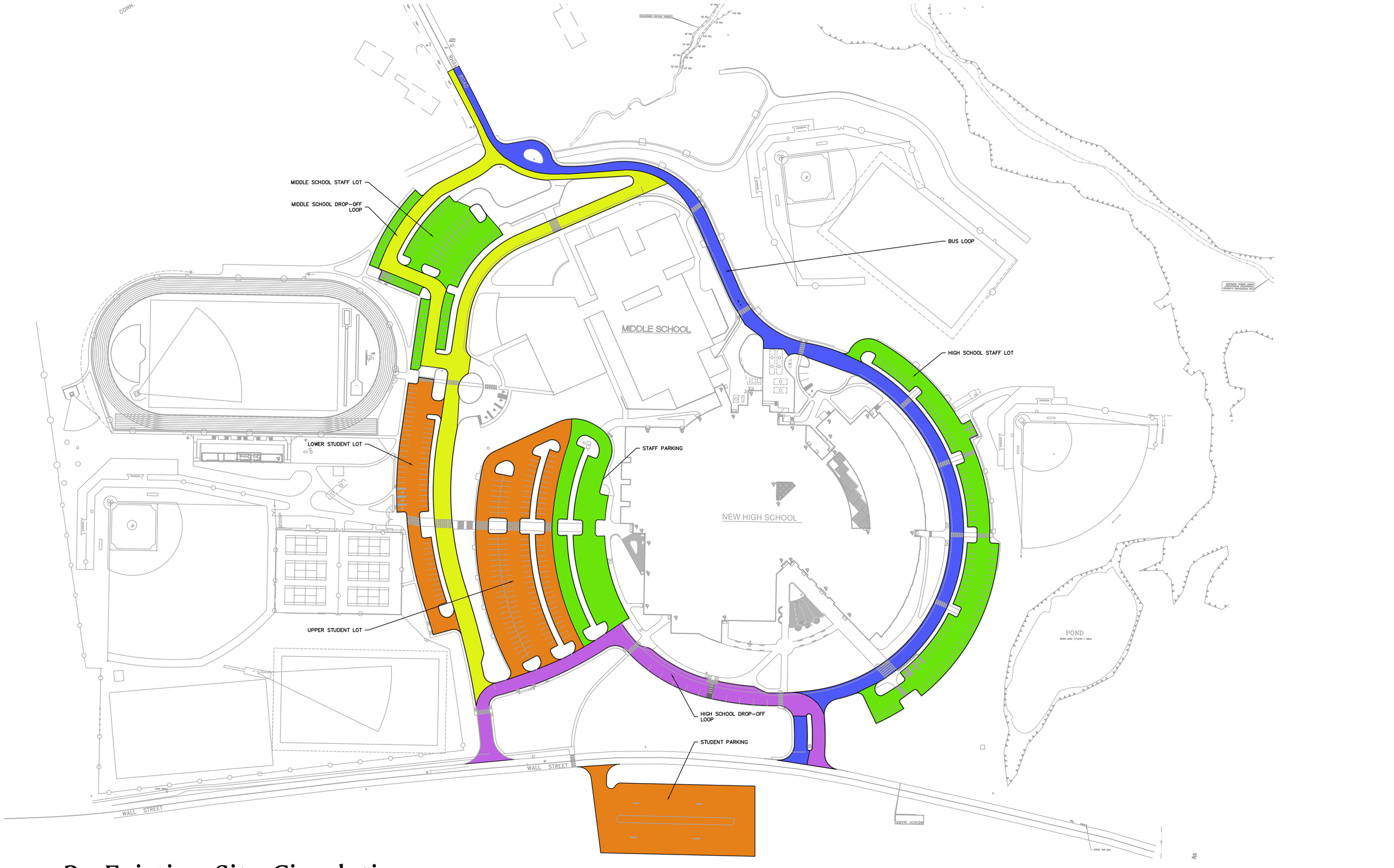


Figure 2 - Existing Site Circulation
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=80'-0"	DATE 11/04/2015	North	PRJ. NO. 83623.00

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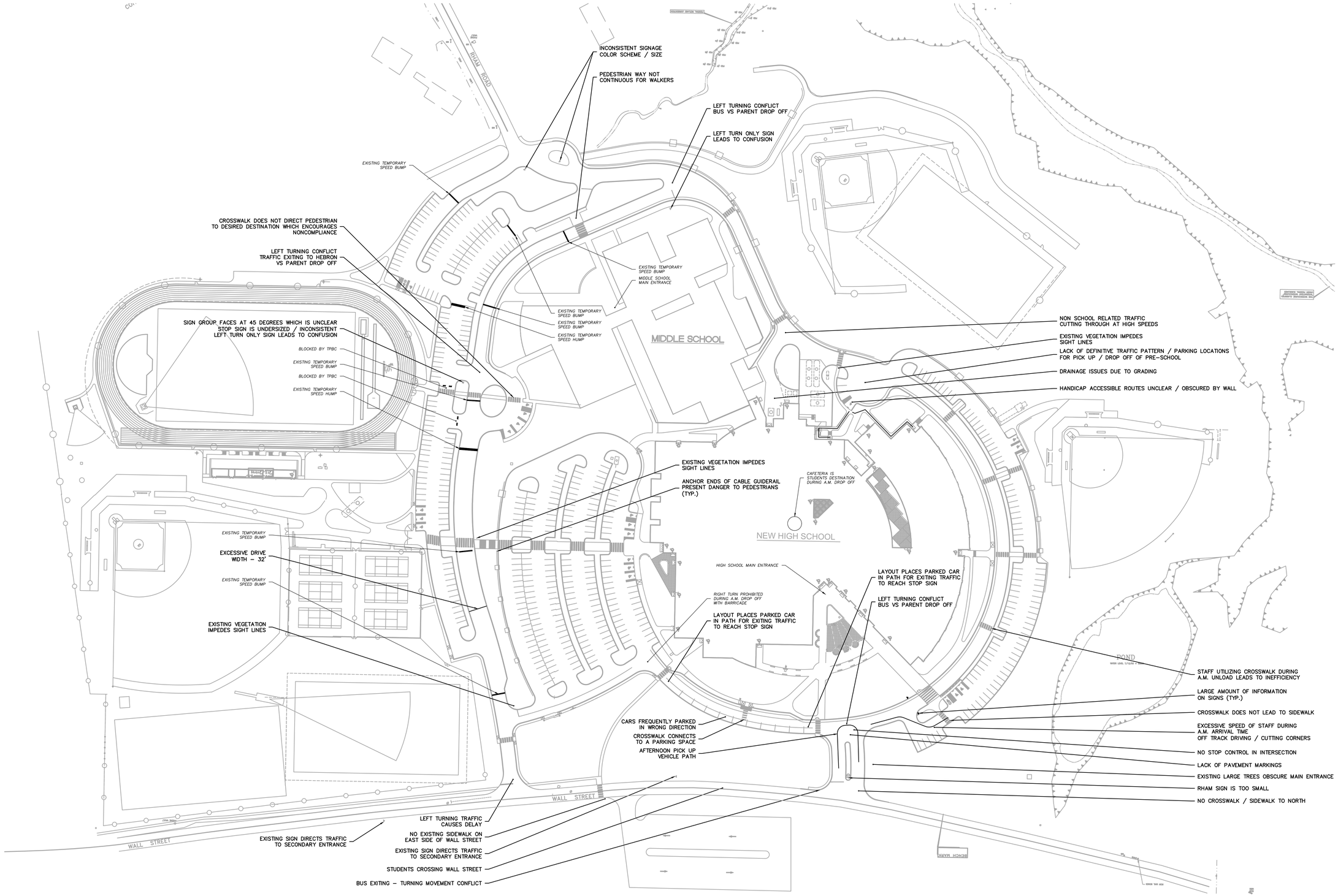

