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MEMORANDUM

TO: Mr. Christian Huntress Huntress Associates, Inc. 17 Tewksbury Street Andover, MA 01810	FROM: Dermot J. Kelly, PE, PTOE DJK Associates, Inc. 6 Cameron Road Andover, MA 01810
SUBJECT: Haynes Athletic Fields Traffic Impact Analysis	REF: 806
	DATE: Updated February 26, 2014

Proposal

DJK Associates, Inc. has updated the January 17, 2012 Traffic Impact Analysis for the proposed construction of the Haynes Athletic Fields which would consist of two Multi-Purpose Athletic Fields and one Babe Ruth Baseball Field. The Updated Traffic Analysis included an evaluation of a tentative schedule of events that could occur at the Haynes Athletic Fields. The evaluation also included a series of mitigation measures designed to minimize traffic and parking related impacts of the proposed project.

The athletic fields are proposed to be located off of Middleton Road midway between the Main Street and Elm Street/Georgetown Road intersections in Boxford, Massachusetts. Each Multi-Purpose field would be able to accommodate a full size standard regulation soccer field that measures 210 feet by 360 feet. Each Multi-Purpose field would also be able to accommodate two, side by side, mini-soccer games for younger participants. Each Multi-Purpose Field would also be able to accommodate lacrosse, football/cheerleading or flag football. The baseball field would be a standard Babe Ruth Field with 90 feet between bases and 60.5 feet to the pitcher's mound. The outfield fences would be 283 feet to 348 feet from home plate. A continuous bituminous concrete sidewalk system would be provided from Middleton Road up to both Multi-Purpose Fields (MP1 and MP2) and around the Baseball Field (BB). The Overall Landscaping Plan Prepared by Huntress Associates, Inc. dated March 17, 2012 is reproduced in the Appendix of this report and it graphically presents the location of each field.

The proposed athletic fields would be used for town sponsored, Boxford Athletic Association (BAA), events including soccer, baseball, lacrosse, flag football and football/cheerleading. The schedule of events at the Hanes Athletic Field would be controlled by the BAA. Private use of these fields would be prohibited, although, passive use (walking) on these fields would be permitted.

Parking for 159 vehicles would be provided on-site. The primary access/egress driveway would intersect Middleton Road at a 90 degree angle with a secondary fire/emergency driveway located opposite and east of field MP1. The proposed secondary fire/emergency driveway would be gated and intersect with Samuel Bixby Road.

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Existing Athletic Facilities

There are five existing athletic facilities in Boxford where soccer, lacrosse, football/cheerleading and flag football are played. Spofford, Chadwick and Johnson Fields are located near Spofford Road and the Spofford School. Spofford, Chadwick and Johnson Fields have 2 baseball fields, 2 & 1/2 multi-purpose fields and 2 softball fields, respectively. The Cargill Field is located near the Cole School and has two baseball fields. During the fall, two soccer games can be played in the outfield of those baseball fields. Boy Scout Park is located off of Cahoon Road and has one multi-purpose field and 2 baseball fields, however only one baseball field can be used at a time.

Proposed Use of the Haynes Athletic Fields

Haynes Athletic Fields are generally proposed to operate during two seasons, spring and fall:

- **Spring Season:** Mid March to Mid June, 12 weeks;
- **Fall Season:** 1st week of September to the 1st week of November, 10 weeks.

During each season, the fields would be generally used on Saturdays from approximately 8:30 AM up to approximately 6:00 PM during the fall and 7:00 PM during the spring. During weekdays, the Haynes Athletic Fields would generally be used between 3:30 PM up to approximately 7:00 PM. No special events are planned for the Haynes Athletic Fields.

- **Spring Saturdays:** During spring Saturdays, fifteen events could be tentatively planned for the Haynes Athletic Fields between approximately 8:30 AM and 7:00 PM, five U14 (under 14 years of age) soccer games, seven pairs of U10 (under 10 years of age) soccer games and three baseball single team practices. The five U14 soccer games could be scheduled to be played on Multi-Purpose Field number 1 (MP1). The duration of each game is 90 minutes with 30 minutes allotted between games to allow plenty of time for the participants to arrive and depart the facility. On MP2, seven events (14 games) could be scheduled for the U10 soccer league with two games played simultaneously on the MP2. Each game has a duration of 60 minutes with 15 minutes initially allotted between games. Based on recommendations contained in this Traffic Analysis, that 15 minute period was extended to 30 minutes. On the baseball (BB) field, three 1 hour and 45 minute single team practices could be scheduled with 15 minutes initially allotted between practices. Again, based on recommendations contained in this Traffic Analysis, that 15 minute period was extended to 30 minutes. The modified Haynes Spring Saturday tentative schedule is reproduced in the appendix of this report along with the associated vehicle-trip generation characteristics.
- **Spring Weekdays:** During spring weekdays, Monday through Friday, five events per day could be planned for the Haynes Fields, two U14 lacrosse games, two pairs of U10 soccer games and one baseball game. On MP1, the first lacrosse game could start at 3:30 PM with the second lacrosse game starting at 5:30 PM with both games played with a duration of 90 minutes and with a 30 minute turnover between games. Similarly, on

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MP2 the first soccer game could start at 3:30 PM with the second soccer game starting at 5:30 PM with both games played with a duration of 90 minutes and 30 minute turnover between games. One baseball game is scheduled to be played on field BB with 120 minute duration.

