

Town of Needham
Memorial Park Building & Grounds Feasibility

May 1, 2017

WINTER STREET ARCHITECTS, INC.

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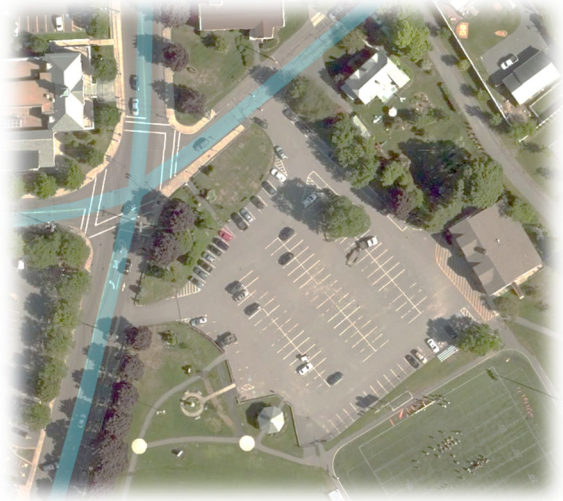
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A. Executive Summary

In 1920 the Town of Needham established the Memorial Park to “properly *commemorate the services and sacrifices of the soldiers, sailors and marines who served the country in war...*”. In 1923 the Town Meeting established the Memorial Park Trustees and funded improvements to serve as headquarter for the Trustees and American Legion Post 14. In 1930 through Trustee, Town Meeting and State House action, a portion of Memorial Park was “*set apart for an enclosed athletic field*”. The current field house, constructed prior to 1958 was originally a single-story structure that was expanded in 1985 and by the 1990s gained a second floor. Today the field house is headquarters for the Memorial Park Trustees and American Legion. It also serves numerous athletic activities in the park and provides support space and storage for local athletic and service organizations that utilize the park. A portion of the building is designated for Needham Public Works Parks and Forestry Division in relation to maintenance of the park.



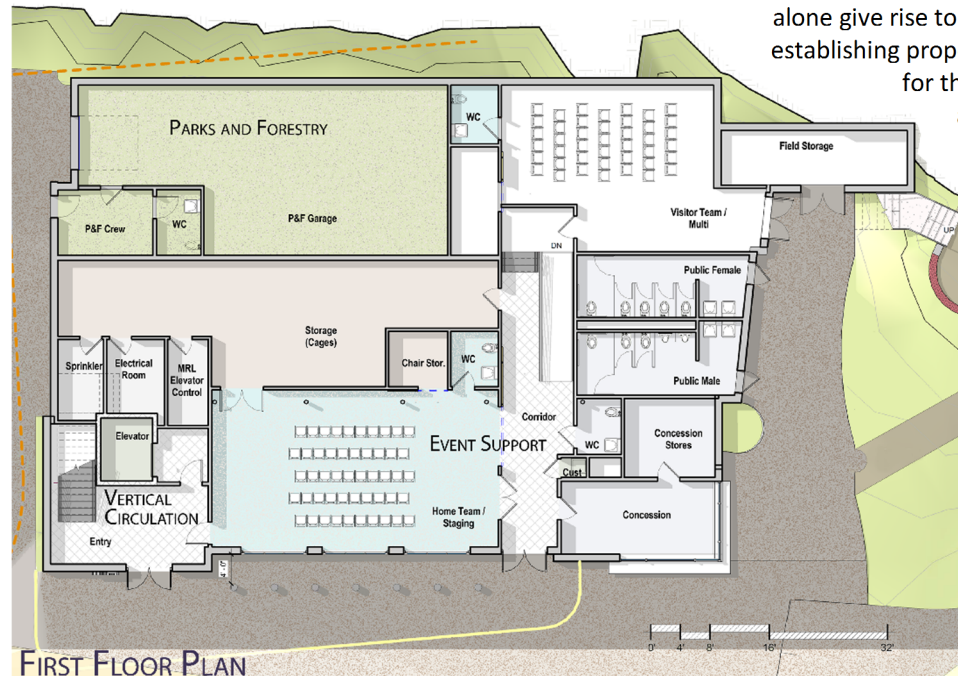
Sited along Rosemary Street at the eastern edge of the park, the Field House sits prominently between Needham Free Public Library and Needham High School. Further development of the design should produce a structure that is appropriate for a memorial park and complementary to these nearby landmarks

Continued Use

The field house is structurally stable but well below regulatory standards for its current activities and uses. To continue using the second floor for meetings (780 CMR **Assembly Use**), the building must be accessible, conforming egress must be provided and separation of Uses must be improved. The level of renovation required to meet the standard triggers comprehensive renovation and upgrade of nearly all building components including foundations.

Expansion

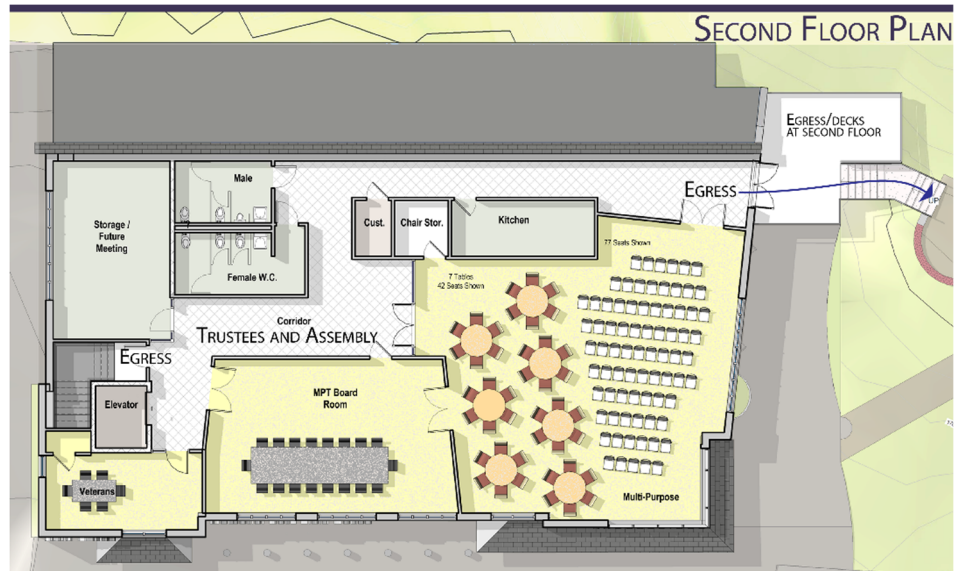
The existing 8,300-square foot building is used intensively during active seasons. Accessibility and egress improvements alone give rise to expansion of the building; establishing proper separation and functional space for the documented uses requires additional expansion. The space requirements detailed herein accommodate the current use with a modest expansion of capacity. The total area required is approximately 12,000 sf.



Renovation and Expansion or New Construction

The existing field house was built as a simple utility structure and has served the town for at least 60 years. It has grown through a series of expansions, each with a different type and quality of construction. No building component is of sufficiently high

quality, condition or value to be preserved. Most of the building walls, doors and windows, the electrical, mechanical and plumbing systems have reached or are approaching the end of their useful life. Renovation would require complete removal of the interiors and likely demolition of the entire upper floor. The ground floor slab would be removed to introduce new foundations. Except in cases where the underlying building is particularly well suited and is of sufficient quality, significant renovation of existing buildings is more expensive and unpredictable than new construction.



A newly constructed field house will eliminate the risk associated with renovation and provide Needham Memorial Park with a building that meets the functional requirements with reduced maintenance and operating costs at a lower price.

Design and Use

Use of the field house can be organized into three categories:

- I. **Trustees / Assembly** | the building is the home and headquarters for the Memorial Park Trustees and American Legion Post 14. The second-floor meeting areas are also used periodically by youth sports groups and other local organizations.
- II. **Event Support** | From holiday celebrations to home games, the field house provides access to restrooms, it houses the concession stand, provides storage for many of the groups and is used at time for staging large events and equipment distribution.
- III. **Parks and Forestry** | park maintenance is provided by this division of Needham Public Work. The maintenance operation has a requirement for storage of equipment and supplies.

The conceptual design integrates the Trustee's program requirements and continues the existing use while improving life-safety. The ground floor design is configured to minimize interference between park activities and maintenance. It provides a modest increase in the amount of group storage while dramatically increasing convenience. It segregates active uses from storage and creates a versatile space (event station) intend to better satisfy the variety of ways the building is currently being used. The upper floor is meeting and event space, a continuation of the current use with an incremental increase in capacity and a dramatic increase in utility and safety.

Anticipated Cost

Anticipated cost for this project is approximately \$5.8 million including an escalation contingency for construction start in the spring of May of 2018. The stated project budget includes design fees and other soft costs, it also includes furnishing, technology and other cost attributable to the project.

B. Introduction

The goal of the Feasibility Study is to develop options and recommendations for the renovation and/or reconstruction of the Memorial Park Building and associated grounds including the parking lot. The town is looking for a cost-effective design that provides a long-term solution for the continued and improved use and access of the Memorial Park Building and associated grounds.

The Study considered options for renovations, reconstruction and improvements to the existing Memorial Park Building and Grounds in Needham to allow for the continued long term use of the facility. The Designer selected is eligible to complete the full design services on the project if project funding is approved at future Town Meetings. The Trustees of Memorial Park (MPT), an elected Town Board, has primary jurisdiction over the Park. Maintenance of the fields and grounds is provided by the Department of Public Works (DPW) and Public Facilities Department – Operations (PFO) provides building maintenance. The Public Facilities Department – Construction (PFC) will act as the Town of Needham employee Owner’s Project Manager (OPM) under the Permanent Public Building Committee.

Methodology

The study began with exploration of the Existing Conditions and Programming. Existing conditions includes survey and measurement of the building as well as review of the quality and condition of the construction

Programming is exploration of the field house use and requirement. The Memorial Park Trustees articulated the primary vision for future use while several user organization contributed by reporting their use and activity. The study team met with nine separate groups who regularly utilize the field house to establish how the facility is being used and how often. Thousands of people “touch” the field house during approximately 200 plus events, meetings and activities each year, not counting most of the athletic event taking place at the field.

The Programming portion of the study was published in January 2016, immediately followed by Conceptual Design and Engineering Design Narratives. The Conceptual Design and Narratives then served to define the scope and quality foundation for the Conceptual Estimate.

Project History and Background

The Park was created in 1921 by citizen volunteers to honor those who had served in World War 1. The original one-story brick field house was built over 60 years ago, and in 1985 a second floor was constructed by citizen volunteers.

The multi-purpose synthetic turf and natural grass baseball field are both Musco (manufacturer) lighted fields for use by the Needham High School’s (NHS) sports teams, and by Needham’s youth sports groups such as Needham Baseball, Legion Baseball, Needham Junior Football and Cheerleading, Needham Soccer Club, Adult Soccer Club, Boys and Girls Lacrosse. The park and field house are used annually for such events as Memorial and Veteran’s Day observances, the Needham Exchange Club 3rd and 4th of July Celebrations, youth sports group registration & sign-up, equipment storage for various sports groups in the off season, and as a gathering place on game days for NHS and youth sports teams during half-time or potentially dangerous weather conditions. The fieldhouse has public restrooms, storage and garage space on the first floor. The facility houses supply and equipment for the Needham DPW Park and Forestry Division field maintenance efforts. There is also a concession area on the first floor, and a lavatory facility and janitor’s closet combination within the garage space. This first-floor area also houses the field irrigation control room and piping.

The second floor contains two meeting/general purpose rooms with a small kitchen off the hallway, two bathrooms and several finished & unfinished storage areas currently being used by the youth sports teams to store equipment during the off-season.

Prior Studies

- 2014 - Town of Needham, MA: Facility Master Plan (FMP) (Volumes 1, 2, & 3)

C. Physical Investigations

The **Memorial Park Field House** building is stable and, if suitably repaired and maintained, can continue to serve the Town of Needham (though not its current array of uses, see ADA/MAAB on next page). The current structure is the result of several stages of construction. The most recent permit document available to us is dated 1984 but does not provide the intended use. Limited information suggests that the building was being used for garage and storage purposes. Construction in 1984 included providing access to the upper floor and the interior was fit out as meeting space with storage and support space. The status of code compliance when constructed has not been established. The two-story building generally conforms with Type V-B which has a very limited set of Uses under any recent code. Continued use of the building without improvement would require substantial repair program and the elimination of any Assembly Use.

To continue the current use (without expansion) there are a variety of paths available, but all require:

- Repairs described elsewhere in this report.
- Upgrades to structural framing, mechanical, electrical, fire protection systems and building envelope.
- New protections of existing building elements.
- Accessibility improvements including an elevator.
- New egress stairs.



Site

This study does not include comprehensive review of the site. The site is generally in good repair with recent improvements. At the time of our initial visit, improvements to site drainage adjacent to Memorial Field were underway closely followed by repair and restriping of the parking area.

Access:

Vehicular access to Memorial Park is via two curb cuts in close proximity to the intersection (signalized) of Highland Avenue and Rosemary Street. Highland Northbound has a turn-only lane while Rosemary Street is one way westbound east of the intersection, two-way to the east.

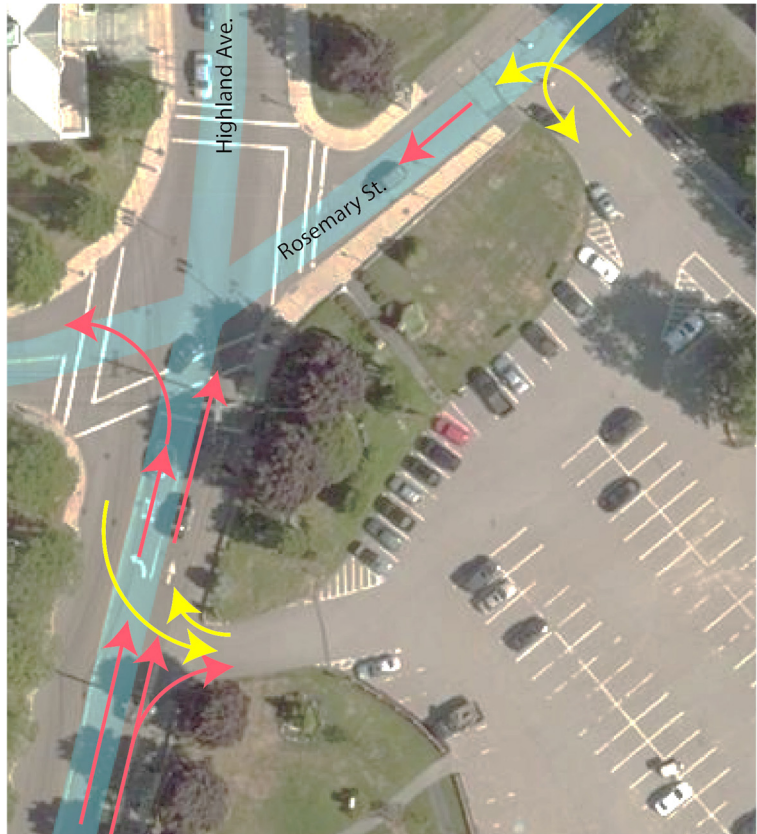
Highland Avenue Access

- Currently two-way.
- North bound traffic queue blocks access.
- South bound turn into park is acute, includes a noticeable rise, restricted visibility and requires crossing two lanes.
- Cars exiting the lot and heading north have an inclined acute right turn.

Rosemary Street Access

- Currently two-way.
- Left turn only.
- Access from the east only.

The Highland Avenue access is reported as an 'accident location'. Substantial improvements to access are not achievable through internal site layout modifications and would require complimentary modifications to the



adjacent road design and traffic patterns. Safety can be improved if the Highland access were restricted to one-way (access only) requiring all cars to exit the site via Rosemary. Also, consider prohibiting southbound left turn access to the site from Highland. Eliminating the southbound left turn will reduce the potential for accidents but may also have broader impacts because of redirecting traffic flow for access to the site.