Figure 3- Issue Identification Plan
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=80'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00

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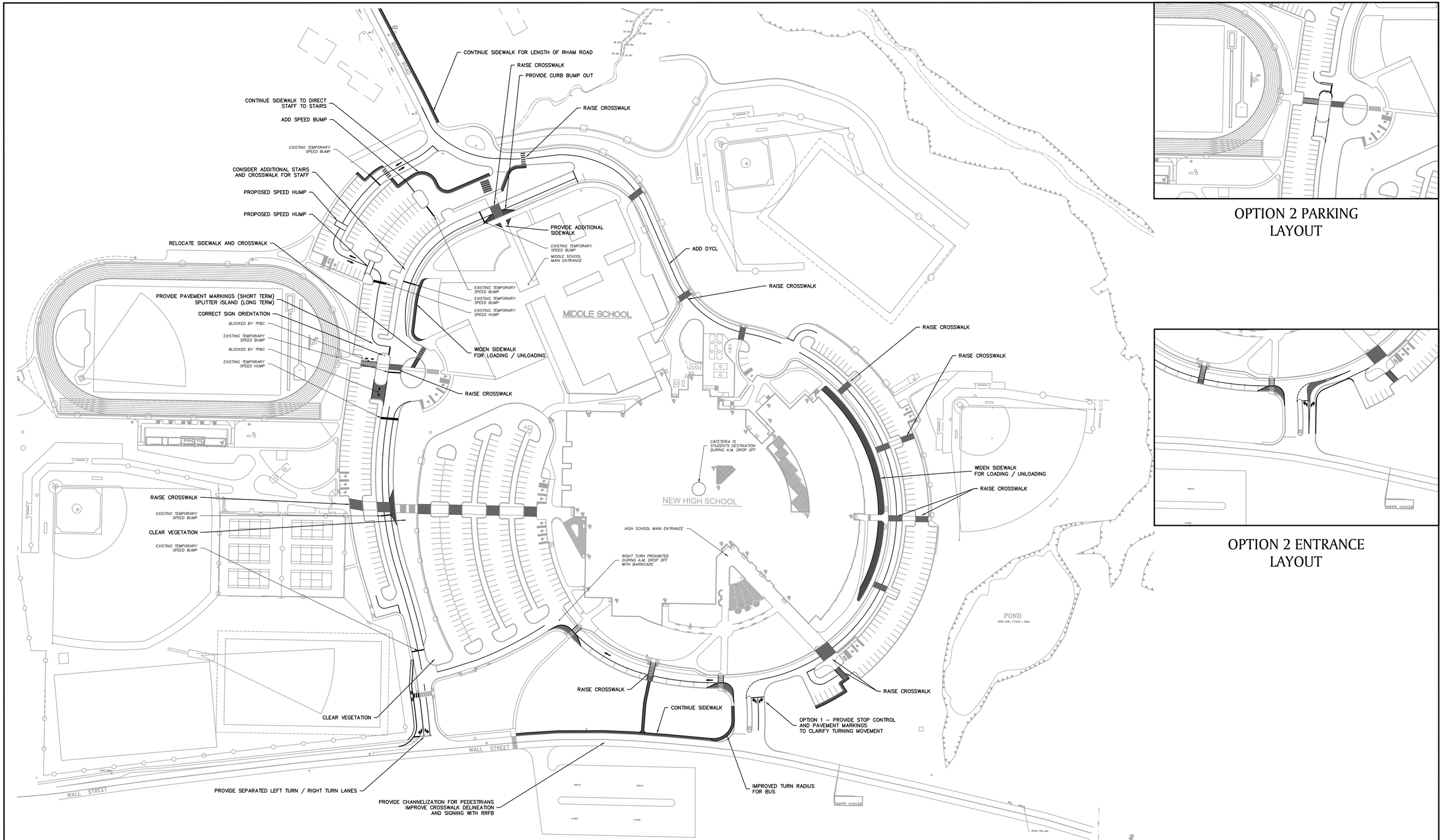

OPTION 2 PARKING LAYOUT

OPTION 2 ENTRANCE LAYOUT

Figure 4 - Short Term Concept Plan
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=80'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00

