

## MEMORANDUM

**TO:** Kevin Buckley, AIA – KBA Architects  
**FROM:** Erin Joyce, PE – Nitsch Engineering  
**DATE:** February 26, 2009  
**RE:** Schematic Design Narrative – Nitsch Project #6970.1

The following is a summary of responses to the Full Schematic Design content requirements for the new Memorial School in Burlington, MA as required by the MSBA. Per the requirements for schematic design, the following content is required (requirements are noted in *italic* text and Nitsch Engineering's response in plain text):

- (a) *Site Development Plan – Site plan shall be at a minimum scale of 1 inch equals 40 feet and include property lines with bearings and distances, building setbacks, site acreage, wetlands information, proposed and existing topography, proposed and existing buildings and site features, ground floor elevations for all buildings, proposed and existing utilities and utility connections, emergency equipment access.*

Please refer to the Existing Conditions Plan (sheet EX-1) for information regarding existing site features and the Site Layout Plan (sheet C-1) for information regarding proposed site features. Information on proposed utilities may also be found on the Site Grading and Utilities Plan (sheet C-2). Information on the plans is depicted at a scale of 1-inch equals 40-feet.

- (b) *Traffic Analysis – analyze the impact of anticipated vehicular and pedestrian traffic, including impacts to existing infrastructure, to determine efficient and safe site access.*

The existing Site has three (3) curb openings onto Winn Street, all near the southeast corner of the site. The curb opening furthest to the north allows vehicles to access the circular turnaround at the front of the existing school building and also to access internal drives within the Site. The second curb opening, south of the first opening, allows vehicles to access both the main parking area for the school and the roadway serving the turnaround and internal drives within the Site. The third curb opening, located furthest south along Winn Street and currently gated, serves to provide additional access to the turnaround at the front of the school. The vehicular use of these curb openings appears to be mixed between bus traffic and passenger vehicle traffic for both parents and teachers. Pedestrian access to the site occurs via a bituminous concrete sidewalk running along the western edge of Winn Street and a bituminous concrete sidewalk running through the playing field area to the west of the site.

The new Memorial School building proposes to re-use two (2) out of the three (3) existing curb openings near the southeast corner of the site. The curb opening furthest north is proposed to be closed as part of the new construction. The new school's design and layout strives to separate passenger vehicle access (parking and parent drop-off) and bus access. Under this schematic design, buses would enter the site through the southernmost curb cut and have their own access drive to the back of the building where

the bus turnaround and drop off area would be. Passenger vehicles would not be permitted into this bus access drive or turnaround during normal school hours, but would instead use the curb opening to the north of the bus access drive. The passenger vehicle entrance will allow them to enter into the faculty and visitor parking areas, the parent drop-off zone, and the access drive at the front of the building. Separating bus traffic and vehicular traffic will reduce the amount of potential traffic conflicts on the site. The parental drop-off area at the front of the building will also reduce the amount of potential pedestrian-vehicle conflicts on the site because parents will have the option of allowing their children to exit the car on the passenger side of the vehicle and onto the main plaza area at the front of the building. Fire truck and emergency vehicle access is provided on all sides of the building, with an 18-foot wide fire lane provided along the north side of the proposed school. Pedestrian access to the site, from the sidewalk along Winn Street and the sidewalk running within the playing field area to the west of the school, will generally be protected and maintained.

The existing parking area for the Memorial School appears to be sized to park approximately 80 vehicles; however the lot is currently un-striped. Within the new parking areas for the new Memorial School, space has been provided for 130 parking stalls, six (6) of which will be designated as accessible spaces. Crosswalks are proposed for all pedestrian crossings within the site as well as for pedestrian crossings occurring at the curb openings along Winn Street. Please refer to the Site Layout Plan (sheet C-1) for more information.

- (c) *Environmental Assessment – Provide additional site and building assessments as may be required by the Authority to quantify presence of unsuitable materials and scope of possible remediation efforts.*

At this time, the design team is unaware of any history of unsuitable materials on the site or of any required remediation efforts on the site. Preliminary soil testing did not review any unsuitable soils that would require remediation. As depicted on the Site Grading and Utilities Plan (sheet C-2), much of the earthwork for the proposed project requires the addition of fill materials to the site. It is anticipated that if unsuitable materials or contaminated soils are found during the site construction work, the appropriate State Regulations will be followed.

- (d) *Geotechnical and Geoenvironmental Analysis – Provide additional geotechnical analysis as may be required by the Owner or the Authority to describe soil conditions, remediation requirements and appropriate foundation requirements.*

Preliminary soil testing reveals relatively high ledge ( $\pm 6$ " from the surface) at the rear of the existing school building and relatively sandy and gravelly soils along the eastern edge of the site. Due to the presence of shallow ledge to the west of the existing school building, care will be taken to minimize the amount of earthwork, in particular the amount of cutting, in these areas. Additionally, in order to achieve usable field space at the rear of the existing school building, temporary maintenance of the existing building during construction of the new building, and construction of the new school building along the eastern edge of the site, a retaining wall will be required. The retaining wall will essentially take the place of the existing school building in accounting for the grade change once the existing school

has been demolished. The retaining wall varies in height, but is generally 17-feet in most areas.