- **Fall Saturdays:** During fall Saturdays between approximately 8:30 AM and 7:00 PM, twelve events could be planned for the Haynes Fields, five U14 soccer games, four football games and three baseball games. The five U14 soccer games could be scheduled to be played on MP1. The duration of each game is 90 minutes with 30 minutes allotted between games. On MP2, four football games could be scheduled. Each game has a duration of 120 minutes with 30 minutes allotted between games. On the baseball (BB) field, three 60 minute flag football games could be scheduled with 15 minutes initially allotted between games. Again, based on recommendations contained in this Traffic Analysis, that 15 minute period was extended to 30 minutes.
- **Fall Weekdays:** During fall weekdays, Monday through Friday, five events could be planned for the Haynes Fields, two U14 soccer games, two football games and one baseball game. On MP1, the first soccer game would start at 3:30 PM with the second soccer game starting at 5:30 PM with both games played with a duration of 90 minutes and with a 30 minute turnover between games. Similarly, on MP2, the first football game would start at 3:30 PM with the second game starting at 5:30 PM with both games played with a duration of 90 minutes and 30 minute turnover between games. One baseball game is scheduled to be played on field BB with 120 minute duration.

Mitigation Measures

The final phase of the analysis process is to identify the mitigation measures necessary to minimize the traffic-related impacts of the project on the adjacent transportation system. *The proponent has committed to implement all mitigation measures listed below, assuming all permits and approvals are obtained to construct the proposed project as well as all necessary permits and approvals to implement such mitigation and the project proponent proceeding to construction and operation of the proposed project:*

- The turnover period between all events at the same field should be separated by 30 minutes or more. The turnover period is the time between the scheduled end of an event and the start of the next event. This would allow 15 minutes for one event to clean up and leave the facility and 15 minutes for the other event to arrive at the facility, warm-up and get ready for the event. This would also allow the traffic related impacts to be spread out over time and lessen the peak parking demand.
- All participants should be instructed to arrive 0 to 15 minutes before the scheduled start of an event. Similarly, all participants should be instructed to leave the fields 0 to 15 minutes after the scheduled end of an event.
- All events should end at the scheduled time with no extended game/practice times unless there is no event scheduled for the following time period. No overtime periods

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should be permitted in the event of a tie unless there is no event scheduled for the following time period.

- The Proposed Primary Access/Egress Driveway is suggested to consist of a 24-foot wide cross section with one 12-foot wide lane for entering traffic and one 12-foot wide lane for exiting traffic along the first 100 feet of the driveway north of Middleton Road. All other sections of the driveway are proposed to be 20 feet except for the bridge and 100 feet on either side of the bridge. Intersection corner radii are suggested to be 5- to 30-foot radius.
- Egress movements from the Proposed Driveway are suggested to be placed under Stop sign control with a painted stop line and a double yellow center line for the first 50 feet of the Driveway.
- To enhance the overall sight distance at the intersection of the Proposed Driveway with Middleton Road, it is recommended that roadside vegetation and topographic ground elevations adjacent to the access/egress driveway and across the project parcel frontage be maintained such that sufficient safety sight lines are provided in both directions throughout the life of the project. This triangular area across the project parcel frontage should extend 20 feet back from the existing edge of the roadway (representing an existing vehicle) and extend 305 feet along Middleton Road representing an approaching vehicle. It should be noted that the 20-foot distance into the Site Drive exceeds the normal position of a driver's eye, which is generally 8 feet or less from the front of the vehicle. Furthermore, the 305 feet along Middleton Road represent adequate sight distance for a design speed of 40 mph based on American Association of State Highway and Transportation Officials (AASHTO) requirements, which is 10 mph above the posted speed of 30 mph.
- It is suggested that a secondary, gated fire/emergency access driveway be provided opposite and east of Field #1 which in turn would connect with Samuel Bixby Road. This emergency access driveway would consist of 18 foot wide cross section.

Summary/Conclusions

The Haynes Athletic Fields are proposed to accommodate soccer, baseball, lacrosse, flag football and football/cheerleading. The lacrosse and football/cheerleading activities currently proposed for the Haynes Athletic Fields currently occur in the surrounding communities and would be relocated to the Haynes Field such that, in general, no new vehicle-trips would occur from these activities and in fact vehicle-miles traveled in the town/region for these activities would be reduced. A portion of the soccer, baseball and flag football activities would be relocated from existing Boxford fields to the Haynes Athletic Fields.

APPENDIX

- Overall Landscaping Plan, Prepared by Huntress Associates, Inc. dated March 17, 2012.
- Haynes Fields – Spring Saturday - Modified Schedule, Prepared by DJK Associates, Inc. dated February 11, 2014.