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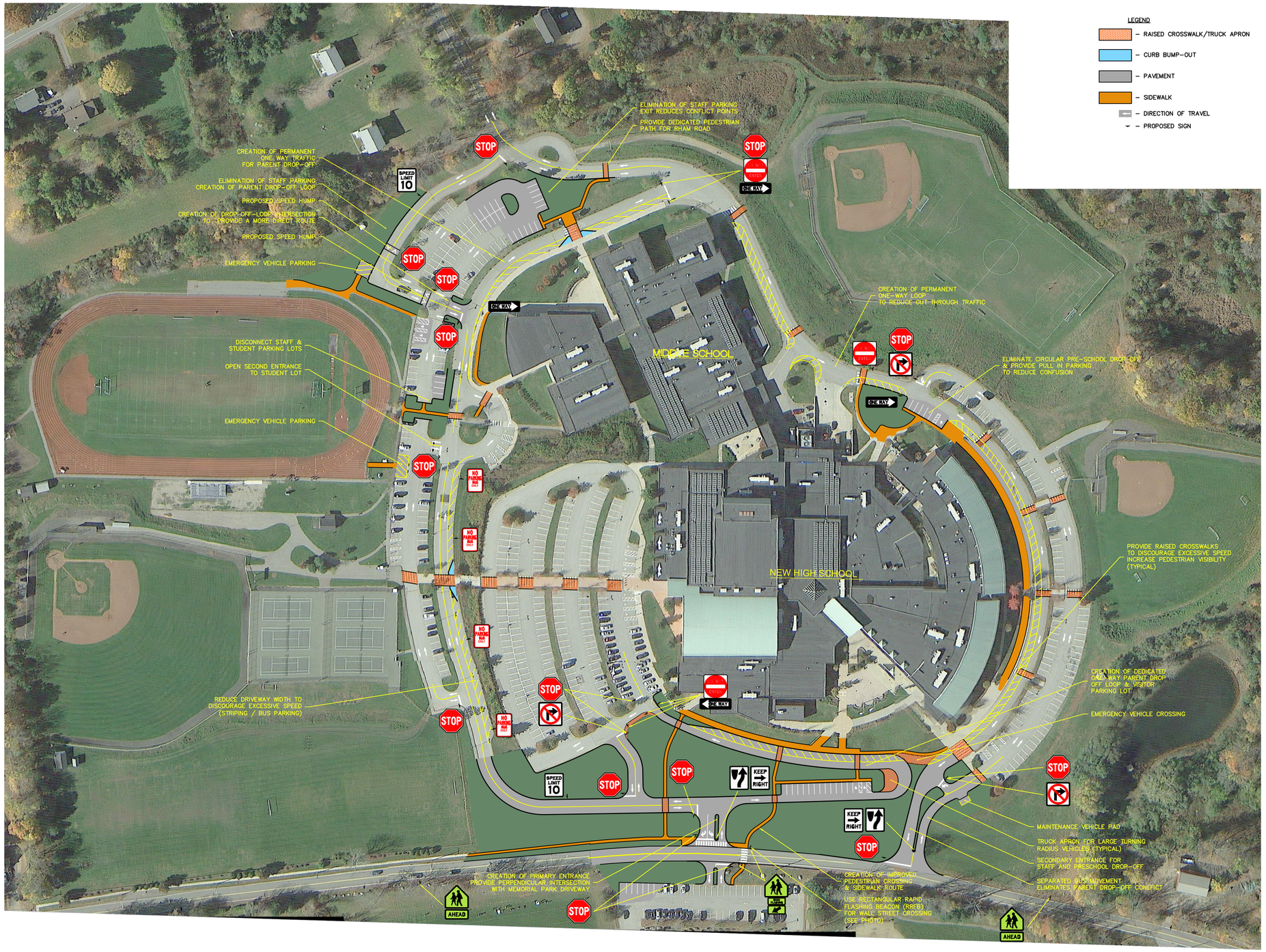

RRFB

TYPICAL TRUCK APRON

TYPICAL SPEED HUMP

TYPICAL RAISED CROSSWALK

TYPICAL CURB BUMP-OUT

Figure 5 - Long Term Concept Plan
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=80'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00

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EXAMPLE "ACCEPTABLE" PANEL

EXAMPLE "REPAIR RECOMMENDED" PANEL

EXAMPLE "REPLACEMENT RECOMMENDED" PANEL

LEGEND

C10 – CONCRETE AREA DESIGNATION

– AREA OF SIDEWALK CONSIDERED ACCEPTABLE

– AREA OF SIDEWALK RECOMMENDED FOR REPAIR

– AREA OF SIDEWALK RECOMMENDED FOR REPLACEMENT

Figure 6 - Sidewalk Condition Analysis
RHAM High School Exterior Site Improvements

Hebron, CT | SCALE 1"=80'-0" | DATE 11/09/2015 | North | PRJ. NO. 83623.00

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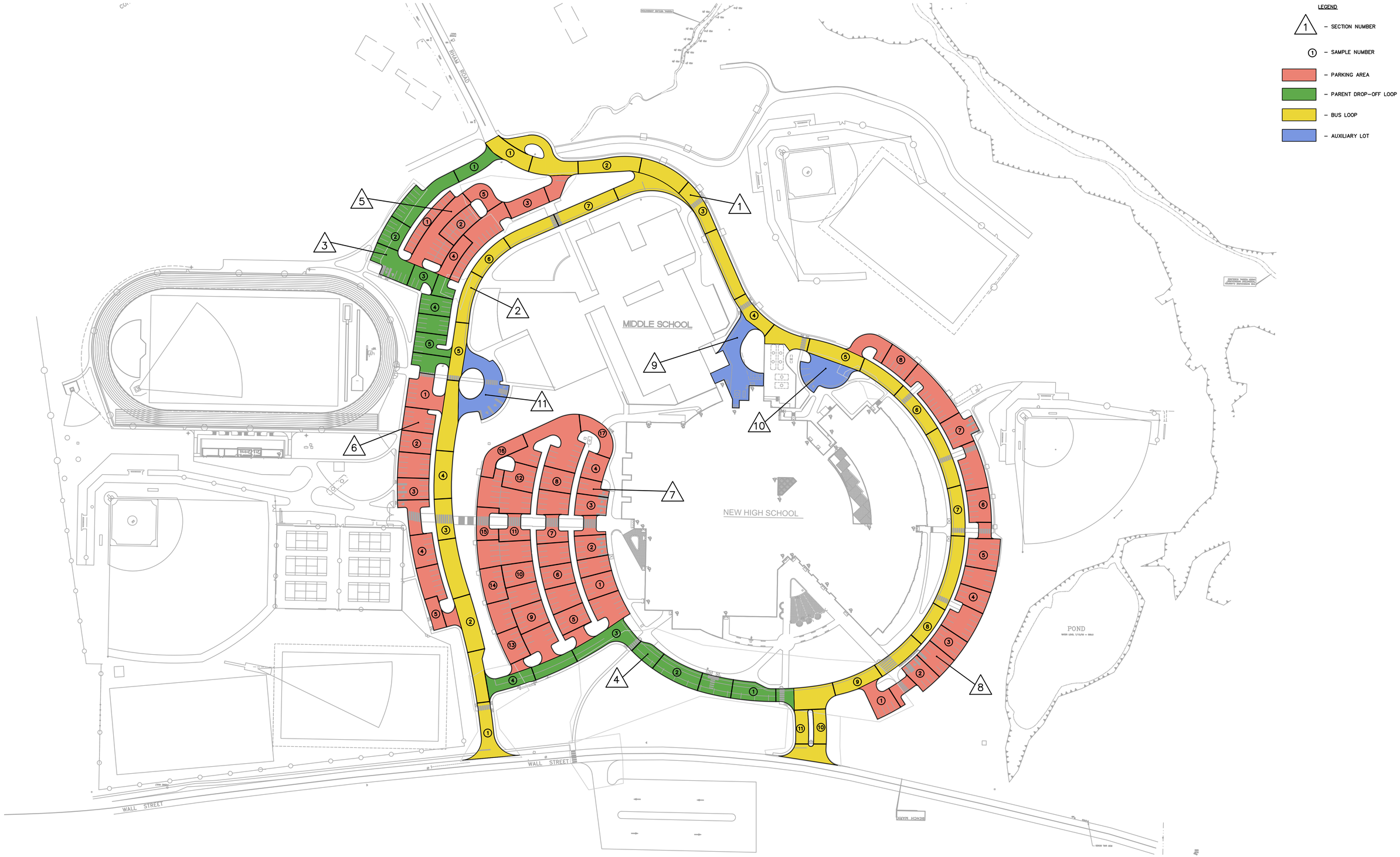