As the project progresses, the Owner/Authority will need to provide soil testing information for use in determining the capacity of the soils to meet foundation requirements. Textural soil analyses' coupled with soil permeability testing will be required for the stormwater management system design.

- (g) *Utility Analysis – Determine the availability and capacity of all required building utilities. Provide soils analysis and preliminary design for on-site septic/sewerage treatment facilities, if required.*

Sanitary Sewer:

Existing:

The Site is currently served by public sanitary sewer located within Winn Street. The existing public sanitary sewer line is an 8" main running within the western side of Winn Street, flowing north to south. The existing Memorial School building's sanitary sewer discharge is through a single 6-inch service pipe exiting at the eastern edge of the building and running east across the existing grass/field area between the school building and Winn Street.

Proposed:

Due to the construction of the new Memorial School Building within the grass/field area between the existing school building and Winn Street, the existing sanitary sewer service from the school will need to be temporarily rerouted until it can be discontinued. The proposed re-routing of the sanitary sewer will take into account the future routing of the sanitary sewer for the new building. During construction of the new school building, the proposed sanitary sewer will be installed with a temporary connection made for the existing school. Upon completion of the new school building, the existing service to the old school building will be cut and capped at its connection to the main sanitary sewer collection system and abandoned in place. For proposed routing and connection points of the existing and proposed sanitary sewer, refer to the Site Grading and Utilities Plan (sheet C-2). Since the new construction of the Memorial School building ultimately replaces the existing school building, it is anticipated that the existing public sanitary sewer system in Winn Street has adequate capacity for the redevelopment.

Potable Water and Fire Protection:

Existing:

The Site is currently served by public water supply mains located within Winn Street. There are two existing water mains in Winn Street, a 12-inch ductile iron main running north to south along the eastern edge of the Memorial School property and an 8-inch asbestos-cement water main running beneath the center of Winn Street. Additionally, there are three (3) existing fire hydrants providing fire protection to the site. The existing Memorial School building's water service appears to tie into the existing 8-inch water main in Winn Street and the service

appears to run easterly, from the eastern edge of the building, across the grass/field area between the school building and Winn Street. The existing conditions plan depicts a second water service to the existing building, but the connection point (to either the 12-inch or the 8-inch) is unknown at this time. As the design progresses, this existing service and its connection to the main in Winn Street will need to be verified.

**Proposed:**

Due to the construction of the new Memorial School building within the grass/field area between the existing school building and Winn Street, the existing water service will need to be temporarily rerouted until it can be discontinued. The proposed rerouting of the water service will take into account the future routing of the water service for the new building. During construction of the new school building, the proposed water service will be installed with a temporary connection made to the existing water services for the old school. Upon completion of the new school building, the existing service to the old school building will be cut and capped at its connection to the water main and abandoned in place. Since the new construction of the Memorial School building ultimately replaces the existing school building, it is anticipated that the existing public water supply system has adequate capacity for the redevelopment.

**Storm Drain:**

**Existing:**

The Site appears to shed stormwater runoff from west to east, with a minimal to non-existent storm drain collection system. At the curb openings for the existing parking areas there are catch basins, within Winn Street, that appear to collect the surface runoff from the paved parking areas on the site.

**Proposed:**

The stormwater management system proposed for the new development will strive to incorporate Low Impact Design (LID) methods to improve the characteristics of stormwater runoff by improving water quality of the runoff before it leaves the site and attenuating any potential increases in runoff volume and rate associated with the addition of impervious areas on the site due to the new development. The schematic stormwater strategy depicted on the Site Grading and Utilities Plan (sheet C-2) incorporates Bioretention Areas and Bioswales to convey, treat, infiltrate and attenuate runoff from the parking areas, driveways and walkways and a 20,000 gallon rainwater cistern coupled with an infiltration system to manage and reuse runoff from the roof of the new school building. The proposed stormwater management system will strive to meet the goals of the Massachusetts CHPS program, while meeting all applicable local and state stormwater management requirements.

Electric, Communications, Gas:

Existing:

The Site is currently served by National Grid via overhead electric and Comcast for telecommunication via lines that run on utility poles scattered across the site. The site is currently served by National Grid (Keyspan) through an existing gas service that runs along the northerly property line and enters at the rear of the existing Memorial School building, about midway along the building.

Proposed:

Due to the construction of the new Memorial School within the grass/field area between the existing school building and Winn Street, temporary rerouting of the existing overhead services may need to occur; this work will be coordinated by the Electrical Engineer. The existing gas service is generally outside of the proposed limit of work and should be able to remain in place until the existing building is taken out of service. The new Memorial School building will be served by a new gas service connected to the gas main in Winn Street; this work will be coordinated by the Mechanical Engineer.