ARCHITECTURAL

The **Needham Memorial Park** building is located at the eastern end of the Memorial Park Parking lot, just north of the football field. The Southwest façade (facing the parking lot) is red brick masonry construction with two large, clapboard, 'doghouse' dormers set into an 8:12 asphalt shingled roof. The brick is toothed into painted concrete masonry unit walls as it wraps around both corners. The CMU extends around the first floor on the SE, NE and NW facades with wood framed clapboard siding at the gabled ends of the roof. Windows at the first floor vary in size but are generally fixed with a traditionally sized mullion pattern. Second floor windows at the gabled ends and dormers are 6 over 6 double hung. Wall finishes at the first level is uninsulated, painted CMU while the floors are slab on grade concrete at varying levels. Concrete planks frame the second floor but since the wood framed exterior walls are considered combustible, the building qualifies as Type V construction type as per 2009 IBC Section 602.

Americans with Disabilities (ADA) | Mass. Architectural Access Board (MAAB)

The existing building has very limited accessibility as defined by ADA or MAAB. The second floor is not accessible to wheelchair bound individuals; though construction prior to both ADA and MAAB, permissible uses are very limited.

Mass Building Code

The current use of the building is a mix of storage (S-1 Moderate Hazard Storage) and assembly (A-3 – board room, multi-purpose room, athletic team gathering areas). The uses are not separated; therefore, the building would be rated according to the most hazardous use, which is A-3.

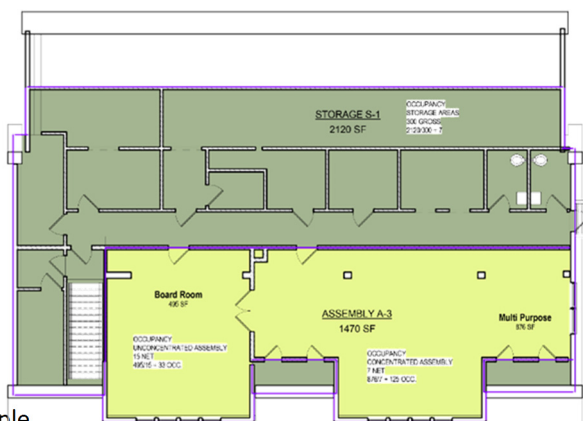
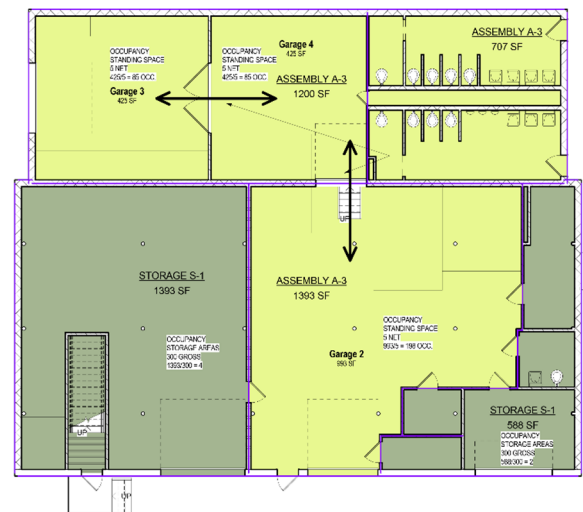
With two stories, the construction type allowed for the building is 5A and requires a 1 hour fire resistance rating for the structural frame, columns, bearing walls, floors and roofs. The building does not have an automatic sprinkler system, columns and roof framing are not protected and gaps in the concrete plank floor compromise fire resistance.

The areas classified as assembly use on the first floor are used by football teams during half time. All three "garage" spaces can accommodate 50 people. Two means of egress are required for each of these spaces for 50 or more occupants. Egress compliance is compromised by passing through intervening space.

The public restrooms on the first floor are accessible and serve outdoor sports events (Use Group A-5 per Mass. Plumbing Code – Stadiums etc.). The current plumbing fixture count supports 300 people (150 men / 150 women) at parity. Skewed by the additional plumbing fixture for men, the count supports 420 men and 150 women.

The single WC and vanity on the first floor serve 100 men for assembly or 20 men for storage use.

The single WC and vanity for each gender on the second floor serve 50 men and 50 women at parity (50 women / 100 men). The building is currently inaccessible as there is no elevator or accessible path to the second floor.



Structural

The existing building is a two-story structure with pitched roof. The structure was erected in multiple phases using different types of materials and framing systems.

Description:

The first-floor slab appears to be supported on grade. The exterior walls are brick masonry along the front and CMU walls are on top of 12" concrete wall on other three sides. See picture 1. Another CMU partition wall divides the main room in to two. This wall is the 12" thick below the door lintel and reduces to 8" thick above. In addition, many 4" diameter steel pipe columns are observed in this space. The columns are spaced approximately 12 feet in one direction and about 15 feet in the other. It appears that the columns were installed at a later date to support the second floor above. The column footing sizes are unknown. Based on field observations, it is our opinion that the footings are 2'x2' or smaller in plan dimensions. See pictures 2.

The second floor over the workshop space is framed with a wood deck supported by wood joists that span to steel girders. The girders are in turn supported by the pipe columns described above.

The west portion of this facility is about 76'-10" wide and 24'-4" deep in plan. This late addition, with the first floor higher than the main workshop floor, houses public bathrooms and other work spaces. One side of this space is enclosed by workshop wall and the other three sides are enclosed by CMU walls bearing on concrete foundation walls. 8" thick hollow core planks span about 24 feet between the CMU walls to create the second floor of this portion. Where measured, the planks bear 4" on the CMU. The planks are neither topped with a topping slab nor is there any connection between the hollow core planks. Also, no positive connections were observed between the hollow core planks and the CMU bearing walls.

A pitched roof covers the entire building. The pitched roof is framed with 2x rafters spaced at 12" to 16" spanning between the ridge beams and bearing walls. The ridge beam is supported by series of columns that run through the meeting rooms on the second floor. See pictures 3.

Existing conditions review:

- ➔ The original masonry bearing walls are showing signs of its age. Minor cracks are observed near the openings of almost every masonry wall. This could be from foundation movements over the years.
- ➔ The footings installed for the pipe columns appear undersized for the estimated loads in current service condition. The existing foundations are not compliant with the current building codes.



1. Brick and CMU Exterior Walls.



2. Column Foundation and Slab on Grade Patch



3. SECOND FLOOR COLUMNS SUPPORTING RIDGE



4. ROOF FRAMING AND CONCRETE PLANK ATTIC FLOOR

Considerations:

For continued use or repairs, at a minimum we recommend:

- ➔ Repair and repoint masonry cracks
- ➔ Provide positive anchorage at top of masonry walls
- ➔ Connect precast panels together by means of a new 2" topping or other suitable means
- ➔ Provide positive connection between roof diaphragms and masonry walls that act as shear walls

For use or programmatic modifications to the existing building:

- ➔ Existing framing supporting second floor needs to be evaluated and/or reinforced to support new loads
- ➔ The building lateral system – existing masonry walls –needs enhancements
- ➔ The existing columns footings need expansion or replacement as may be dictated by the design loads and underlying soil condition

Conclusion:

- ➔ The facility is in service and functional but is not compliant with structural codes
- ➔ The alterations and additions are possible but require significant investigation and repair/reinforcement of existing structure
- ➔ The structural system is showing signs of age and may need extensive work to prepare for long term service

Plumbing:

Domestic water is supplied underground through a reduced pressure zone backflow preventer and water meter with gate valve for isolation. There is a tap between the backflow preventer and meter, which is most likely for an exterior irrigation system. The water service piping appears to be ductile iron, flanged, and in good condition.

The piping rises from and returns to below the floor slab, so only the exposed piping scattered throughout the building could be observed and evaluated. The domestic water piping is hard drawn copper tube and appears to be in good condition with no evidence of active leaks. The piping is not insulated, and there appear to be some questionable connections and terminations. There is an irrigation control system located in the concession kitchen area.

Domestic hot water is provided by a 50-gallon Bradford White Model M-2-50S6DS electric water heater with dual non-simultaneous heating elements. The water heater was built in April 2014, and appears to be in good condition. Stored and delivered hot water temperatures are unknown. Thermostatic mixing valves were not observed.

The majority of the existing sanitary drain, waste and vent system appears to be a combination of drainage pattern copper and cast iron. Cast iron is no hub with rubber couplings and stainless steel bands with shields. Visible piping appeared to be in good condition.

The building is equipped with a natural gas service located in the garage. The service is fitted with a pressure regulating valve prior to the gas meter. The gas serves two unit heaters in the lower level garages and two gas furnaces located in the second-floor storage area. Gas piping is steel with threaded malleable iron fittings, and appears to be in good condition. The unit heaters are equipped with pressure regulators, and are power-vented utilizing single wall metal pipe for the vent. The natural draft furnaces are fitted with b-vent type venting system.

The kitchen and concession area includes two single bowl stainless steel drop-in sinks. The staff bathroom includes a floor mounted tank-type toilet, wall hung lavatory and a utility sink. The men's public restroom contains a floor drain, a hose bib, three wall mounted lavatories, three wall hung urinals with manual flush valves, and four floor mounted toilets with manual flush valves. One of each fixture appears to be accessible. The women's public restroom contains a floor drain, a hose bib, three wall mounted lavatories, and five floor mounted toilets with manual flush valves. One of each fixture appears to be accessible. The second-floor kitchenette is equipped with a single bowl stainless steel drop-in sink. The second-floor restrooms each contain a floor mounted tank-type toilet and countertop lavatory. Except for the stainless-steel sinks and fiberglass utility sink, all fixtures are vitreous china. All fixtures appear to be in good condition.



6. WATER SERVICE



7. PLUMBING CHASE



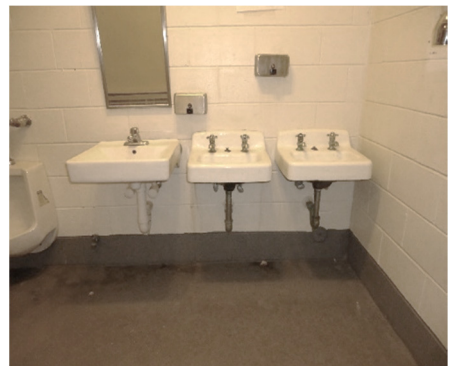
8. UNKNOWN TERMINATION AND PIPE EXITING WALL EXTENDING UNDERGROUND.

Plumbing Notes:

1. The condition of concealed and underground piping could not be observed.
2. One of the concession stand sinks is piped with PVC.
3. The urinals in the men's restroom are not separated with privacy shields.
4. Hose connections are not fitted with vacuum breakers.
5. Unit heater vent piping is not sealed.
6. Unknown hot water storage and delivery temperatures.
7. Unknown flow from public lavatories.
8. Floor drains not equipped with trap primers



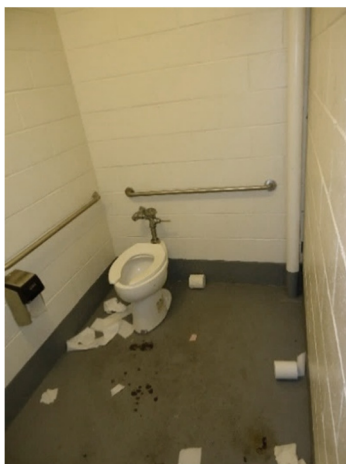
9. CONCESSIONS SINKS



10. MEN'S LAVATORIES



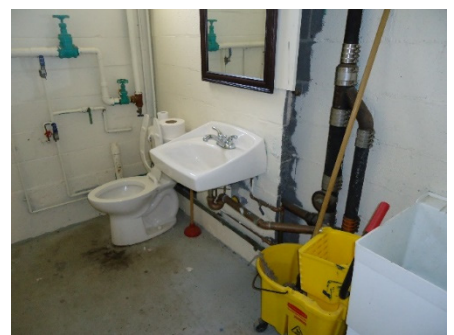
11. MEN'S URINALS



14. MEN'S ACCESSIBLE TOILET



13. SECOND FLOOR



12. RESTROOM

Mechanical:

The HVAC systems serving the first floor consist of gas fired unit heaters (UH) and electric baseboard radiation. The two (2) garage spaces at the front of the building have one (1) gas fired unit heater (UH) each. The UHs are each Modine, Model #PDP175AE0130 with an input capacity of 175,000 Btuh. The UHs are close to five (5) years old and were observed to be in fair condition. The garage and storage spaces at the rear of the building do not have heating or ventilation equipment.

The Kitchen and concession area was observed to be served by an electric baseboard radiation heaters located underneath the concession stand opening. This baseboard radiation was observed to be in damaged condition. The staff bathroom was observed to be unconditioned.

The two (2) exterior public restrooms were served by electric baseboard radiation which appeared to be in deteriorating condition. Each restroom is served by an exhaust fan mounted on the exterior wall. The exhaust fans are each, Emerson, Model #5DDW106A and were observed to be in fair condition. The exhaust fans are controlled by the wall mounted optical sensor switch that is interlocked with the lights.

The HVAC systems serving the second floor consist of two (2) air handling units (AHU). One (1) AHU is a heating only unit with a gas fired furnace and serves the storage spaces, hallway, kitchen and restrooms on the second floor. This unit was observed to be old and in deteriorating condition. The supply and return air ductwork associated with this unit was observed to be old and includes flexible ductwork with lengths more than acceptable to industry standards. There was no insulation observed on the sheet metal ducts. The unit is controlled by a wall mounted thermostat. There was no outdoor air component associated with this AHU.

The second AHU is a cooling and heating unit that consists of a gas fired furnace and a DX split system and serves the meeting rooms. The DX split system includes a DX cooling coil mounted on the furnace and an associated outdoor air cooled condensing unit located at grade. The DX cooling coil is a Carrier, Model #28VQ048030 and is approximately fifteen (15) years old. The furnace and the DX coil were observed to be old and in deteriorating condition. The supply air and return air ductwork was observed to be insulated. The unit is controlled by a wall mounted thermostat. There was no outdoor air component associated with this AHU.

The outdoor air cooled condensing unit is a Carrier, Model #38EH048320DL with a 4.0-ton cooling capacity. The condensing unit was observed to be old but in fair condition.

The two (2) restrooms on the second floor were observed to have a wall mounted exhaust fan each, operated by a wall mounted switch. It was observed that the exhaust fans exhaust the air into the storage space behind the restrooms and not to the outdoors which is not code compliant.

Notes:

1. The source of ventilation for the second floor is operable windows. The percentage of operable window area needs to be evaluated to make sure the space meets with the code required natural ventilation criteria.



15. GAS FIRE UNIT HEATER-CART GARAGE



16. GAS FIRE UNIT HEATER-GARAGE1



17. Unit Heater VENT



18. DAMAGED ELECTRIC BASEBOARD RADIATION AT CONCESSION AREA (KITCHEN)

2. Toilet exhaust for the restrooms on the second floor is not code compliant. The toilet exhaust needs to be directly exhausted to the outdoors per code.
3. Most of the equipment serving the building though well maintained is close to its life expectancy and is starting to show deterioration and might need replacement in the near future.



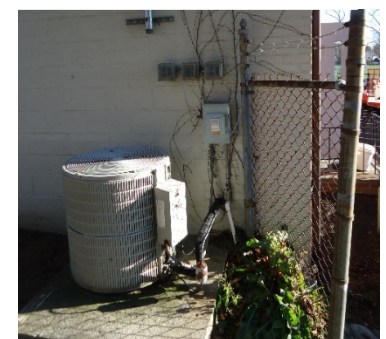
19. SECOND FLOOR – HEATING ONLY AHU.