Figure 7 - Pavement Condition Index Plan
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=80'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00	300 WINDING BROOK DRIVE, GLASTONBURY, CT 06033 (860) 652-8227

BSC GROUP

CIVIL ENGINEERING, LANDSCAPE ARCHITECTURE, SURVEYING, PLANNING, GIS, AND ECOLOGICAL SCIENCES

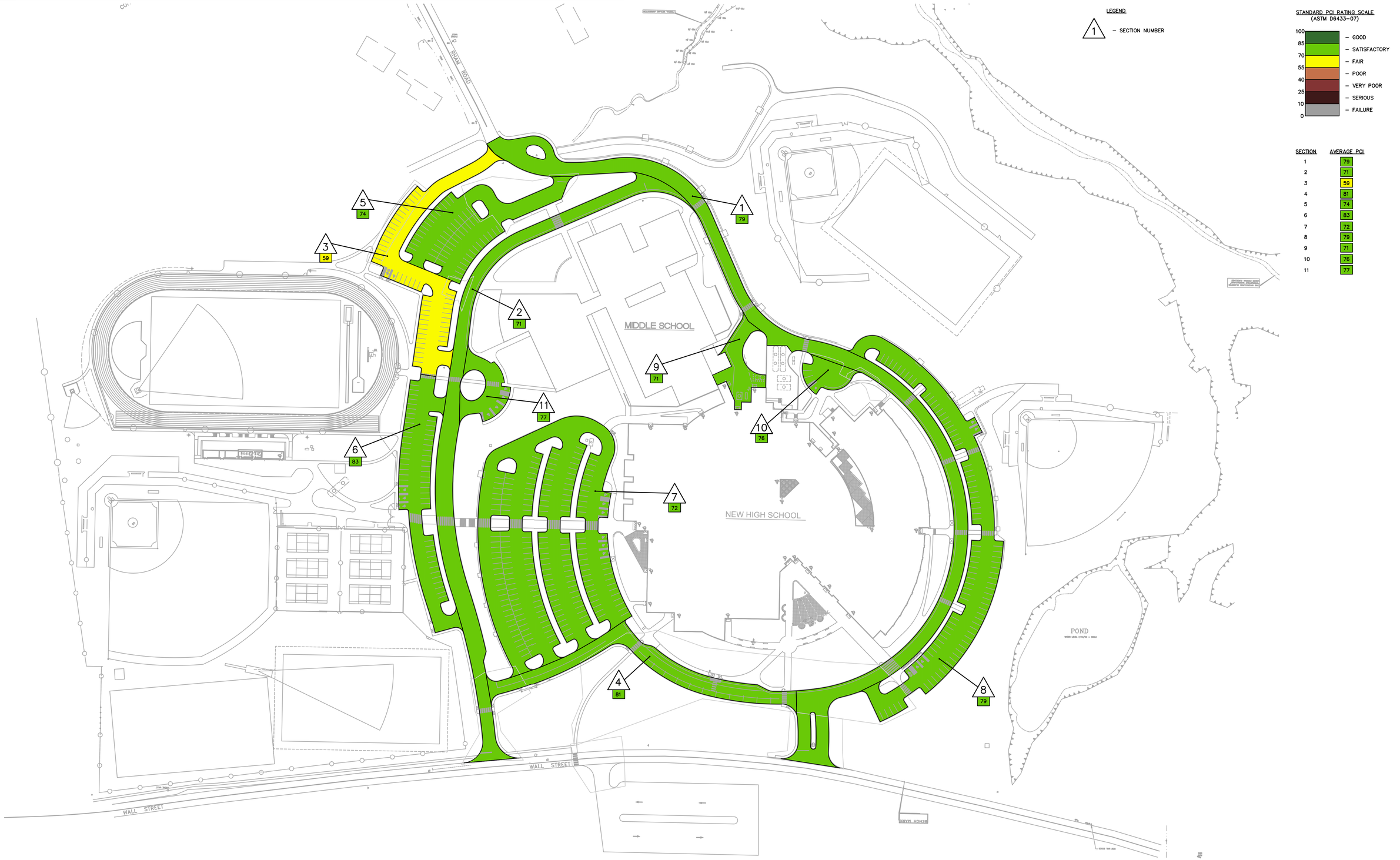

Figure 8 - Pavement Condition Index Findings
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=80'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00