Haynes Fields - Spring Saturdays - Modified Schedule

Event Type	Event Group	Field	Arrival Times (1)	Departure Times (2)	Participants (3)	Arrivals (4)		Departures (4)	
						Entering	Exiting	Entering	Exiting
Soccer	U14	MP1	8:30-8:45 AM	10:15-10:30 AM	40	40	4	4	40
Soccer	U14	MP1	10:30-10:45 AM	12:15-12:30 PM	40	40	4	4	40
Soccer	U14	MP1	12:30-12:45 PM	2:15-2:30 PM	40	40	4	4	40
Soccer	U14	MP1	2:30-2:45 PM	4:15-4:30 PM	40	40	4	4	40
Soccer	U14	MP1	4:30-4:45 PM	6:15-6:30 PM	40	40	4	4	40
Soccer	U10	MP2	8:15-8:30 AM	9:30-9:45 AM	40	40	4	4	40
Soccer	U10	MP2	9:45-10:00 AM	11:00-11:15 AM	40	40	4	4	40
Soccer	U10	MP2	11:15-11:30 AM	12:30-12:45 PM	40	40	4	4	40
Soccer	U10	MP2	12:45-1:00 PM	2:00-2:15 PM	40	40	4	4	40
Soccer	U10	MP2	2:15-2:30 PM	3:30-3:45 PM	40	40	4	4	40
Soccer	U10	MP2	3:45-4:00 PM	5:00-5:15 PM	40	40	4	4	40
Soccer	U10	MP2	5:15-5:30 PM	6:30-6:45 PM	40	40	4	4	40
Baseball	LL	BB	12:15-12:30 PM	2:15-2:30 PM	15	15	13.5	13.5	15
Baseball	LL	BB	2:30-2:45 PM	4:30-4:45 PM	15	15	13.5	13.5	15
Baseball	LL	BB	4:45-5:00 PM	6:45-7:00 PM	15	15	13.5	13.5	15
Subtotal:						525	88.5	88.5	525
Grand Total:						525	1,227		

Vehicle-Trips				Vehicle-Trips			
Time Period	Entering	Exiting	Hourly Total	Time Period	Entering	Exiting	Hourly Total
8:00-8:15 AM				2:00-2:15 PM	4	40	44
8:15-8:30 AM	40	4		2:15-2:30 PM	57.5	59	160.5
8:30-8:45 AM	40	4		2:30-2:45 PM	55	17.5	233
8:45-9:00 AM			88	2:45-3:00 PM			233
9:00-9:15 AM			88	3:00-3:15 PM			189
9:15-9:30 AM			0	3:15-3:30 PM			72.5
9:30-9:45 AM	4	40	44	3:30-3:45 PM	4	40	44
9:45-10:00 AM	40	4	88	3:45-4:00 PM	40	4	88
10:00-10:15 AM			88	4:00-4:15 PM			132
10:15-10:30 AM	4	40	132	4:15-4:30 PM	4	40	132
10:30-10:45 AM	40	4	132	4:30-4:45 PM	53.5	19	160.5
10:45-11:00 AM			88	4:45-5:00 PM	15	13.5	145
11:00-11:15 AM	4	40	88	5:00-5:15 PM	4	40	189
11:15-11:30 AM	40	4	88	5:15-5:30 PM	40	4	189
11:30-11:45 AM			88	5:30-5:45 PM			116.5
11:45-12 Noon			88	5:45-6:00 PM			88
12:00-12:15 PM			88	6:00-6:15 PM			88
12:15-12:30 PM	19	53.5	116.5	6:15-6:30 PM	4	40	132
12:30-12:45 PM	44	44	204.5	6:30-6:45 PM	4	40	88
12:45-1:00 PM	40	4	204.5	6:45-7:00 PM	13.5	15	116.5
1:00-1:15 PM			204.5	Total:	613.5	613.5	1227
1:15-1:30 PM			44				
1:30-1:45 PM			44				
1:45-2:00 PM			0				

(1) Arrival Times includes 0 to 15 minutes prior to the start of typical event.

(2) Departure Times includes 0 to 15 minutes after an end of a typical event.

(3) Soccer and baseball participants include team members and one to two parent coaches per team, i.e. vehicle-trips are base on soccer and baseball participants, only. Referees/umpires are generally one to two per game with some referees/umpires covering more than one game. No vehicles-trips were generated for the referees/umpires and/or carpooling. The U14 (under 14 years of age) Soccer League includes up to 20 team members/team with 11 on-field players/team and one game occurring on each Multi-Purpose Field. The U10 (under 10 years of age) Soccer League includes up to 10 team members/team with 6 on-field players/team with two games occurring on each Multi-Purpose Field. Baseball participants include up to 15 team members/team with 9 on-field players/team. During Spring Saturdays, the baseball field is used for practice by one team per field.

(4) Soccer arrivals and departures occur such that 90% of the care givers arrive/depart and watch the soccer games and 10% of the care givers arrive/depart the facility to drop-off the team member and arrive/depart the facility to pick-up the team member. Baseball arrivals and departures occur such that 10% of the care givers arrive/depart and watch the baseball practice and 90% of the care givers arrive/depart the facility to drop-off the team member and arrive/depart the facility to pick-up the team member.