20. SECOND FLOOR – HVAC AHU



EXISTING EXHAUST FANS SERVING PUBLIC RESTROOMS



21. EXISTING AIR COOLED CONDENSER

Electrical

The main service is located on the first floor and is an 800A, 120/208V, 3 Phase, 4 Wire FPE (Federal Pacific) circuit breaker disconnect switch. The meter is an NSTAR meter, NSTAR is now Eversource. The meter is a newer style and demand information should be available to the Town of Needham, for our use to calculate an accurate account of the existing service load.

Electrical Distribution

This main service disconnect provides power to an adjacent panel which feeds several panels within the building. The adjacent panel is an older panel original to the building and contains several sub-breakers to serve subpanels and equipment. This panel also services general receptacles and lighting.

There is a newer Eaton (Cutler Hammer) panel located in the garage area and there are several 30A/2P special purpose and 20A/1P receptacles located around the panel. The kitchen panel is a 100A, single phase 120/208V panel located outside of the kitchen in the main entry garage area, this panel is older but in good condition.

The furnace room on the second floor has a small Crouse Hinds panel serving local equipment and devices. There is also a panel located in the storage area at the end of the corridor, this panel is equipped with (2) 200A/3P breakers, panel schedules are not available.

Lighting

First floor lighting is generally industrial strip lights with fluorescent lamps with local switching. The bathrooms have surface mounted fluorescent canister lights with motion sensor control. The bathrooms also are equipped with emergency battery units with integral lighting heads. The kitchen is illuminated with (4) 4 lamp fluorescent surface mounted wrap fixtures, one is missing a lens with switch control.

The second floor is generally illuminated with surface mounted fluorescent decorative fixtures with local switch control. The storage closets have industrial fluorescent fixtures and several also have older incandescent fixtures hanging from the conduit. The corridor has emergency battery units with integral heads and exit signage. The American Legion Room and the adjacent meeting room both have fluorescent can lights, industrial strip fixtures and track lighting all with local control. Both areas have emergency battery units with integral lighting heads.

The second-floor bathroom has a surface mounted fluorescent decorative fixture with wall switch control.

Receptacles and Equipment

The receptacles for the second floor are surface mounted with the branch circuitry installed in EMT conduit, most are located approximately 40" AFF and are standard 125V receptacles, a few are ground fault protected.

The community bathrooms are equipped with electric hand dryers and ground fault protected receptacles. The single bathroom has an incandescent fixture over the mirror with a wall mounted switch control. The kitchen has several ground-fault protected devices and special purpose receptacles for miscellaneous equipment. The field irrigation control equipment is in the kitchen. The first floor is equipment with electrical baseboard has local thermostat control.

The second floor has both finished areas and storage areas. The finished areas are provided with flush mounted devices and the storage areas have surface mounted device and conduit. The kitchen area receptacles located near sinks and bathroom receptacles are provided with ground fault protected devices.

Communications

The phone service is located on the first floor adjacent to the main electrical service and appears to be a (10) line cable. One devices jack was noted in the American Legion Area and one in the adjacent meeting room. Cable TV service is located on the first floor near the electrical utility entrance and is provided by RCN.

The fire alarm control panel (FACP) is located next to the main entry. The panel is an EST (Edwards Systems Technology) and is in good condition. The panel is connected to a master box for fire department notification. The master box is located on the outside of the building next to the main entry door. The annunciator panel is located next to the FACP and is manufactured by Fire Lite Alarms Mini-Scan 424, the annunciator appears to be original to the building.

The first-floor fire alarm devices are very limited. The kitchen is protected with a heat detector at the ceiling and a pull station and audio/visual alarm at the entry door. The kitchen storage area also has a heat detector.

The second floor is equipped with several heat detectors in each room and smoke detectors in the corridors. The bathrooms do not have strobes and there is only one audio/visual device on the second floor located in the corridor with a pull station mounted below it.

Recommendations

Electrical Service

The existing 800A, 120/208V, 3 Phase, 4 Wire service would be sufficient for 15,000sf of office space and elevator but it is unclear as to what existing loads are to remain. The existing service feeders also need to be verified, it is not uncommon to have a large disconnect feed by significantly smaller service feeders.

If the town has existing electrical bills that they can provide, an analysis of the existing load can be accomplished. (3) Years of bills would be sufficient but any that amount available will be useful. Information about loads exterior to the building such as the field lighting or any power requirements for the town use and celebrations held on these fields would be necessary to determine if the service is sufficient in size for the proposed renovation.

Electrical Distribution, Lighting, Receptacles and Communications

The electrical distribution is older and is not sufficient to be utilized for office space. It is recommended that the entire distribution be replaced with new.

The lighting, receptacles, data devices, and controls shall be replaced with new to meet the layout requirements.

The fire alarm system is newer but all the devices will need to be replaced. Single sourcing the devices will increase the cost and therefore it is recommended that the entire fire alarm system be replaced with new. The master box (i.e. notification system) will need to be coordinated with the fire department.

The phone and cable television service will not be of sufficient size to provide for the new office space and shall be replaced with new.

Environmental

Excerpted from Hazardous Materials Survey Report, see Appendix for complete report.

TRC Environmental (TRC) performed a survey for asbestos-containing materials (ACM), testing for lead paint and a visual inspection for mercury-containing devices, liquid polychlorinated biphenyl (PCB) containing electrical equipment, and other building materials that may require special handling and/or disposal as part of the Memorial Park Building and Grounds Feasibility Study, Needham, Massachusetts. The asbestos survey and the hazardous/regulated building materials assessment was performed on April 12, 2017 by Commonwealth of Massachusetts Department of Labor Standards (MA DLS) certified asbestos inspector Mr. Robert Thomson (Certification No. AI-031431). The lead paint testing was performed by Mr. Thomas Roche on April 12, 2017. Mr. Roche is a Massachusetts Department of Public Health licensed lead inspector (License # 1676) and is factory trained in the use of the X-Ray Fluorescence (XRF) Spectrum Analyzer.

Asbestos Survey

Representative bulk samples of suspect ACM were collected from accessible interior and exterior areas of the building and analyzed to determine asbestos content. Asbestos-containing materials identified at the site include interior window glazing compound in the first-floor kitchen and restroom and exterior caulk associated with the overhead garage doors on the South Elevation.

Due to the limited nature of the asbestos survey, additional site inspection and bulk sampling using destructive sampling methods is required prior to the start of any future renovation/demolition activities.

All identified and assumed ACM should be removed from the building prior to the start of any planned renovation/demolition activities that may disturb the materials. Note that additional suspect ACM may be present in buried areas, the roof or otherwise inaccessible building locations. If additional suspect ACM is encountered during renovation activities, then precautions should be taken to prevent disturbance and the material should be tested to determine asbestos content.

Lead Paint Testing

Lead paint testing was performed using an x-ray fluorescence spectrum analyzer (XRF) to determine the lead content of accessible interior and exterior painted building components. The purpose of the lead paint testing is to provide information for compliance with OSHA and US EPA requirements during renovation or demolition activities where painted surfaces will be disturbed. Renovation/demolition work that disturbs lead requires compliance with the OSHA lead standard (29 CFR 1926.62).

The lead content of the surfaces tested range from less than the lower limit of quantification for the XRF instrument of less than 0.05 milligrams per square centimeter of sampled surface area (mg/cm²) to 4.2 mg/cm². Demolition waste containing lead must be characterized to determine disposal requirements (as construction debris or as hazardous waste). This can be accomplished by performing the toxicity characteristic leaching procedure (TCLP) or using other methods that accurately characterize the lead content of such waste.

Hazardous/Regulated Building Materials

TRC visually inspected accessible building areas and observed suspect potentially hazardous/regulated building materials including, but not limited to, fluorescent lamps and ballasts; a mercury thermostat, flow meters, a ceiling mounted heater, white goods, an electrical transformer, air conditioners and a hot water heater. These items should be removed from the building and either recycled or disposed in accordance with the Massachusetts Department of Environmental Protection (MA DEP) hazardous waste regulations, 310 CMR 30.000 and other applicable regulations.

Geotechnical

See Appendix

D. Permitting

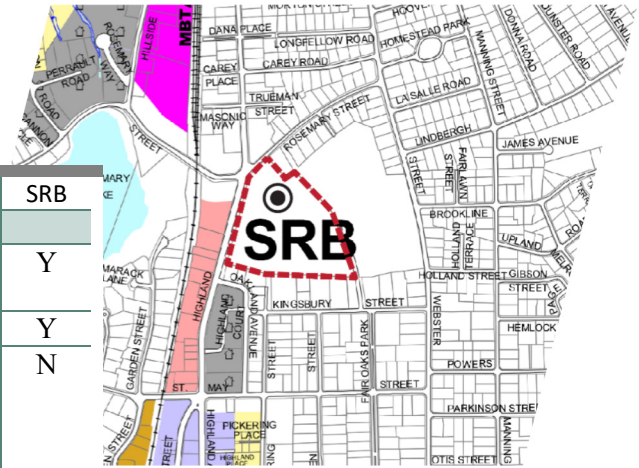
The conceptual design is intended to be compliant with relevant regulations. No appeals or exceptions are anticipated at this time. Site Plan approval by Planning Board Special Permit will be required, as well as Design Review

Zoning

Memorial Park is located in SRB-Single Residence A District. The site is clear of both the Aquifer Protection and Flood Plain Districts.

3.2 Schedule of Use Regulations

USE	SRB
PUBLIC, SEMI- PUBLIC & INSTITUTIONAL	
Public park and play- ground and municipal structure including a water tower and reservoir	Y
More than one municipal building and/or municipal use on a lot	Y
Off-street parking for vehicles associated with a principal use, located on a separate lot owned or leased by the owner of the land on which the principal use is located, within a zoning district in which the principal use is permitted	N



4.02.1 Table of Regulations

District	Min. Lot	Min.	Front	Side	Rear Setback	Max. Floor Area	Max. % Lot	Max.	Max.
	Area (sf)	Frontage (ft)	Setback (ft)	Setback (ft)	(ft)	Ration (F.A.R.)	Coverage	Stories	Height (ft)
Single Residence B	10,000	80	20	12.5	10	NR	NR	2-1/2	35
			(b)	(c)(g)(i)	(d)(g)(j)	(e)	(f)(k)	(l)	

(b) Buildings and structures on any lot in a Single Residence B or General Residence District **devoted to a public**, semi-public or institutional use, as listed in Section 3.2 Schedule of Use Regulations, shall have a **minimum front yard setback of twenty-five (25) feet...**

(c) Buildings and structures on any lot in a Single Residence B or General Residence District **devoted to a public**, semi-public or institutional use, as listed in Section 3.2. Schedule of Use Regulations, shall have a **minimum side yard setback of twenty-five (25) feet.** The Board of Appeals may grant a special permit reducing the minimum side yard setback required by this footnote to no less than twenty (20) feet. (See Section 4.2.7)

(d) Buildings and structures on any lot in a Single Residence A, Single Residence B or General Residence District devoted to a public, semi-public or institutional use, as listed in Section 3.2. Schedule of Use Regulations, shall have a minimum rear yard setback of twenty-five (25) feet. The Board of Appeals may grant a special permit reducing the minimum rear yard setback required by this footnote in a Single Residence A District to no less than fifteen (15) feet and the minimum rear yard setback required by this footnote in Single Residence B and General Residence Districts to no less than ten (10) feet. (See Section 4.2.7)

(e) Buildings and structures on any lot in a Rural Residence-Conservation, Single Residence A, Single Residence B or General Residence District devoted to a public, semi-public or institutional use, as listed in Section 3.2. Schedule of Use Regulations, shall have a maximum Floor Area Ratio of 0.30.

(f) Buildings and Buildings and structures on any lot in a Single Residence A, Single Residence B or General Residence **devoted to a public**, semi-public or institutional use, as listed in Section 3.2 Schedule of Use Regulations, shall not cover more than fifteen (15) percent of the lot area...

E. Programming

Through actions at Town Meeting in 1920, the Town of Needham purchased a ten-acre parcel from Nellie A. Richwagen “for the purposes of a **Memorial Field** to properly commemorate the services and sacrifices of the soldiers, sailors and marines who served the country in war...”. In 1923, with passage of Town Meeting Article 20 the Town established the Memorial Park Trustees and began to improve the site, creating Memorial Park Headquarters for use and governance by the Memorial Park Trustees and American Legion Post 14

Town Presence

Memorial Park is governed by the **TRUSTEES OF MEMORIAL PARK**. Formally, the Trustees have a standing monthly open meeting during which they administer the park’s affairs including among other things:

- Scheduling the use of the athletic field and fieldhouse
- Supporting Special Events
- Coordinating maintenance activities with town departments including Public Works, Parks and Forestry Division
- Administering the Park Budget
- Supporting capital projects that relate to the Park
- Memorial Day and Veterans Day Ceremonies

The **PARKS AND FORESTRY DIVISION** of the Needham Public Works Department utilizes space in the Fieldhouse and have a regular presence on the site. Their activities are largely related to care of the park and their footprint is dominated by equipment and supplies used in care and maintenance of the grounds.

The **PARK AND RECREATION DEPARTMENT** works with the Trustees to coordinate and schedule certain activities at the park but do not have not dedicated footprint for formal function in park operations.

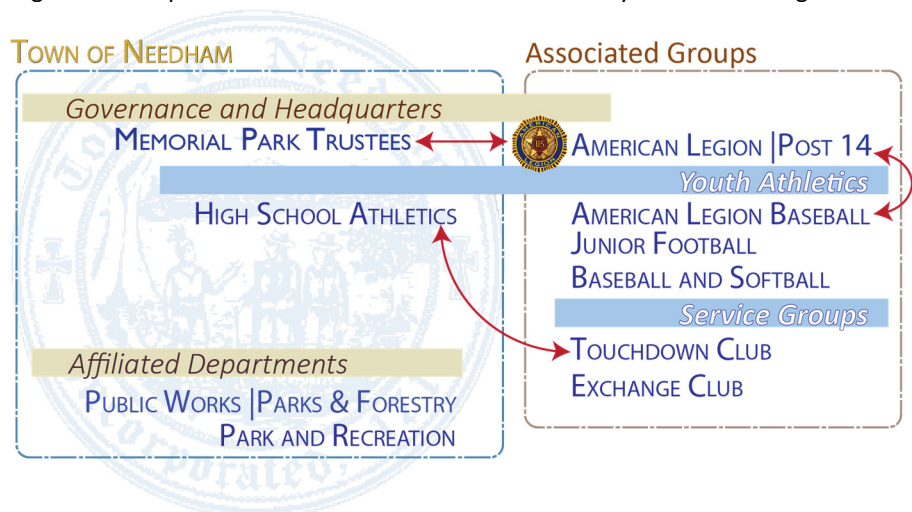
Needham High School is adjacent to Memorial Park. A recent expansion of the high school led to an Interdepartmental Agreement (see appendix) allowing the high school to use 116 of the 151 total spaces at Memorial Park for overflow parking. Memorial Park is also the home field for Needham High School Football, the Field House is active during games and athletic related equipment is store there.

Associated Organizations and User Groups

Memorial Park’s founding purpose is to commemorate Veterans and serve as headquarters for **American Legion Needham Post 14** and a **Memorial for those that have served our country**. The American Legion and veterans, are present on site in several ways.

- **Trustees** – Post 14 and the American Legion are not part of Town Government but are formally tied to it through the Town Meeting warrants establishing the park and MGL C.41 which stipulate that three of the trustees must be veterans.
- **Veterans Office and Storage**, located on the second floor of the Field House.
- American Legion Baseball.