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(860) 652-8227
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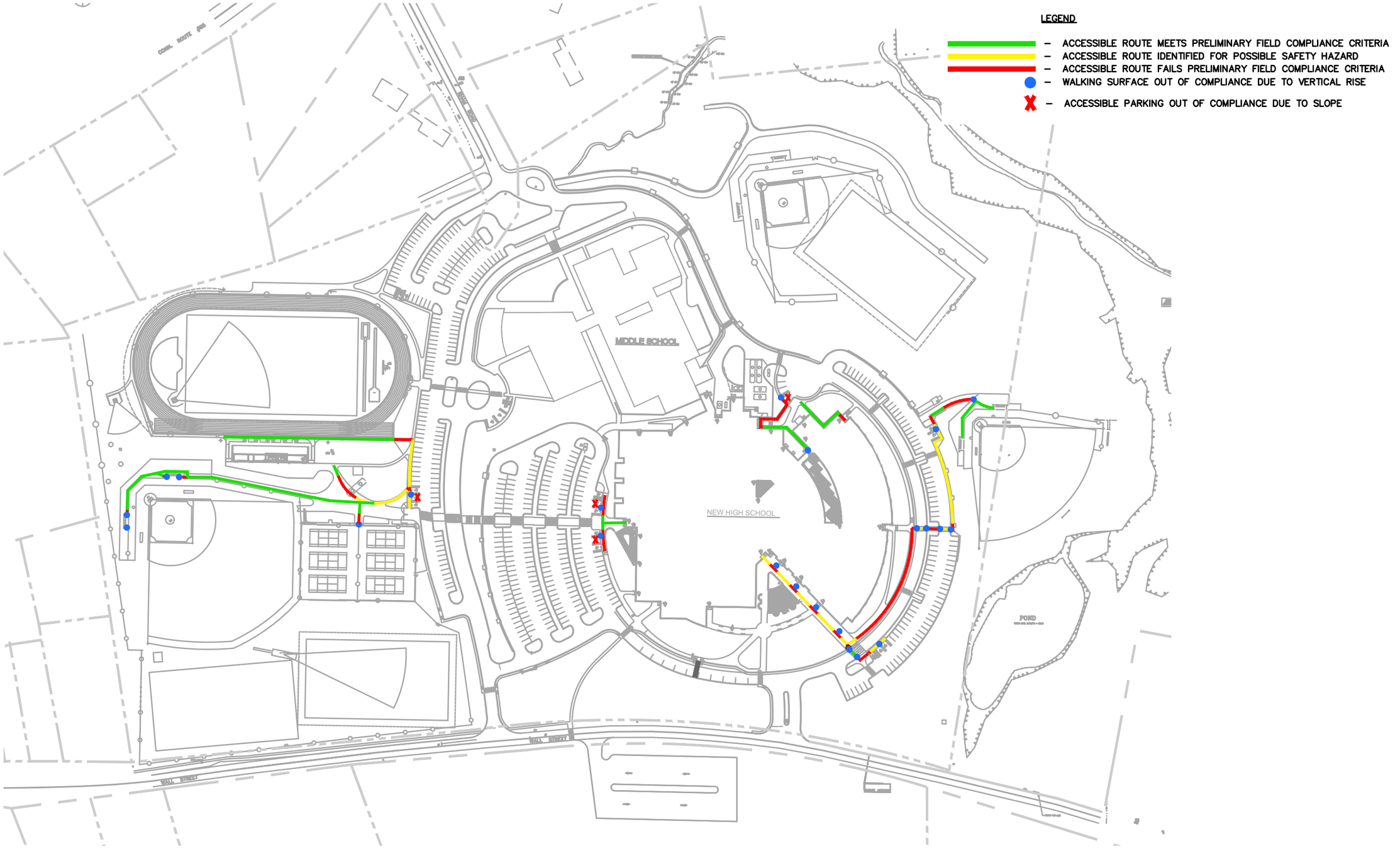

Figure 9 - High School Exterior Handicapped Accessibility Assessment - BAI Items

RHAM High School Exterior Facilities Study

SCALE: 1" = 200'

0 100' 200' 400'

BSC GROUP

Hebron, CT	SCALE 1"=200'	DATE 11/9/2015	North	PRJ. NO. 83623.00	300 WINDING BROOK DRIVE, GLASTONBURY, CT 06033 (860) 652-8227 | CIVIL ENGINEERING, LANDSCAPE ARCHITECTURE, SURVEYING, PLANNING, GIS, AND ECOLOGICAL SCIENCES

LEGEND

- ACCESSIBLE ROUTE MEETS PRELIMINARY FIELD COMPLIANCE CRITERIA
- ACCESSIBLE ROUTE IDENTIFIED FOR POSSIBLE SAFETY HAZARD
- ACCESSIBLE ROUTE FAILS PRELIMINARY FIELD COMPLIANCE CRITERIA
- WALKING SURFACE OUT OF COMPLIANCE DUE TO VERTICAL RISE
- ACCESSIBLE PARKING OUT OF COMPLIANCE DUE TO SLOPE
- STAIR/RAMP FAILS FIELD COMPLIANCE CRITERIA

STAIR #1

STAIR #2

RAMP #1

STAIR #3

MIDDLE SCHOOL

NEW HIGH SCHOOL

POND

WALL STREET

Figure 10 - Campus Exterior Accessibility Assessment

RHAM High School Exterior Facilities Study

SCALE: 1" = 200'

0 100' 200' 400'

BSC GROUP

Hebron, CT	SCALE 1"=200'	DATE 11/9/2015	North	PRJ. NO. 83623.00	300 WINDING BROOK DRIVE, GLASTONBURY, CT 06033 (860) 652-8227 | CIVIL ENGINEERING, LANDSCAPE ARCHITECTURE, SURVEYING, PLANNING, GIS, AND ECOLOGICAL SCIENCES

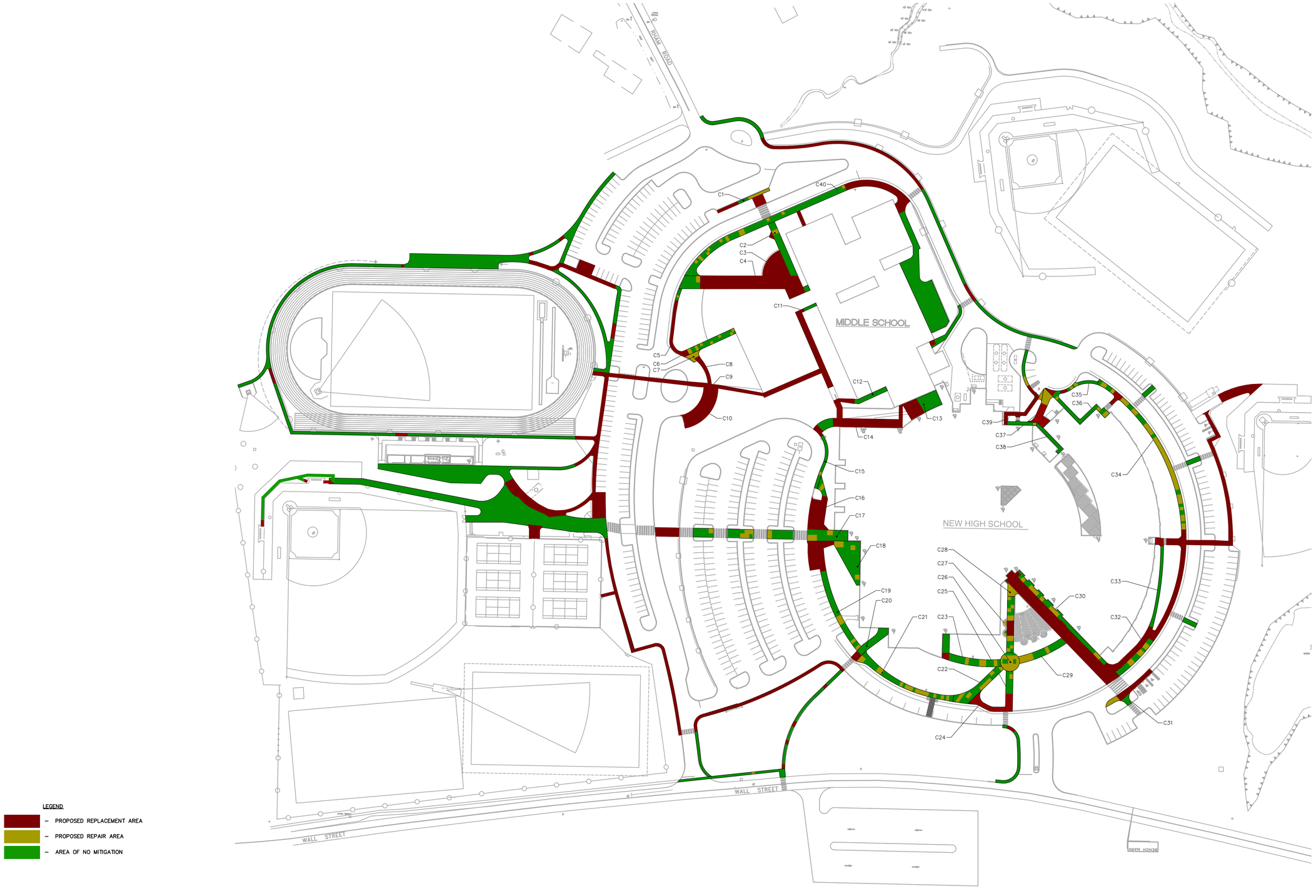

Figure 11 - Combined Site Mitigation Plan
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=80'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00	300 WINDING BROOK DRIVE, GLASTONBURY, CT 06033 (860) 652-8227

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- PONDING OF STORMWATER AT EDGE OF PLANT BED.
- SHRUBS ENCROACHING ON WALKWAY.

- EXISTING SHRUBS IN POOR HEALTH.
- PONDING OF STORMWATER AT EDGE OF PLANT BED.

- EXISTING BROADLEAF SHRUBS IN POOR HEALTH.
- LARGE AREAS OF BARE PLANT BED TAKEN OVER BY WEEDS.

- INCONSISTENT SHRUB PLANTINGS.
- POSSIBLE SECURITY ISSUE.

- SHRUBS ENCROACHING ON STAIR.
- SHRUB PROHIBITING ABILITY TO GRAB HAND RAIL.
- VINES GROWING ACROSS STAIR TREADS.

- PAVERS ARE IN GOOD SHAPE.
- TRIP HAZARDS AT EDGE OF CONCRETE PAVEMENT AND PAVERS.
- WEED GROWTH IN JOINTS.
- TRIP HAZARD AT AREA DRAINS.

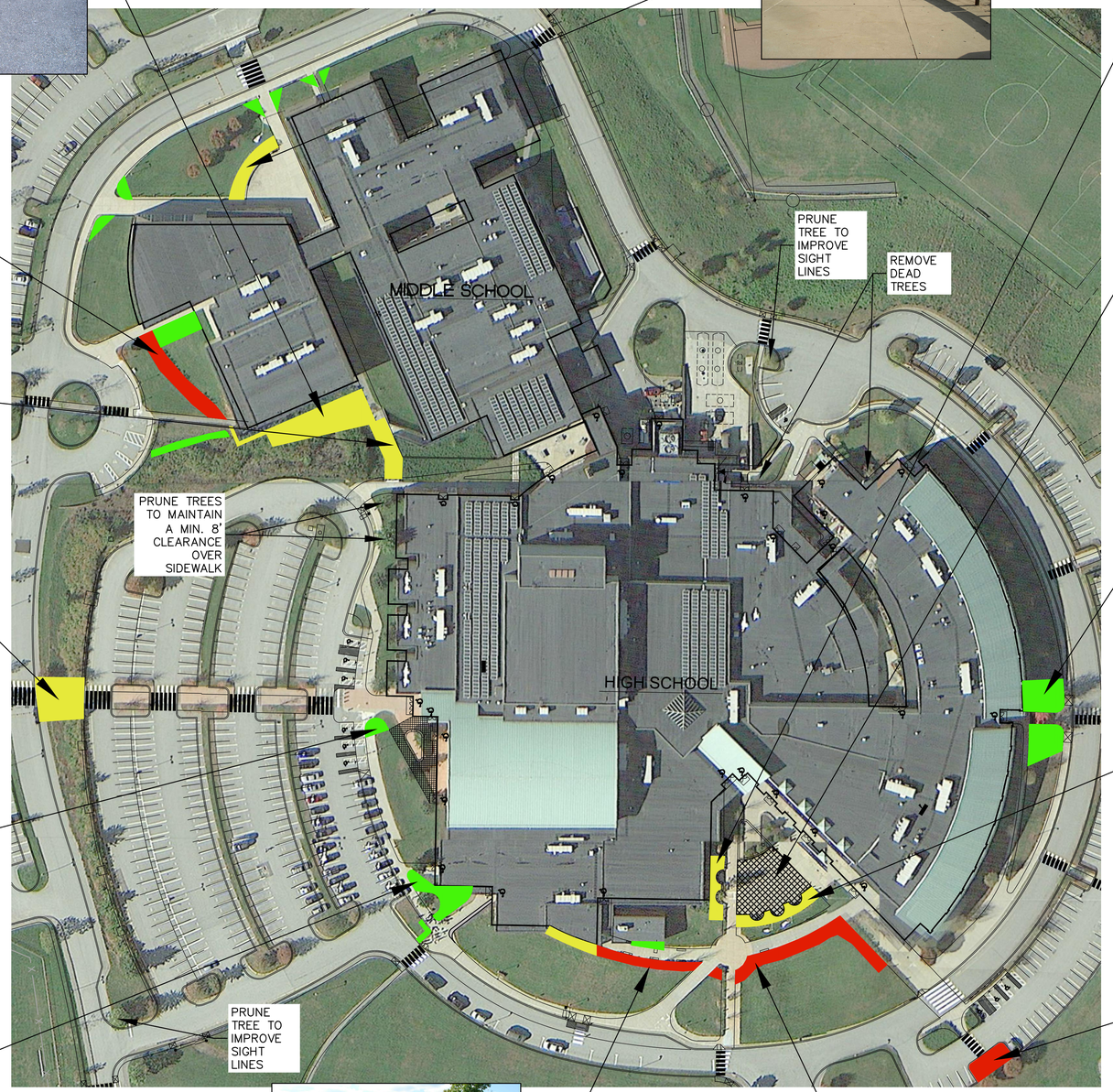
- SHRUBS AND LOW BRANCHING TREES REDUCE VISIBILITY OF PEDESTRIANS AT CROSSWALK.
- SHRUBS ENCROACHING ON STAIR.
- SHRUB PROHIBITING ABILITY TO GRAB HAND RAIL.