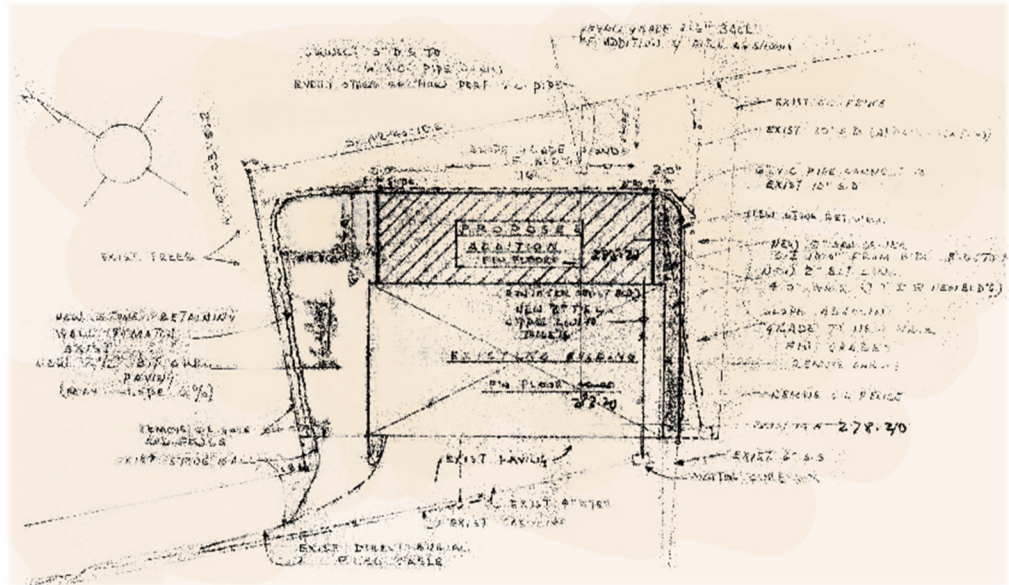
Most visitors to the park are youth athletic participants, spectators and volunteers from the various organizations supporting teams and staging events.



Review of Current Space and Uses

The current field house building is the result of a series of expansions. Drawings prepared by Architect Jay S. Tracy Jr. and dated August of 1984 depict the building essentially the same as its current form but did not describe second floor uses nor provide windows or stair access to an upper level. It did call for precast concrete deck at the level of what is not the second floor, perhaps in anticipation of future use with occupancy on the second floor.

By the 1990s, the upper floor was occupied as evidenced by the dormers and egress stair to the south.



Current Uses

The building is a mixture of spaces with dedicated functions and others that serve a variety of needs that change with the season, day of the week and even the time of day.

First Floor

The **First Floor** is split level; the rear (NE) third is 3' above field level and is mostly garage-like space, portions have accumulated varied uses that rotate with the sports seasons.

1. Parks and Forest (P&F) occupies the northwest garage. Used mostly for equipment and materials storage. P&F maintains the site and field.

Space is also allocated for storage of non-P&F gear including a large tent used for events. The electrical service is in one corner and the main stair divides the space and has storage beneath it.

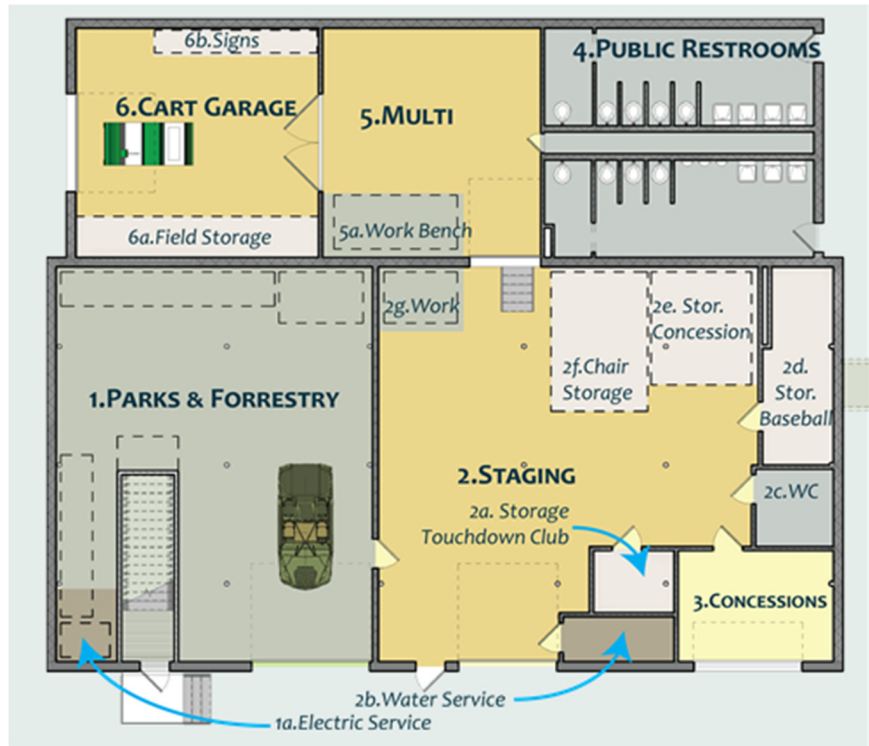
2. Staging - labeled for its use during special events and sports equipment distribution. Daily used as a work area, meeting room, lounge and circulation space, providing access to the smaller spaces that surround it. 2f. Chair Storage and 2e. Concession Storage are not secured storage but rather footprint allocations as labeled. Staging also serves as a gathering area (referred to as **locker room**) for the home football team during half-time.

3. Concession is small serving room located at the corner closest to the fields and houses food service equipment, features a rolldown serving window. Includes irrigation controls.

4. Public Restroom open to the exterior to support park activities.

5. Multi-use –currently arranged as a work area for P&F but is reportedly used for ad-hoc purposes according to need.

6. Electric Golf Cart Garage – recently separated from 5. Multi, storage racks line one wall for storage of field equipment. The high school golf cart is parked in the bay; large signs are stored along the back wall. During half-time it is the visiting team room.



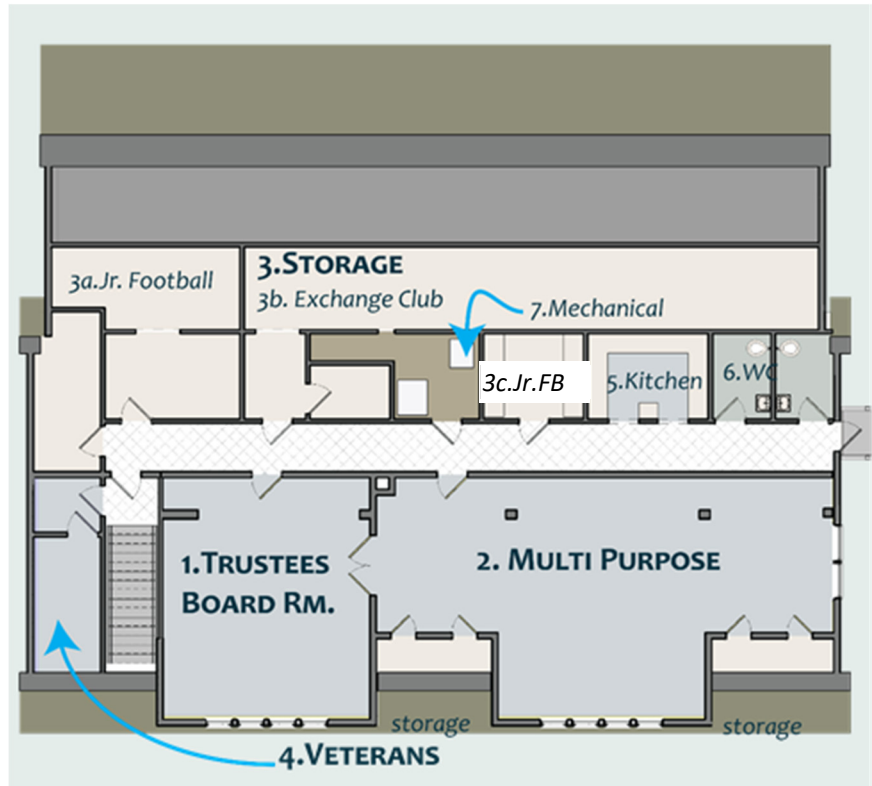
1 | FIRST FLOOR - EXISTING CONDITIONS AND USES

Existing Building Areas		8,000	
Space	Area (SF)	Space	Area (SF)
First Floor Total		Second Floor Total	
4,700		3,300	
1. Parks & Forestry Gar.	1,120	1. Trustees Board Rm.	500
1a. Electrical Service	50	2. Multi-Purpose	880
2 Staging	990	3. Storage (combined)	1,130
2a. Storage - Touchdown Club	50	4. Veterans Storage	130
2b. Water Service	50	5. Kitchen	100
2c. Restroom	60	6. Restrooms	100
2d. Storage-Baseball / Softball	140	7. Mechanical Utility	100
2e. Concession Storage	140	Corridor	380
2g. Chair Storage	150	<i>Please note: areas reported are approximate and rounded to the nearest 10 for individual spaces and 100 for totals</i>	
2g. Work Area	60		
3. Concession Stand	180		
4. Public Restrooms	590		
5. Multi Use Garage	430		
5a. Work Bench	90		
6 Cart Garage	430		
6a. Storage-Field Equip.	100		
6b. Storage - Signs	50		

Second Floor

The second floor is accessed by the main stair at the front left (NW) of the building. The stair emerges at a corridor that extends laterally to the south east exterior wall and connects to the exterior stair for a second means of egress. Lacking an elevator or alternative accessible means of the access, the second floor is not suitably accessible for a public building.

1. **Trustees Board Room** - a 500 sf meeting room with a fixed conference table.
2. **Multi-Purpose** – immediately adjacent to the Board Room and accessible by communicating doors. The space is used for larger events, its proximity to the kitchen is intended to support food service during activities.
3. **Storage** – across the corridor are several smaller spaces, that extend under sloping rafters that are used for storage by related organization.
4. **Veterans** – a small area, referred to as office space, this room to the left of the stair, contains a variety of stored items and includes office records.
5. **Kitchen** – a u-shaped kitchen with appliances, the kitchen is currently being used for storage.
6. Restrooms- one male and one female individual rooms.
7. Mechanical Equipment



1| SECOND FLOOR - EXISTING CONDITINOS AND USES

Patterns and Conflicts

Red arrows indicate, equipment or vehicular paths, blue arrows are for pedestrian flow.

The arrangement of ground floor space assignments and existing site features give rise to several intersections between pedestrians and vehicular traffic. Reportedly, peak pedestrian traffic in and around the building is not coincident with vehicular/equipment traffic related to the building.

Parking spaces in close proximity to and backing toward the concession stand present a potential for hazard.

Optimal placement would segregate pedestrians and vehicles and incorporate physical barriers such as site walls and bollards where proximity is unavoidable.

Secure Storage

The building perimeter is secured by locked doors and limited circulation of keys. The locks are keyed to segregate access to various spaces.

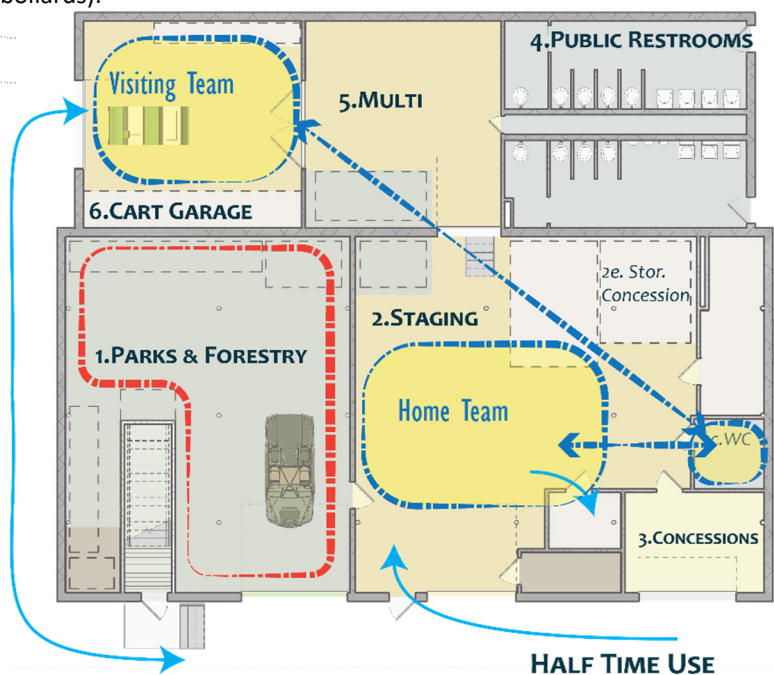
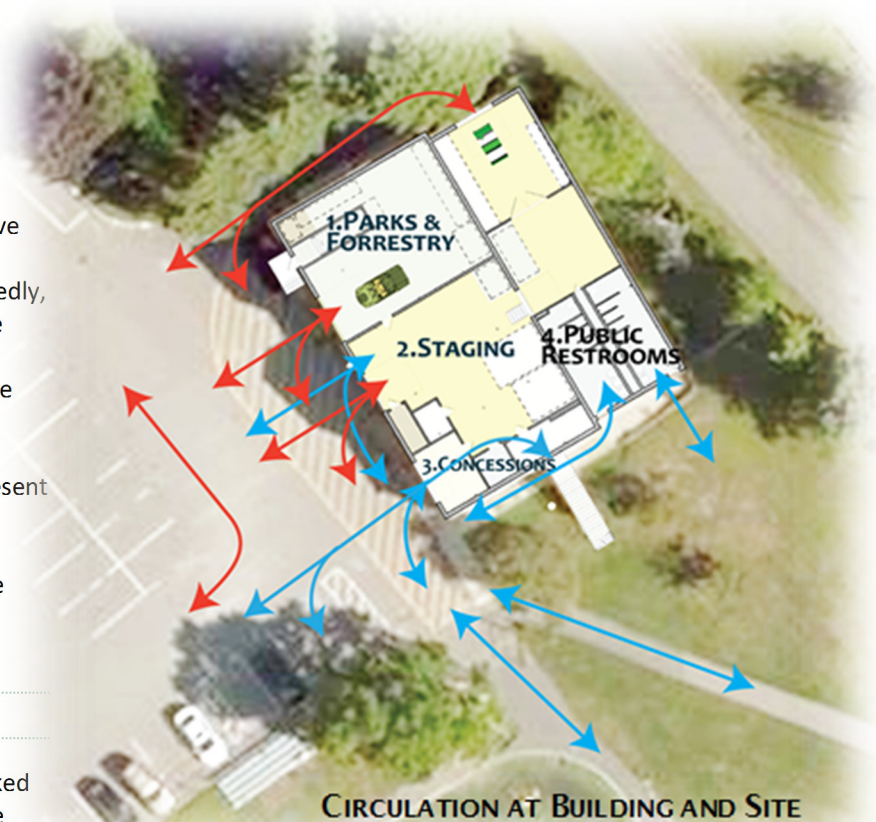
Except for the open storage areas on the ground floor, storage rooms are secured, some with padlocks.

The security arrangement is minimal but reported to be generally successful, however users have reported some frustration, a handful of cut padlocks and some minor shrinkage of supplies. All reported squawks relate to unsegregated storage.

Parks and Forestry's equipment and inventory are stored in the NW garage (red shape in image below). The room is secured and keyed separately, the communicating door into 5. Staging is secured by a padlock. The room also stores some items not related to P&F. The cut padlock report did not include missing equipment or inventory; the padlocks were likely cut to gain access to the stored items (cones, ropes, bollards).

Use Scenario – Halftime

The plan at right shows the accommodations available to the teams during halftime. The two team's spaces are not suitably enclosed, they both rely on one internal restroom or nearby public restrooms, both are simultaneously open to storage areas and the home team is in close proximity to Concessions activity.