- EXCESSIVE BARE GROUND DUE TO FOOT TRAFFIC.
- TRIP HAZARDS AT EDGE OF PAVEMENT.

- BARE SOIL DUE TO FOOT TRAFFIC.
- POSSIBLE PONDING OF WATER FROM COMPACTED SOIL AND DEPRESSION.
- TRIP HAZARD AT EDGE OF PAVEMENT.

- EXISTING SHRUBS IN POOR HEALTH.
- LARGE AREAS OF BARE PLANT BED TAKEN OVER BY WEEDS.

- DESIRE LINE LEADING TO GYM DOOR
- POSSIBLE PONDING OF WATER FROM COMPACTED SOIL



- CROSSWALK LEADING TO PLANT BED.
- DEAD/DYING SHRUBS.
- TREES TO REMAIN.

- INCONSISTENT SHRUB PLANTINGS WITH OVERALL POOR CONDITION.
- POSSIBLE SECURITY ISSUE.
- TREES TO REMAIN.

- INCONSISTENT/DAMAGED SHRUB PLANTINGS.
- LARGE AREAS OF BARE PLANT BED TAKEN OVER BY WEEDS.
- MISSING TREE.

LEGEND

- LAWN AREA RESTORATION
- PLANT BED RESTORATION
- POOR PLANT BED CONDITION

Figure 12 - Site Landscape Assessment
RHAM High School Exterior Site Improvements

Hebron, CT | SCALE 1"=60'-0" | DATE 11/09/2015 | North | PRJ. NO. 83623.00

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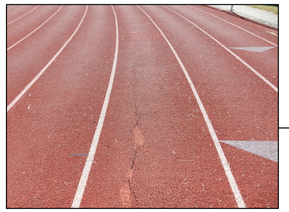


- SURFACE CRACKING REQUIRES REMOVAL OR RESURFACING.

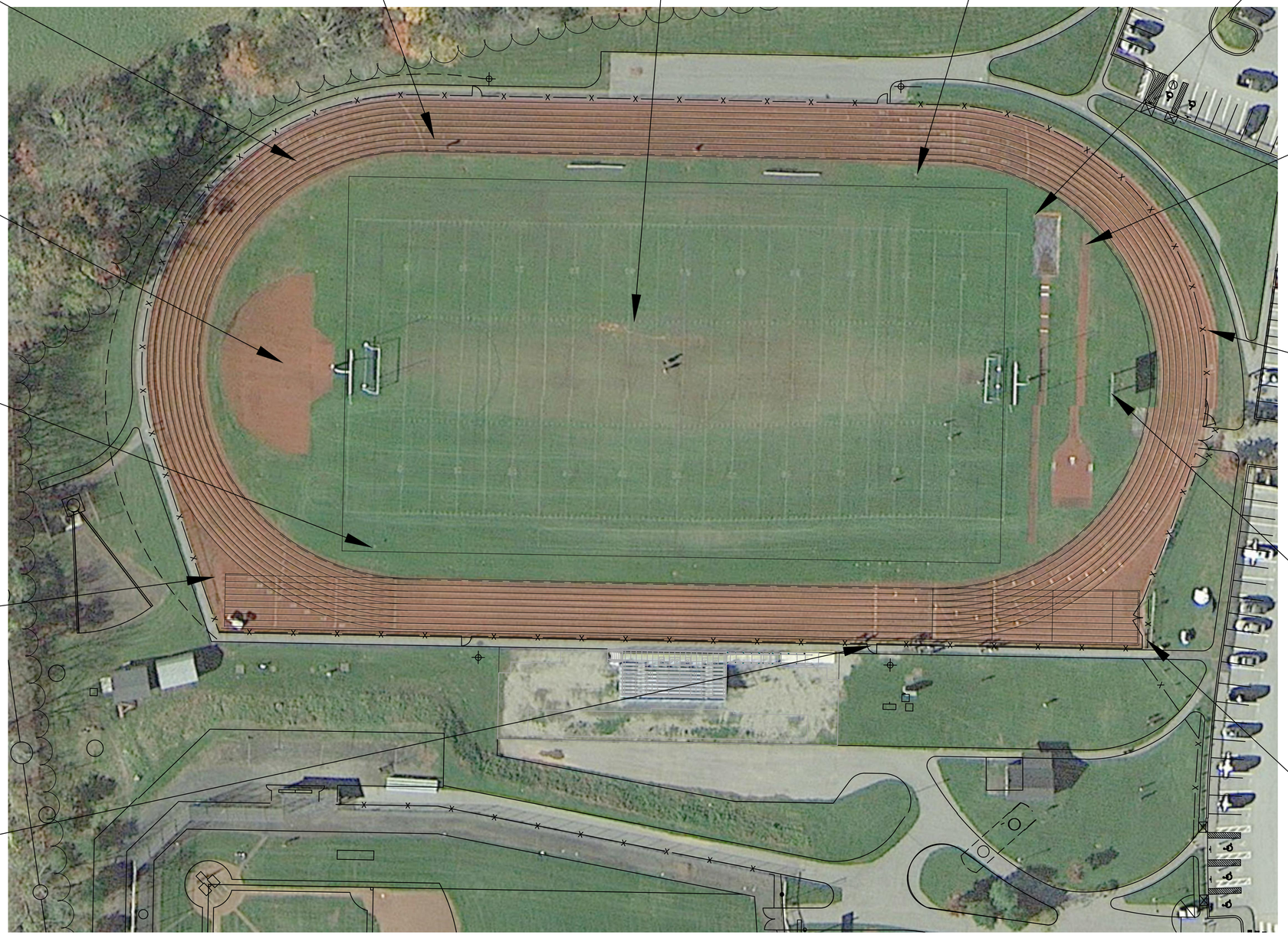
- VISIBLE SURFACE WEARING OF INNER LANES.
- FADED STRIPING AND MARKINGS.

- HAMMERHEAD HIGH JUMP PAD NOT DESIRABLE LAYOUT.