Associated Organizations and User Group Detail

The project team met with each associated group or department to understand and document how they used the building. The interviews were conducted informally and with one exception conducted on site. The following was used to guide the conversation:

- ➔ Representatives were informed:
 - ➔ they were participating in the information gathering process in advance of the design study.
 - ➔ that no decisions had been made regarding the renovation/replacement size or contents.
 - ➔ all such decisions about the future use rested with the Memorial Park Trustees and other Needham officials.
 - ➔ That the Public Facilities Department, Design and Construction Division is managing the study process for the Permanent Public Building Committee
- ➔ They were asked:
 - ➔ Organization size and the nature and frequency of their use of the building.
 - ➔ What part of the facility they used and how?
 - ➔ What features would improve the facility for their groups use.

The information gathered is compiled here by group and integrated throughout this study.

Memorial Park Trustee

Meeting Date:	12/15/2016
Location:	Field House
Representative(s):	John Gallelo

The Trustees articulated requirements for the facility beyond those captured herein. This section is related to the Trustees direct use of space. Additional requirements are captured elsewhere in this document.

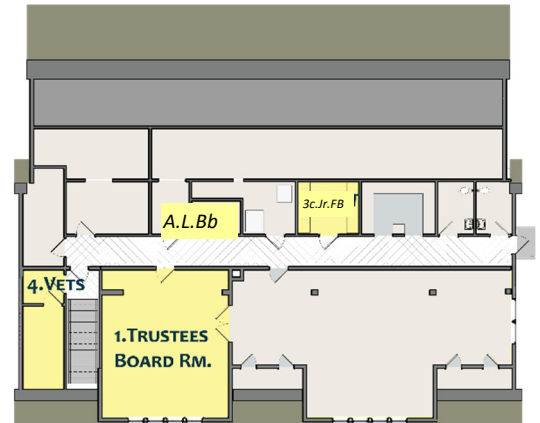
Space	Area (SF)
Trustee Related Footprint	1000
Trustees Board Room	800
Storage	70
American Legion Storage	130

The headquarters and administrative functions are housed on the second floor of the field house, primarily in the board room. A standing meeting each month is their primary group activity. The Trustees reported some associated

storage space and are closely linked with the American Legion (also referred to as Veterans.

Request / Requirements.

- ➔ Board Room functionally equivalent with the current room.
- ➔ Office/storage for records and supplies.
- ➔ A functional kitchen area for coffee/tea and refreshments.
- ➔ Improved HVAC for year-round use.



Membership and Activities.

Group	Group	Freq.	attend	comments
Trustees	5	12 /yr.	10	
Members	6	Brd.Meetings	12/yr.	10 includes guest

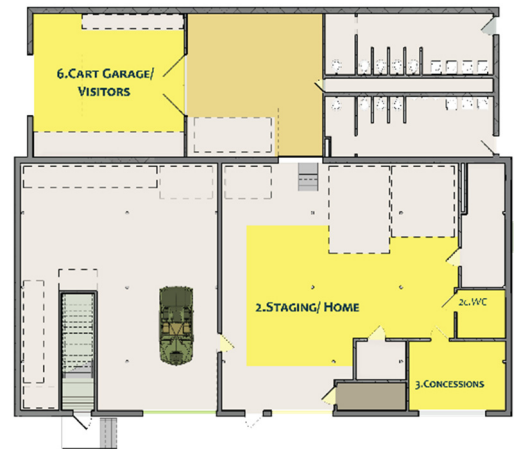
American Legion

Meeting Date:	1/26/2017
Location:	Via tel
Representative(s):	John Gallelo

American Legion conducts regular meetings at the field house and, stores its ceremonial items, archives and records in the room labeled 4. Vets. American Legion Baseball also stores equipment in the adjacent room during the offseason

Membership and Activities.

Group	Group	freq.	attend
American Legion	?	21/yr.	
Members	?	Gen. Meeting	9 /yr. 30 max
Officer	?	Officer Meeting	12/yr. 6



NHS Athletics

Meeting Date:	12/16/2016
Location:	NHS AD Office
Representative(s):	Michah Hauben, Athletic Director

Memorial Field is the home field for Needham High School. Every other Thanksgiving Day since the early 1900s, Needham hosts what is reported to be the oldest rivalry in the nation. The game is attended by as many as 4,000

spectators and students. Varsity Football home games are well attended and supported by the Touchdown Club's concessions operation.

The school's athletic cart is stored in 6. Cart Garage as well as field related equipment, during the halftime break, the garage is utilized by the visiting team. Needham's squad used the Staging area in a similar fashion.

Participants /Activities

Group	Teams	Participants	Group	frequency	Group	Area SF
Students	3	180	Activities	16 per yr.	Storage	530
Football	3	100	Home Games	5 per yr.	Field Equip. Storage (Shared)	100
Cheer	1	20	Thanksgiving Game	1 per yr.	Golf Cart	430
Dance	1	40	Other Sports	10 per yr.		
Band	1	20	Practice			

Requests and Requirements

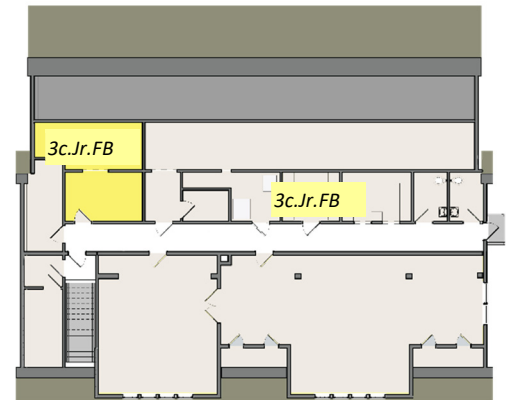
During our interview in response to questions, the Athletic Director identified some desirable features that are not essential requirements; those items are included below.

- Better space for halftime, suitable for up to 100-person home, 50 away, with adjacent restrooms.
 - Lockers for in-season use would be desirable.
- Training room with ice machine.
- Meetings Area (shared) features that support exercise related activities (yoga or similar) as well as classroom format with IT network and Smartboard.
- Media Booth for the Needham Channel with networking connection.

Junior Football and Cheer

Meeting Date:	12/28/2016
Location:	Field House
Representative(s):	John Sullivan Lynn Palmatier

Junior Football and Cheer serves approximately 220 players and cheerleaders. There are typically 6 teams and 6 cheer squads across 6 age groups from 3rd to 8th grades. 6 home games are played Memorial Field for each team successively on Saturdays. Organizers report that game day is approximately 12 hours from start to finish. Volunteers from the group offer concessions to players and spectators during the day.



Storage

Group	Current Area SF
Storage	247
2D storage	247

Participants / Activities

Group	Teams	Participants
Youth	6	120
Football	6	120
Cheer	6	100

Group	Teams	Participants
Coaches	12	24
Football	6	30
Cheer	6	25

Group	frequency	participants	comments
Activities	44 per yr.		
Meetings	32 per yr.		
Board Meetings	12 per yr.	40	
Training	8 per yr.	30	
Team Parties	12 per yr.	35	
Equipment Distribution	12 per yr.		
Pickup	6 per yr.		by age group
Drop Off	6 per yr.		

Requests and Requirements

- Suggests modest storage near concession for in season consumables.
- Additional year-round storage would be ideal .
- This group stores all equipment at this site and share equipment with Needham High School
- All helmets, uniforms and pads are stored at this site.

Baseball and Softball

Meeting Date:	1/18/2017
Location:	Field House
Representative(s):	Paul Siegenthaler Bernie McFarland

Needham Baseball and Softball is a large organization that orchestrates 3 seasons of sports and peaks at over

1,000 youth athletes in the spring. The games too numerous to rely on Memorial Park fields but team logistics are staged out the field house. Equipment management and storage are centered on the ground floor. BB/SB's storage area is the locked room at the south end of the staging area. The 140sf room is well organized and close packed with baseball and softball gear. Limitations in space have led to less than convenient storage up the ceiling.



Members and Participants

Group	Teams	Participants
Youth /Peak-->	86	1,032
Spring	86	1,032
Summer	22	264
Fall	12	144

Group	Teams	Participants
Coaches /Peak-->	86	258
Spring	86	258
Summer	22	66
Fall	12	36

Activities

Group	frequency	participant	Comments
Activities	36 per yr.		
Meetings	30 per yr.		
Board Meetings	12 per yr.	40	prefer on site
Coaches Meetings Spring	8 per yr.	50	
Coaches Meetings Summer	5 per yr.	35	
Coaches Meetings Fall	5 per yr.	25	
Equipment Distribution	6 per yr.		
Spring Pickup	1 per yr.	258	uses staging area
Spring Drop Off	1 per yr.	258	
Summer Pickup	1 per yr.	66	
Summer Drop Off	1 per yr.	66	
Fall Pickup	1 per yr.	36	
Fall Drop Off	1 per yr.	36	

Storage

Storage	140
2D storage	140 requested more
field boxes	n/a

Requests and Requirements

- Storage - Field house is the principal storage location; additional space is requested.
 - Nominal climate control is important for bat, gloves, ball, first aid ice pack inventories.
 - Stores approximately 8-10 different levels of baseballs and softballs.
 - Variety of storage shapes, shelves and bins required to equipment.
- separate direct entrance as well as access to staging area preferred.
- A card key system for entry would be very helpful and eliminate the need to hunt down keys.
 - Typical coaches package for pickup includes a bag or box of uniforms, one of the large black baseball equipment travel bags, bats, catchers equipment bag and a bucket with about 3 dozen baseballs,.

Touchdown Club

Meeting Date:	
Location:	Field House
Representative(s):	Bud Sumner

The Touchdown Club (TDC) is a 501C3 non-profit organization, was established in 1996 and has three primary purposes:

- To enhance the football experience for football players, cheerleaders and their families
- To raise funds to accomplish the TDC mission
- To work with NHS administrators and coaches, and communicate with families and the community.

from www.touchdownclubneedham.org



Members and Participants

The Touchdown club is a parent/adult organization supporting the High School football and cheer student athletic groups:

Group	Participants	Group	Participants
High School Athletics	140	Adults	140
Varsity Football	?	Board Members	15
Junior Varsity Football	?	Coaches	6
Freshman Football	?		
Varsity Cheer	?		
JV Cheer	?		

Activities

Touchdown Club's primary on site activity is selling food, concessions and merchandise during high school football games.

Group	frequency	participants	⊕	comments
Activities	22 per yr.	730		
Concessions (homes games)	6 per yr.	n/a	✓	small staff, serving attendees at home games
Board Meetings	12 per yr.	20	?	Board members plus HS coaches
Barbecue	1 per yr.	250	✓	Outdoor, uses staging area
Pizza Party	1 per yr.	100	✓	Annual, for athletes moving up from Jr. Football

Storage Requirements

Group	Current Area SF	comments
Storage	152	
Field Gear	100	shared,
Closet	52	merchandise
Chairs	150	not permanent

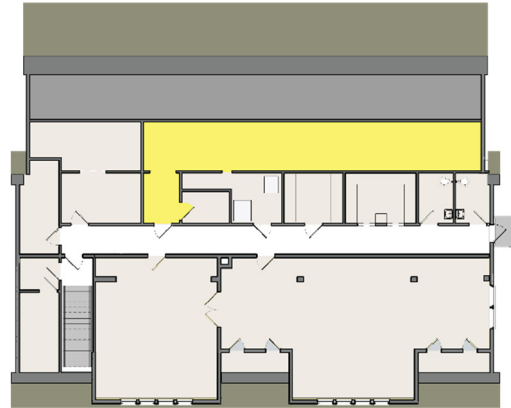
Exchange Club

Meeting Date:	
Location:	Field House
Representative(s):	Bill Dermody Mark McDonough Sam Hart

The Exchange Club of Needham is a local service organization, they conduct a variety of events to support service. At least two significant events are staged annually at Memorial Park, Needham's 3rd and 4th of July celebration and an annual Citrus Sale at the field house.

According to club leadership, approximately seven days around the 3rd and 4th event, volunteers prep the site and occupy the field house as event headquarters. A large tent (stored in the NW garage) is erected in the parking area, concessions are sold and a concert is staged in the park and features a fireworks extravaganza.

Exchange Club's presence in the park and field house is event oriented, their meetings are held off site. The only durable footprint is a large section of storage on the second floor and additional sign storage in the NE garage.



Activities

<i>Group</i>	<i>freq.</i>
Exchange Club	2 per yr.
Independence Day, 4th of July	1 per yr.
Fruit Sale	1 per yr.

Storage

<i>Space</i>	<i>Area (SF)</i>	<i>Comments</i>
Exchange Club	566	
Storage	472	Not full height
Storage	52	
Storage	42	
Sign Storage		counted elsewhere

Public Works | Parks and Forestry

Meeting Date:	
Location:	Field House
Representative(s):	Ed Olsen

Parks and Forestry (P&F) is a division of the Needham Department of Public Works and is responsible for care and maintenance of the facilities at Needham Memorial Park. P&F has direct access and control of the garage space at the NW corner of the Field House as well as two satellite work areas elsewhere on the ground floor. The garage is used primarily for storage, including storage for other groups (e.g., Exchange Club's 4th of July tent).



Request / Requirements.

- Estimates existing garage footprint adequate for equipment and seasonal supplies.
- Can consolidate satellite work areas within single footprint.
- Prefers complete segregation from other storage for security.
- P&F Staff use Staging area and restrooms daily.
- *Consider small staff room and restroom within P&F to reduce conflicts, improve manageability.*

Use / Group	Current		Preferred	
	Area	Level	Area	Level
Parks & Forestry	1,170	1	1,120	1
Garage	1,120		1,120	1
Work Area	60		-	
Work Bench	90		-	
Storage for others	(100.0)		0	

Park and Recreation

Meeting Date:	10/1/2016
Location:	Field House
Representative(s):	Patricia Carey

The Town of Needham Park and Recreation (P&R) Department has, no specific footprint or physical requirement at Memorial Park with the Field House. The department director, Patricia Carey met with the study team to provide input regarding the connections between Park and Recreation, Memorial Park and the Trustees. P&R's bears formal administrative obligations at most Needham parks and recreation facilities, the connection to Memorial Park can be characterized as a supporting role with an emphasis on schedule coordination at the park subject to Memorial Park's Trustees' approval on use. Ms. Carey reported that she engages with the Trustees on a regular basis to regarding scheduling on site activities.

P&R also utilizes the Gazebo Area for P&R sponsored Arts in the Park Series—approximately six live summer music events.

Optimized Spaces and Uses

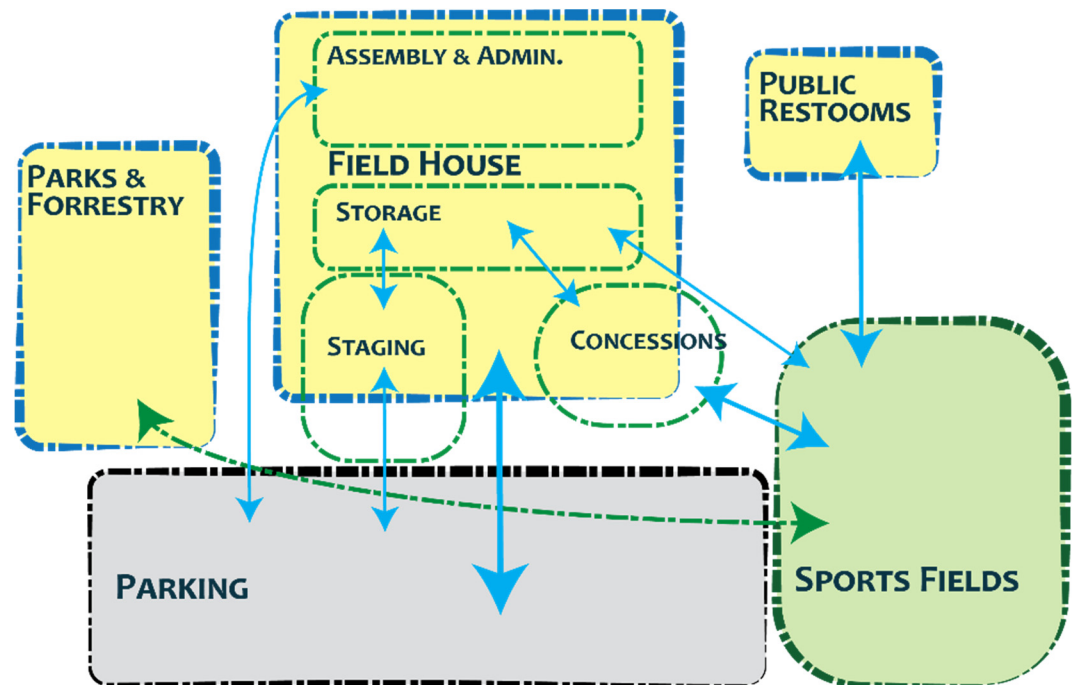
The existing field house supports a variety of activities at the Park throughout the year and is used intensively scheduled at times. Some contributors indicated they would use the facility more were it accessible and available. The existing building is approximately 8,000sf. The Facilities Master Plan (FMP) conceptualized a building almost twice as big at 15,225sf but it includes spaces and uses that have not been identified by the client group as part of this project. Some portion of the expansion relates to incorporating an elevator for accessibility and other code related improvements. The remaining gap can accommodate increased utility and service but also increase the cost.

Summary Tabulation

	Existing Area	Requirement
Summary Totals	8,350	12,000
Assembly and Administrative	1,780	3,200
Trustee Board Room	500	800
Multi-Purpose	880	1,500
Support Kitchen	100	200
American Legion	130	130
Trustees - admin	70	120
Restrooms	100	230
Team and Training	-	1,500
Home Team Room		840
Visitor Team Room		490
Restroom		82
Event Support	1,960	1900
Multi-Staging	990	800
Concessions	180	240
Concession Storage	140	150
Internal Restrooms	60	100
Public Restrooms	590	600
Facility Storage	730	500
Cart Garage	430	
Signs	50	100
Field Equipment	100	200
Chairs	150	150
Associated Group Storage	1,030	1,400
Parks & Forestry	1,120	1,200
Garage		750
Pallets/small equipment		120
Rack area		180
Staff Room		70
Restroom		50
Circulation	380	1,100
Infrastructure	810	1200
Elevator and Machine		140
IT		100
Mechanical	100	100
Electrical	50	100
Water	50	
Sprinkler		100
Irrigation	10	50
Wall Thickness	600	600
Superseded	540	-

Facility Organization

- Separation of uses, Assembly has most stringent requirement, must be separated from storage and garages.
- Park and Forestry can, should be self-contained.
- Optimal location for storage on the ground floor.
- Middle garage becomes Staging, multi-purpose room.
- Assembly functions on upper levels



Assembly Spaces and Administrative

This section describes the set of uses on the existing second floor except for storage. The Mass Building Codes describes these uses as Assembly Occupancy. Assembly spaces have a high level of life safety consideration. Storage in close proximity to Assembly is limited by floor area unless it is separated by protective measures.

The Summary Tabulation show two combinations of assembly spaces, a code compliant equivalent of the current functionality and a second array with two expanded rooms and two additional rooms. Contributors have indicated there is a substantial demand for meeting space, additional size or room count can be incorporated if preferred.

Needham's Zoning Ordinance mandates parking to support use but does not provide a category that closely matches the facilities' combination of uses. The most stringent application would require one parking space for every three seats or as many as 50 spaces for the assembly areas alone; the least restrictive application we require less than 35 spaces.

Trustees Board Room

	Existing Area	Level A	Level B	Level C
Trustee Board Room	500	500	800	800

Administration

The **American Legion** currently has a small storage area for archives and ceremonial items. There is also an adjacent space used by American Legion Baseball for equipment storage; the equipment storage is incorporated into the storage section of this document. The American Legion does not have staff or personnel on site.

The **Trustees** have a small dedicated area used for storage across from the Board Room. The Trustees do not have operation staff so do not require active office space but would benefit from better accommodation. We recommend:

→ American Legion

- Improved access and a better shaped single room.
- Lockable cabinet or closet interior to the room.
- Baseball storage segregated from the Assembly floor.

→ Trustees of Memorial Park

- A single room, medium office sized.
- Suitable for file cabinets and a small table or desk.
- Lockable cabinet or closet.

	Existing Area	Requirement
American Legion	130	130
Trustees - admin	70	120

Multi-Purpose

This space is intended as the replacement function for the large room immediately adjacent to the existing board room. Over the years, this room has served a variety of uses, Mass Building Codes describes it as Assembly.

→ Assembly Occupant Load

- Maximum – Existing 120 persons
| Expanded 200
- Capacity w/chairs - Existing +60 persons
| Expanded +120
- Capacity w/tables and Chairs - Existing
+36 persons | Expanded +72

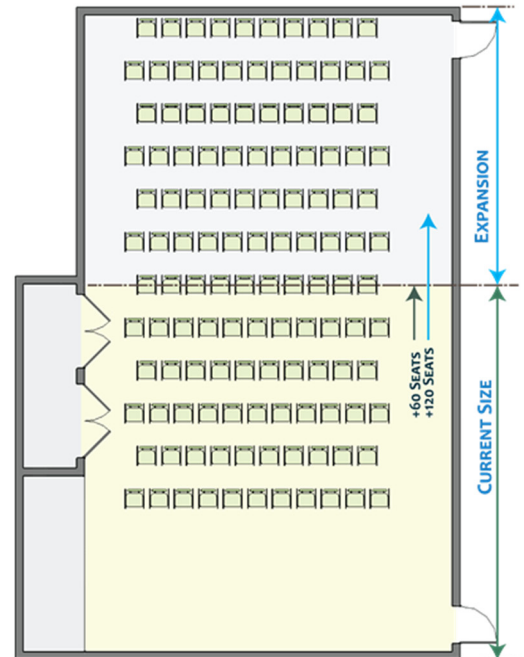
→ Plumbing Fixtures – toilets required for occupancy.

- Limited urinal substitution allowed for male fixtures in multi-fixture rooms.
- Restroom can be one floor away.
- Calculations assumes gender balance.
- Maximum – 2 male, 4 female
- Limited to Seating – 1 male, 2 female

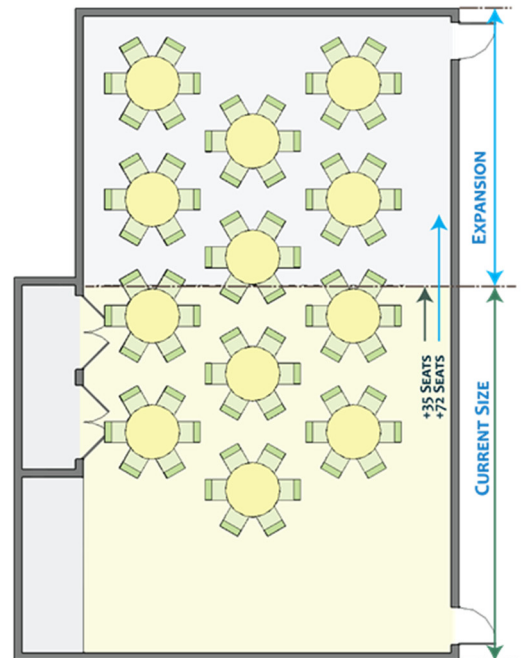
→ Related Spaces

- Restrooms
- Chair Storage
- Support Kitchen – Can be in Room or in close proximity.

Room SF	Existing	Level A	Level B	Level C	
Multi-Purpose	880	900	1,500	1,500	
Support Kitchen	100	100	200	200	
Restrooms	100	100	230	230	



MULTI-PURPOSE | CONCENTRATED SEATING



MULTI-PURPOSE | BANQUET STYLE SEATING

Sports Related

This space is intended to accommodate the half-time activity currently taking place on the ground floor during high school varsity football games. The space is configured to accommodate the entire NHS home game squad and small travelling visitor squad.

	Existing Area	Requirement	Comments
Team and Training	-	1,542	
Home Team Room	-	840	
Visitor Team Room	-	490	
Corridor	-	60	
Restroom	-	82	

- The restrooms shown are located as convenience restrooms and do not satisfy the occupancy load alone.
- The two team areas can be multi-use developed to satisfy sports related uses as well as other assembly functions.
- Provide two separate paths of travel for the teams.
- Provide complete separate spaces for the teams.

Event Support

Event support is the collection of spaces on the ground floor that serve as general storage and staging for activities. The program study has established a need for versatile and accessible space adjacent to the parking area for a variety of logistic uses related to events and sports league activity.

	Existing Area	Level A	Level B	Level C	
Event Support	1,960	1,850	1,890	1,890	
Multi-Staging	990	800	800	800	
Concessions	180	200	240	240	
Concession Storage	140	150	150	150	
Internal Restrooms	60	100	100	100	

- Internal Restrooms – indicated in close proximity for convenience to concessions.
- Concession Storage – lockable and intended for consumable items purchased by associated groups.
- Multi-staging should include roll-up doors, adjacent to parking area. Consider awning to extend cover.

Storage

Storage is a significant subset of the existing facility and the aggregate area exceeds the amount allowed as accessory storage not segregated from Assembly and other similar occupancies. This study further segregates the storage into two categories

- ➔ **Facility Storage** is for items and materials that may be shared by more than one user group, its shape or size is unique or it has some other special requirements.
- ➔ **Associated Group Storage** replaces the variety of spaces used by the groups.
 - Ideally located on the ground floor.
 - Heated at a minimum, limited climate controlled preferred.
 - Individually lockable subsection of a larger room optimal.

	Existing Area	Required
Facility Storage	730	700
Signs	50	100
Field Equipment	100	200
Chairs	150	150

	Existing Area	Required
Associated Group Storage	1,030	1,400
American Legion Baseball	110	150
Junior Football and Cheer	250	300
Baseball and Softball	140	300
Touchdown Club	50	150
Exchange Club	480	500
Needham HS*	0	

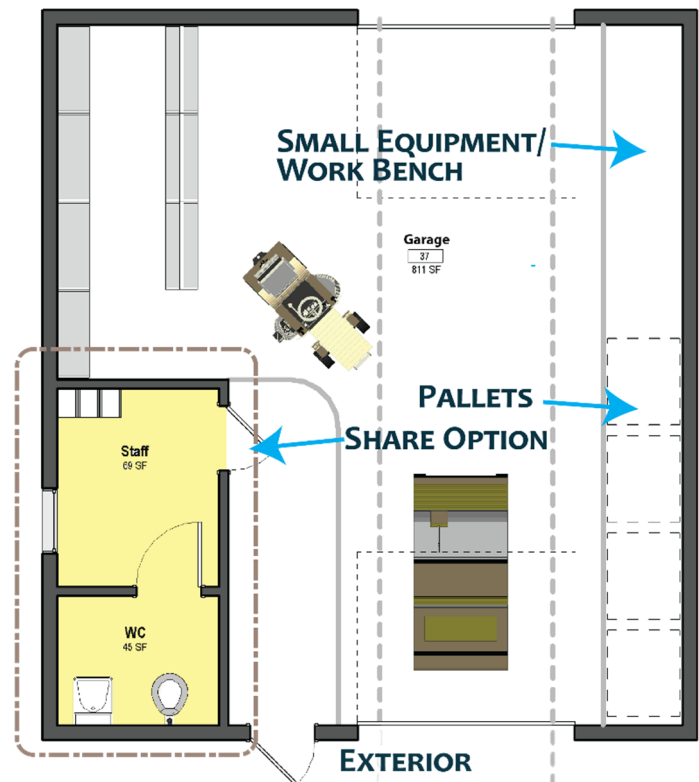
Note: Needham HS storage is currently open and shared and captured in the Facility Storage category.

Public Works | Parks and Forestry

The Parks and Forestry area is a mixed garage and moderate hazard storage area. Such areas require separation from other areas. Parks and Forestry's operations are predominately business week activity; personnel are typically not present off hours.

- Separate access with no shared facilities is optimal. -
- Staff and restroom can be integrated for use by others, operational security improved if independent
- Drive through garage, advantageous but not a requirement.
- Level A storage capacity is roughly equivalent to the current capacity less storage for others in existing footprint.

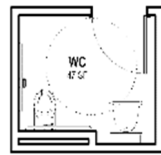
Parks & Forestry	<i>Level</i>	<i>Area</i>	<i>Required</i>
Garage	1	540	750
Pallets/small equipment	1	120	120
Rack area	1	180	180
Staff Room	1	70	70
Restroom	1	50	50
Subtotal		960	1,170
Current Area		1,170	1,173
Net Change		(210)	(3)



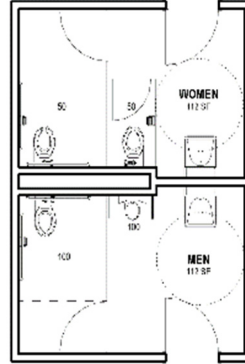
Restrooms

The restroom requirements are detailed in each individual section. Fixture counts correlate with the specific occupant load which varies according to size and/or seats. Restroom requirements can be accommodated on accessible adjacent floors.

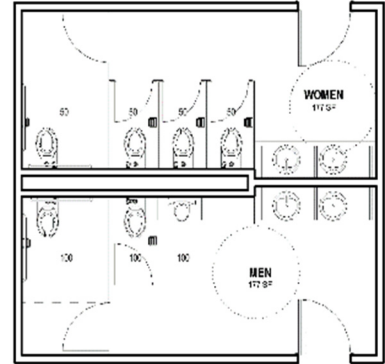
UNISEX BATHROOM



RESTROOMS SUPPORTING
OCCUPANCY OF 200 FOR
ASSEMBLY USE



RESTROOMS SUPPORTING
OCCUPANCY OF 400 FOR
ASSEMBLY USE



Public Restrooms – the existing public restroom fixture count supports an occupant load of 150 female and 420 male visitors, 300 persons total

assuming gender balance. This count is adequate for typical daily activity in the park. It does not adequately accommodate large events. The high school facilities are within 300 feet of Memorial Field and can be considered supporting when high school activities are conducted at Memorial Park. Large events can satisfy requirement with temporary facilities.

Additional permanent facilities are not required unless regular visitor count is greater than 300 persons.