- EXPOSED AREA DRAIN GRATE.
- MAY BE IN THE FIELD OF PLAY FOR SOCCER.
- GRATES COVERED BY CARPET PATCH AND CREATE SAFETY HAZARD FOR PLAYERS.

- BITUMINOUS TRACK BASE DOES NOT DRAIN OFF TRACK AND CAUSES DRAINAGE ISSUES.

- HEAVING OF FENCE POST FOOTINGS.



- REDUCED PLAYABILITY OF FIELD DUE TO LARGE PERCENTAGE OF CLOVER.
- POSSIBLE DRAINAGE ISSUES DUE TO COMPACTION.

- EXPOSED AREA DRAIN GRATE.
- TOP OF FRAME NOT LEVEL WITH GRASS.

- DETERIORATING EDGE.
- SETTLEMENT AROUND SAND PIT EDGE CREATES SAFETY HAZARD.

- TRACK SURFACING REPAIR/REMOVAL.
- DETERIORATING EDGE.

- TYPICAL OUTSIDE EDGE OF TRACK.
- ADEQUATE EXCESS SURFACING MATERIAL OUTSIDE LANE 8 FOR RESURFACING.
- SPACE BETWEEN LANE 8 AND FENCING NOT PER NFHS RECOMMENDATIONS.

- SCOREBOARD LOCATED IN D-ZONE AND CREATES SAFETY HAZARD

- TRACKING OF DIRT ONTO TRACK FROM PEDESTRIAN ACCESS.
- GATE OPENS ONTO, AND DAMAGES TRACK.

Figure 13 - Track & Field Assessment
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=60'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00

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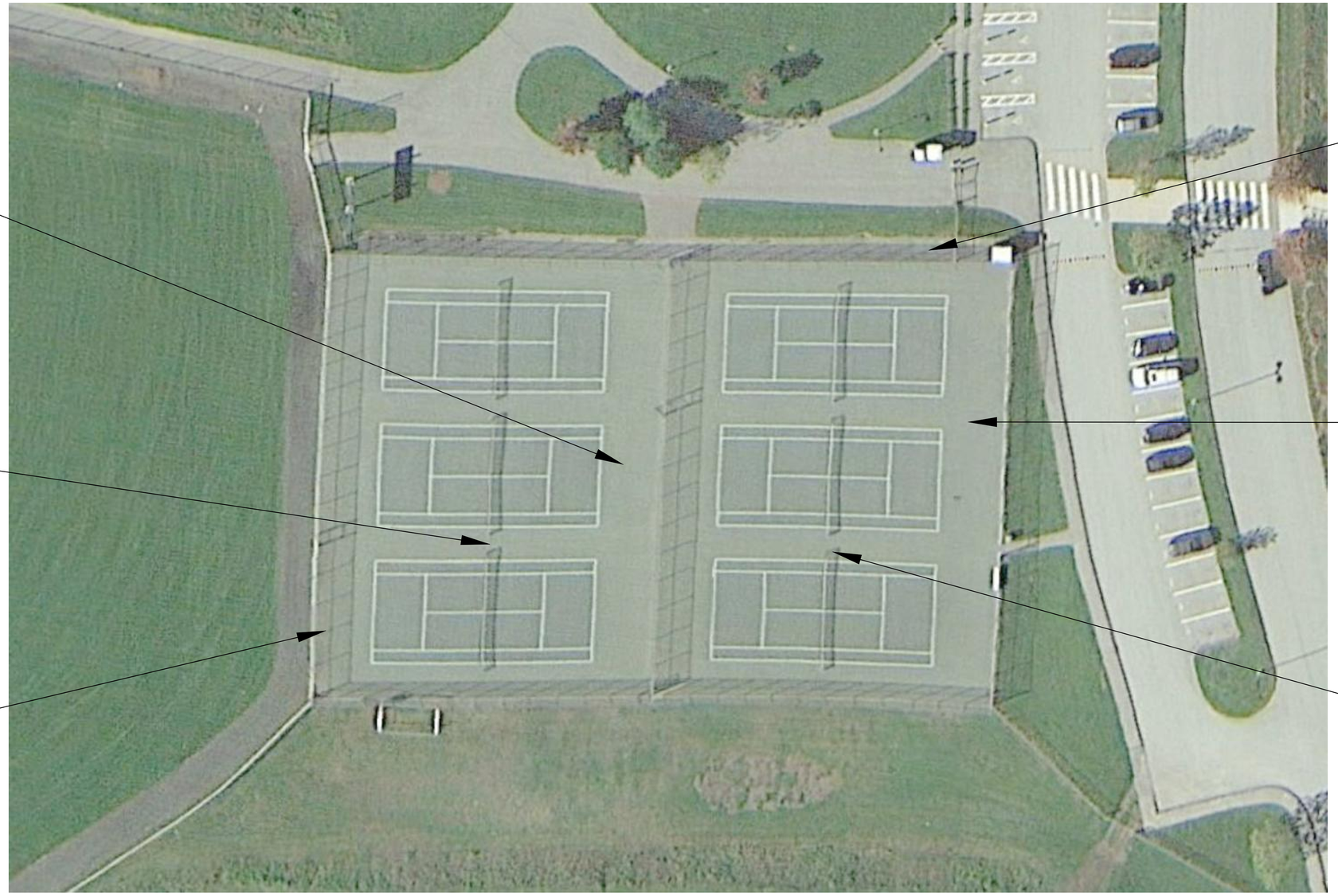
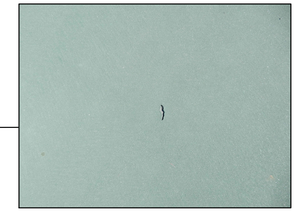
- TENNIS COURT SURFACING IS IN A GENERALLY GOOD CONDITION.

- SURFACE CHIPS AND CRACKS REQUIRE PATCHING AND RESURFACING.

- FENCE HEIGHT UNSAFE DUE TO RISK OF HOMERUN BASEBALLS.



- BITUMINOUS WALKWAY IS NOT CODE-COMPLIANT.



- SURFACE CHIPS AND CRACKS REQUIRES PATCHING AND RESURFACING.

- NET POSTS HAVE REACHED THEIR LIFE EXPECTANCY AND SHOULD BE REPLACE.

Figure 14 - Tennis Courts Assessment
RHAM High School Exterior Site Improvements

BSC GROUP

Hebron, CT	SCALE 1"=60'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00

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Figure 15 - Athletic Facility Master Plan
RHAM High School Exterior Site Improvements

Hebron, CT	SCALE 1"=30'-0"	DATE 11/09/2015	North	PRJ. NO. 83623.00

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