	Existing Area	Required
Public Restrooms	590	600

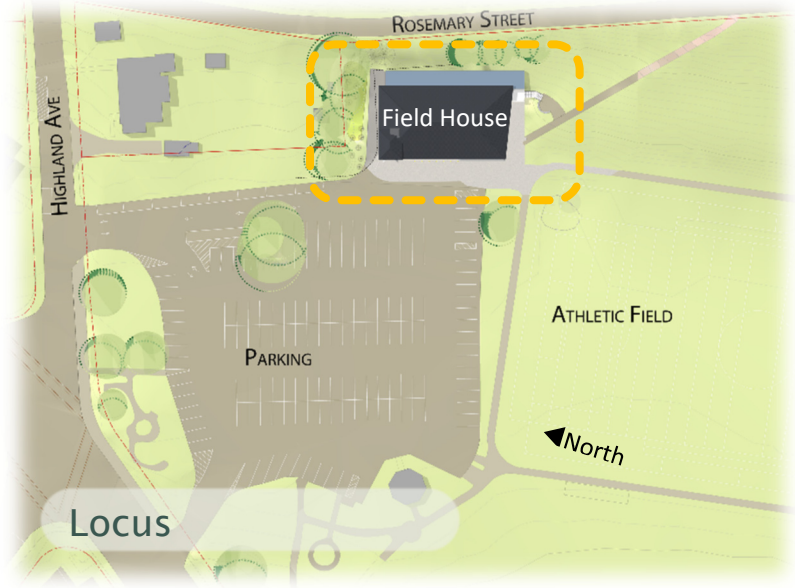
Circulation Infrastructure and Utilities

Circulation	380	1,120
Building Entry	-	100
Corridor - Upper	380	500
Corridor-Lower	-	200
Stair 1	-	160
Stair 2	-	160
Infrastructure	810	1,190
Elevator	-	60
Elevator Machine	-	80
IT	-	100
Mechanical	100	100
Electrical	50	100
Water	50	-
Sprinkler	-	100
Irrigation	10	50
Wall Thickness	600	600

F. Conceptual Design

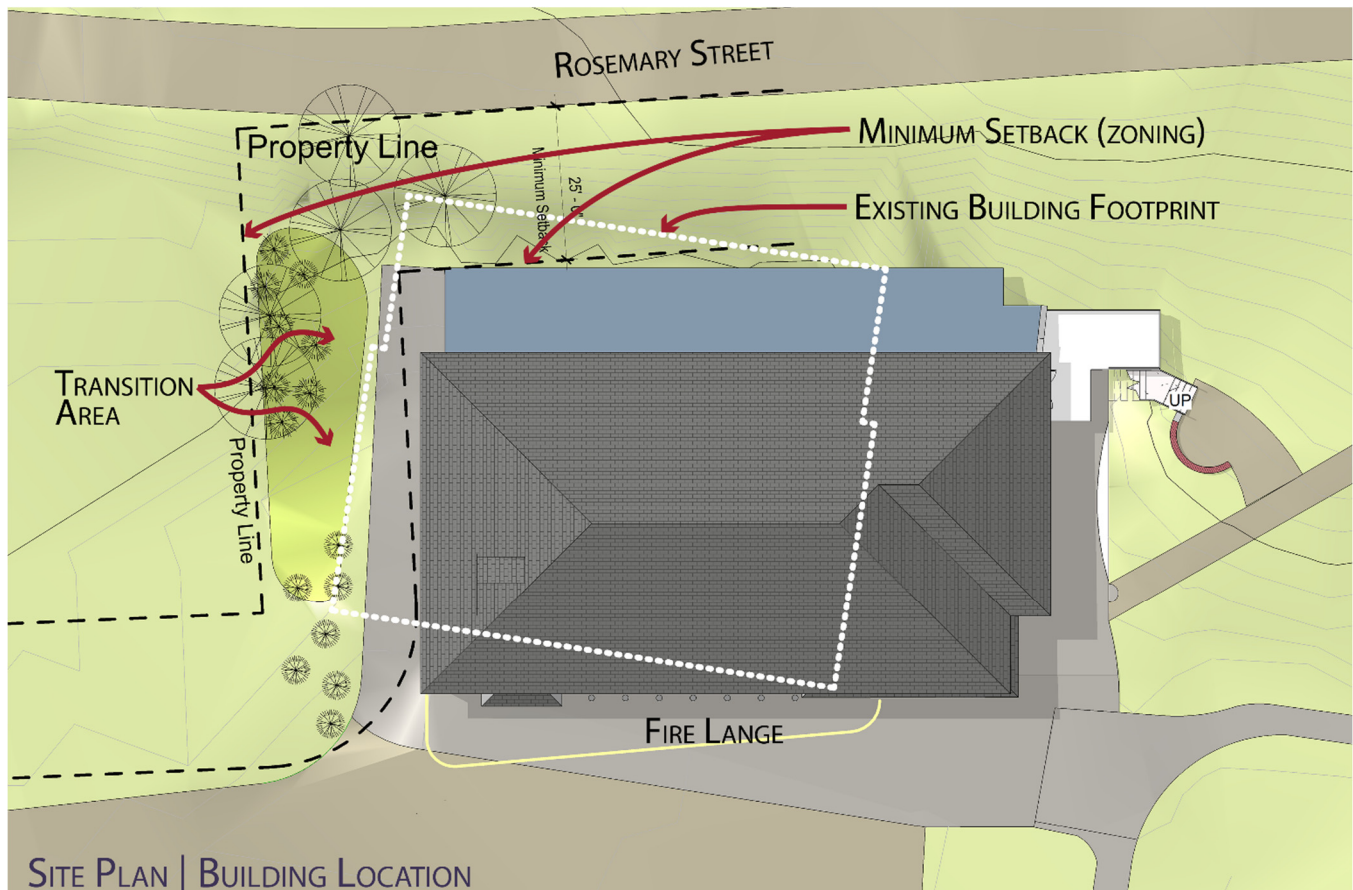
Needham Memorial Park is on Highland Avenue, adjacent to Needham High and across Highland Ave. from Needham Free Public Library.

The existing field house is along the northwest edge of the adjacent to Rosemary Street.

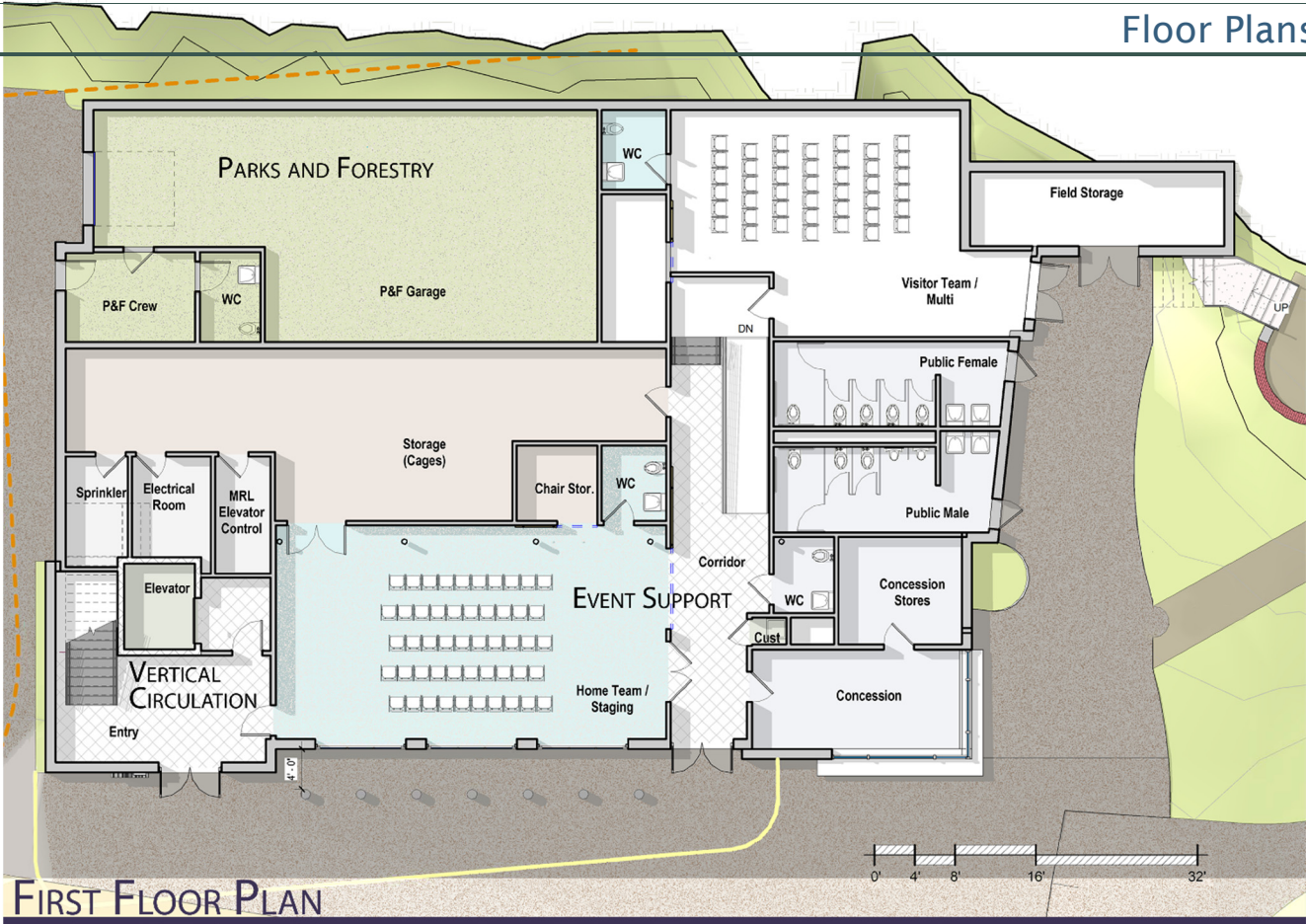


Site Plan

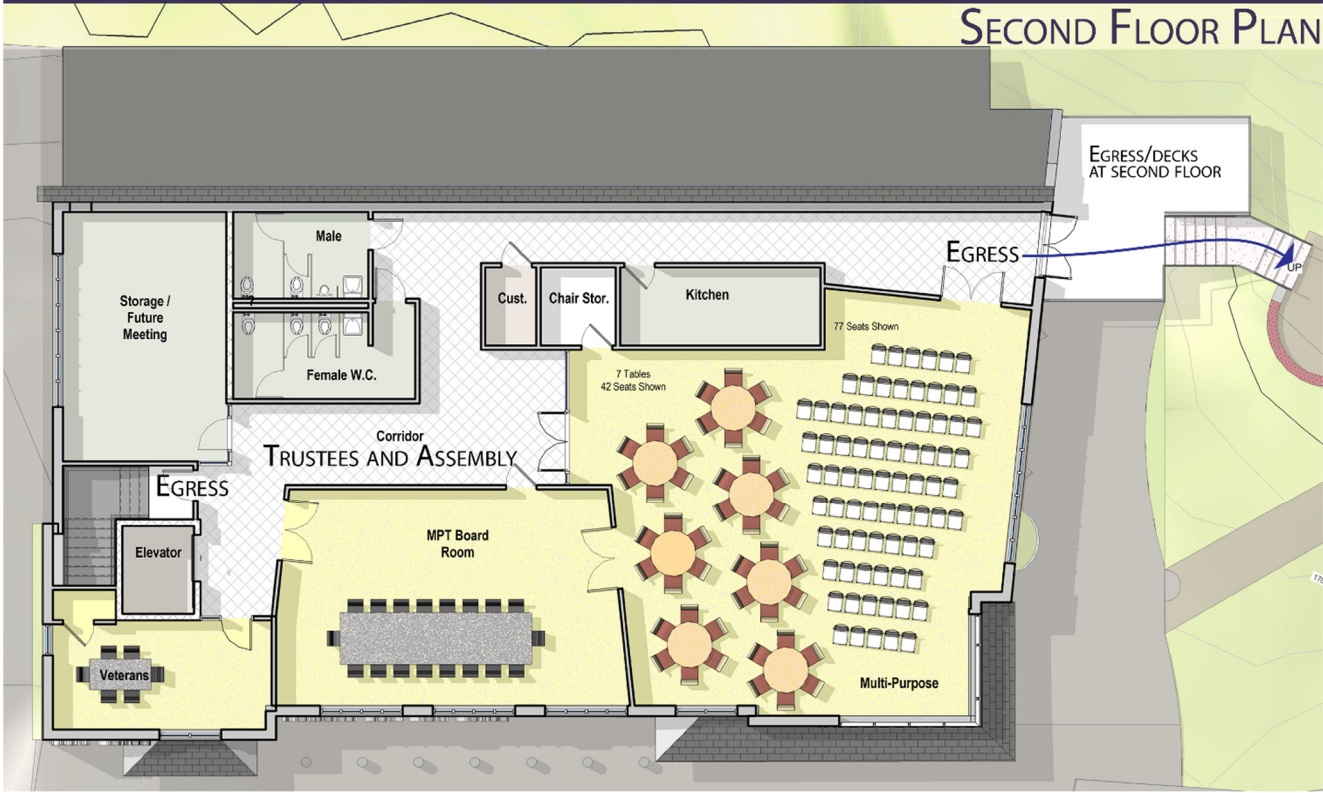
The new larger building sits in approximately the same location as the existing but is shifted to accommodate zoning setback not established at the time the original was constructed.



Floor Plans



FIRST FLOOR PLAN



SECOND FLOOR PLAN

Conceptual Sketches



G. Cost Estimate

Project Cost Summary

Grand Total	5,838,091	
Estimated Construction Cost	4,847,091	
Subtotal Construction	3,524,048	
General Requirements and General Conditions	502,481	
Bonds	40,265	
Insurance	46,768	
General Contractor Fee	141,177	
Escalation Contingency to mid 2Q2018	164,542	
Design Contingency	427,810	
Construction / Owners Contingency 10%	480,000	
Design Fees	408,500	
Basic Services - Includes Architectural, Civil, Structural, Mechanical and Electrical engineering and Landscape Architect and Estimator	345,000	Firm Fixed Fee
Miscellaneous Expenses	20,000	Allow
Geotechnical	6,000	Firm Quotation
Soil Investigation (borings)	-	Not required
Hazardous Materials	16,000.00	Firm Quotation
Furniture	7,500.00	Firm Quotation
Structured Cabling	4,000.00	Firm Quotation
IT / AV / Security	10,000	Allow
Expenses	12,500	
Land Survey	7,500.00	Allow
Bid Printing and Advertisement	5,000	Allow
Hazardous Materials Abatement	-	Allowance included in ECC
Furniture, Fixtures and Equipment	90,000	
Furniture	55,000	Allow
Technology	25,000	Allow
Security	10,000	Allow

Estimators Recapitulation

Needham Memorial Park, Needham, MA		April 4, 2017		
Conceptual Cost Estimate: Summary				
SUMMARY				
Gross Floor Area (sf)		11,179		
		Elements (\$)	\$/sf	%
<i>A Substructure</i>		267,986	23.97	7.60%
A10 Foundations		267,986	23.97	7.60%
A20 Basement Construction		0	0.00	0.00%
<i>B Shell</i>		1,254,679	112.24	35.60%
B10 Superstructure		390,894	34.97	11.09%
B20 Exterior Enclosure		634,038	56.72	17.99%
B30 Roofing		229,747	20.55	6.52%
<i>C Interiors</i>		545,930	48.84	15.49%
C10 Interior Construction		337,921	30.23	9.59%
C20 Stairs		47,329	4.23	1.34%
C30 Interior Finishes		160,681	14.37	4.56%
<i>D Services</i>		1,088,635	97.38	30.89%
D10 Conveying Systems		102,000	9.12	2.89%
D20 Plumbing		233,352	20.87	6.62%
D30 Heating, Ventilating and Air Conditioning (HVAC)		440,468	39.40	12.50%
D40 Fire Protection Systems		49,395	4.42	1.40%
D 50 Electrical Systems		263,420	23.56	7.47%
<i>E Equipment and Furnishings</i>		47,999	4.29	1.36%
E10 Equipment		17,800	1.59	0.51%
E 20 Furnishings		30,199	2.70	0.86%
<i>F Special Construction and Demolition</i>		151,474	13.55	4.30%
F10 Special Construction		0	0.00	0.00%
F20 Selective Demolition		151,474	13.55	4.30%
<i>G Building Sitework</i>		167,345	14.97	4.75%
G10 Site Preparation		39,297	3.52	1.12%
G20 Site Improvements		84,340	7.54	2.39%
G30 Site Civil/Mechanical Utilities		39,298	3.52	1.12%
G40 Site Electrical Utilities		4,410	0.39	0.13%
G90 Other Site Construction		0	0.00	0.00%
Sub Total Construction		3,524,048	315.24	100.00%
General Requirements/General Conditions		502,481	44.95	
Bonds	1.00%	40,265	3.60	
Insurance	1.15%	46,768	4.18	
Builders Risk Insurance		By Owner		
Permit Fee		By Owner		
Escalation to mid-point of construction 2Q2018	4.00%	164,542	14.72	
Design Contingency	10.00%	427,810	38.27	
GC's Fee	3.00%	141,177	12.63	
Construction Contingency		By Owner		
Total Construction Cost		4,847,093	433.59	
Deduct Savings to change to Pre-Fab building		(\$417,010)		
* See Alternates sheet for detail				
cmcg/mydocs/projects/2004/2017-012 Needham Field House (Concept 04 2017).xlsx		1	d g jones international inc	

Supporting Outline Specification /Narrative

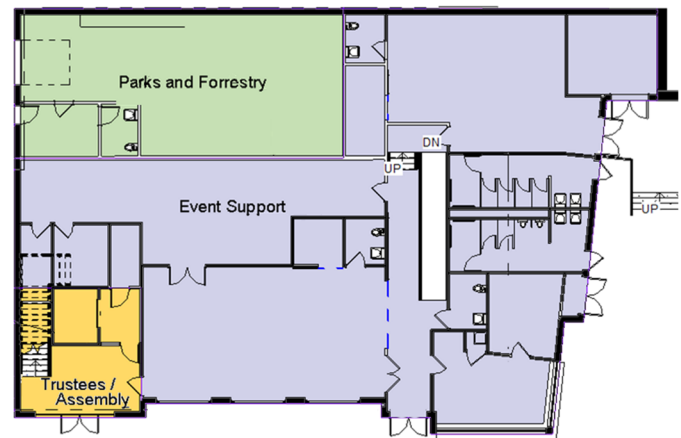
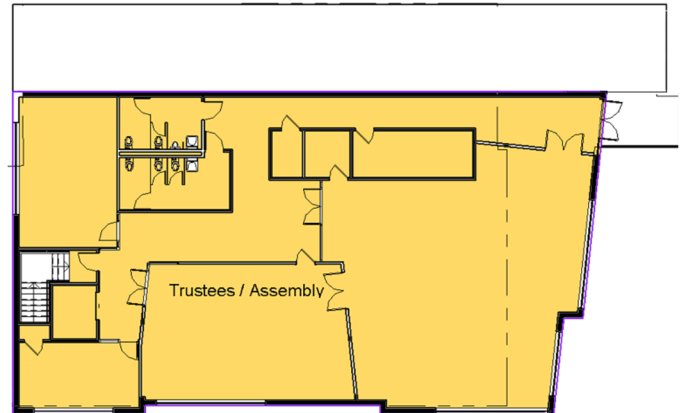
D.G. Jones International, the study estimator used the Field House BIM for material take off and the information in this section to clarify scope and system requirements.

The proposed Needham Field House will replace the existing Field House due to number of concerns regarding code, structural and program. The existing building will be demolished – no re-use of the existing structure or foundation.

The proposed building is +/- 11,300 sf on two floors, the first floor is larger than the second - the portion over P&F is taller and single story. The footprint is approximately 66 by 105 feet and will be sited slightly south and rotated such that is more oriented to the field.

The building will have a more traditional New England ‘field house look’ with the first level CMU walls (both interior and exterior) and clad in a +/- 4” stone masonry veneer at the exterior. The north wall will retain +/- 12’ of grade and be cast-in-place. All first-floor interior finishes will be rugged, and fixtures to be vandal and abuse resistant. Floors to be sealed concrete throughout.

The second-floor level will be steel framed with a composite concrete deck on open web steel joists. Second floor to have carpet tiles throughout and ceramic tiles at bathrooms and kitchen. Walls will be constructed of light gauge metal, clad in wood siding at the exterior and gypsum wall board at the interior. There is a 3,000 lbs. elevator accessing the second floor. The standing seam metal roof will be pitched with a 5:12 slope.



Building Area Tabulation

	First Floor	Second Floor	Combined
Totals	6,343 sf	4,836 sf	11,179 sf
Trustees / Assembly	441 sf	4,836 sf	5,277 sf
Event Support	4,588 sf	0 sf	4,588 sf
Parks and Forestry	1,314 sf	0 sf	1,314 sf

Materials and Finishes

Division 03 – Concrete

- Site:
 - Retaining wall at rear exterior egress stair adjacent to the ‘Field Storage’ area
 - Stamped and colored concrete hardscape at building entrances, concessions area and public bathroom entrance areas
- Foundations:
 - Strip footing at exterior walls with column footings at interior
- Walls:
 - CIP at first floor North retaining wall wrapping around to East

- Floors:
 - Slab on grade at first floor
 - Composite deck at second floor

Division 04 - Masonry

- Walls:
 - First Floor CMU at all first floor exterior and designated interior walls
 - 4" masonry veneer at first floor exterior walls and retaining walls at rear exterior stairs

Division 05 – Metals

- Structural system:
 - Steel frame structure with open web steel joists and composite deck at second floor
- Cage storage at first floor

Division 06 - Wood, Plastics, Composites

- Interior trim

Division 07 - Thermal and Moisture Protection

- Roofs:
 - Pitched wooden scissor-truss roof over two story structure – Standing Seam – assume 3-4 different planes
 - Flat roof over single story 'Parks and Forestry' area - TPO on protection board on insulation
- Exterior walls:
 - Cladding (wood, cement or metal) on hat channel on waterproof barrier, on rigid insulation, on light gauge steel framing – a rain screen. Additional 6" of fiberglass insulation in wall cavity.

Division 08 – Openings

- Window systems:
 - Double glazed insulated operable aluminum window system
 - Operable 'vendor' windows at Concessions
- Doors:
 - Hollow core metal doors with welded, thermally broken frames at exterior 'service' doors
 - Hollow core metal doors with welded frames at interior first floor
 - Wood doors with welded frames at interior second floor
 - Storefront doors at main entrance
 - Garage Doors – 'Schweiss' - 'One-piece' Hydraulic doors
 - Barn doors at 'Home Team' (11'), Chair Storage (4') and 'Visiting Team' area storage (4')

Division 09 – Finishes

- | | |
|--|--|
| ▸ Walk-off matt at main entrance foyer | ▸ Solid Surface Counters at Kitchen |
| ▸ Resilient at concessions and Concession stores | ▸ Plam upper and lower cabinets at Kitchen |
| ▸ Resilient at P&F Crew and WC | ▸ Painted CMU walls at first floor |
| ▸ Resilient in all WC | ▸ Painted exposed metal deck ceiling |
| ▸ Concrete as finish (polished). | ▸ Painted steel columns/beams |
| ▸ Carpet tiles throughout second floor | ▸ Wall fabric at corridors and 2 large meeting rooms |
| ▸ Ceramic tile at second floor bathrooms | ▸ Painted drywall elsewhere at second floor |
| ▸ Sheet vinyl at kitchen | ▸ Acoustic ceiling at second floor |

Division 11 – Equipment

- | | |
|----------------------------------|----------------------------|
| → Kitchenette | ▸ Garbage + Recycling bins |
| ▸ Refrigerator | ▸ Upper and lower cabinets |
| ▸ Microwave | → Concessions |
| ▸ Stove – residential grade | ▸ Refrigerators |
| ▸ Dishwasher – residential grade | ▸ Freezers |

- Microwave
- Stove
- Dishwasher

- Garbage + Recycling bins
- S.S. Counters and lower cabinets
- S.S. shelving at storage

Division 12 – Furnishings

- Cage storage
- Banquet Seating – Assume 100
- 54” Banquet Tables – Assume 16
- Rooms – Furniture as shown
- Conference tables and seating as shown
- Team Seating – Assume 100 plastic folding Chairs
- Meeting

Division 14 – Conveying Equipment

- 3,000 lbs elevator

Division 21 - Fire Suppression

- Fire Sprinklers

Division 22 – Plumbing

Water Supply

- Hose bibs at Parks and Forestry entrance, garage doors at South façade and concessions area

Bathrooms

- HC compliant sinks
- HC compliant toilets with grab bars
- Urinal
- Hose bib
- Floor drain
- Drinking fountain at exterior

Kitchen

- Sink

- Dishwasher
- Refrigerator

Janitors Closet

- Mop sink
- Gutter and leaders at pitched roof
- Internal drain at flat roofed area above Parks and Forestry
- Trench Drains at Parks and Forestry garage entrance (with oil/gas separator)
- Irrigation Controls

Division 23 - Heating, Ventilating, and Air Conditioning (HVAC)

- Home Team Staging, Visitor Team/Multi and Concession & Concession Stores: Heating and ventilating unit (no cooling) located on the low flat roof. Coordination is required for determining space availability above the ceiling for duct distribution.
- P&F Garage: Gas fired unit heaters and CO/NOx detection system with exhaust fans.
- Storage Spaces: Gas fired unit heaters.
- Elevator Machine Room: Ductless split system.
- Public Rest Rooms: Gas or Electric heat with roof mounted exhaust fans.
- MPT Board Room: Indoor AHU (gas fired furnace and duct mounted DX coil) and an associated outdoor air cooled condensing unit (ACCU) on the flat roof. This would require coordination of location for the air handling unit (AHU) based on availability of space for installation above the ceiling or floor mounted in a mechanical closet. Coordination is required for determining space availability above the ceiling for duct distribution.
- Multi-Purpose: Indoor AHU (gas fired furnace and duct mounted DX coil) and an associated outdoor ACCU on the flat roof. This would require coordination of location for the AHU based on availability of space for installation above the ceiling or floor mounted in a mechanical closet. Coordination is required for determining space availability above the ceiling for duct distribution.
- Remaining Spaces + Veterans + Entry: Indoor AHU (gas fired furnace and duct mounted DX coil) and an associated outdoor ACCU on the flat roof. This would require coordination of location for the AHU based on availability of space for installation above the ceiling or floor mounted in a mechanical closet. Coordination is required for determining space availability above the ceiling for duct distribution.
- Rest Rooms: Electric heat and roof mounted exhaust fans.

Division 26 – Electrical

- Solar panels tied to grid – building should be ‘solar ready’ but do not include solar panels
- Lighting
- Security lighting at exterior
- LED lighting throughout
- IT and networking

- IT Closet, not yet drawn
- 2 relay racks for network, telephone and security equipment
- Point of Presence –Provide conduit pathway from pole to network closet, RCN (Needham Public Access TV provider) will provide 4 fiber channels.
- Structured Cabling
- Cabling and terminations at 4 doors
- Cabling and terminations for 30 ethernet drops
- Cabling and terminations for 6 security devices
- Cabling and terminations for 3 Wireless Access Points
- Cabling and terminations for 2 Large Flat Panel Monitors
- Terminations at patch panel in closet

Division 28 - Electronic Safety and Security

- Monitoring – at least four hi-res cameras connected to DVR and streaming over fiberlink back to Needham data center.
- Building Access Control –Needham is standardized on Lenel Access Control and uses a key fob system; the control system is at their main data center. Some doors require a combo fob and key pad

<i>Space</i>	<i>Key Fob</i>	<i>Digital Keypad</i>	<i>Electric Strike/latch</i>
Parks and Forestry	Y	Y	Y
Main Entrance	Y	Y	Y
Irrigation Control	Y	Y	Y
Event Support (near concessions)	Y	N	Y

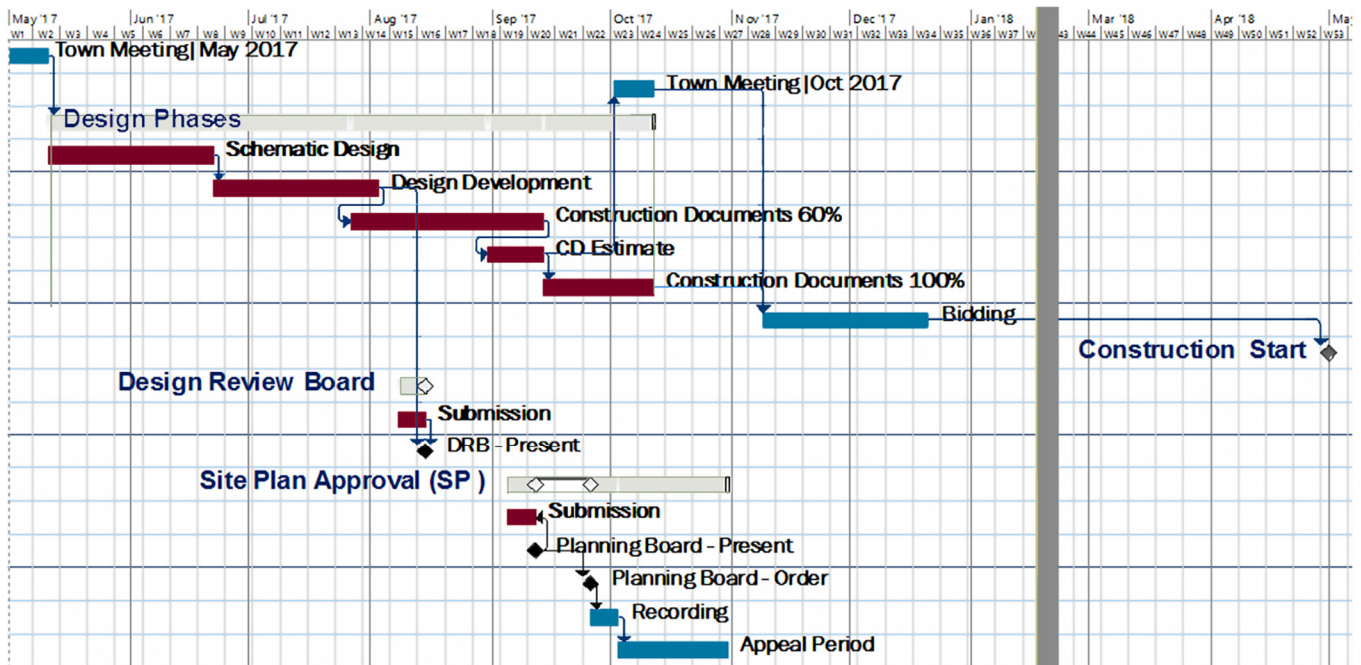
Division 32 - Exterior Improvements

- Asphalt for Parks and Forestry drive aisle
- Concrete apron at rear Parks and Forestry garage door
- Exterior stair to grade from rear egress door
- Tie-into existing sloped path
- Concrete filled bollards – assume 10
- Minor planting
- Concrete paved area adjacent to public restrooms and concessions at south end of building.

H. Implementation Schedule

The schedule below assumes that design phases continue after May 1st Town Meeting and is crafted to coordinate with regulatory procedures and activity at the site:

- Design Review Board | follows Design Development when design is sufficiently detailed for review.
- Site Plan Approval | follows Design Review, a required Special Permit through the Planning Board.
- CD Estimate | a 60% Construction Documents a detailed estimate is prepared prior to October Town Meeting.
- Bidding | Upon project approval and funding at Town Meeting, the project is bid late 2017 to early 2018.
- Construction Start May 2018 | the early sprint start is intended to complete demolition, site and structural work prior to high demand for the parking area.



I. Appendix

Historical | Memorial Park related Town Articles and Legislation

3/15/1920

Article 21. To see if the town will vote to purchase a tract of land from Nellie A. Richwagen, comprising about ten acres, at the corner of Rosemary street and the east side of Highland avenue, for a "Memorial Park," and appropriate money therefor, or pass any vote or votes relative thereto.

6/30/1920

Article 2. Voted that the sum of twenty thousand (\$20,000) dollars be appropriated for the acquisition of land of Nellie A. Richwagen in accordance with the boundaries and measures of the same as filed in the office of the Town Clerk for the purposes of a Memorial Field to properly commemorate the services and sacrifices of the. soldiers, sailors and marines who served the country in war, and to allow the taking by proceedings of eminent domain by the selectmen as made by them. Under the Acts of 1920, Chapter 292, Acts of 1919, Chapter 61, as governed by the Acts of 1915, Chapter 263

One hundred and twenty-five in affirmative and one against.

3/28/1923

Article 20. Voted: As a token of appreciation of the services and sacrifices of the Needham men as soldiers, sailors and marines in the World's War and to commemorate such services and sacrifices, the sum of five thousand dollars (\$ 000) is hereby: -appropriated for excavating a cellar and building the necessary wall and foundation, at a location on Memorial Park to be designated by the Memorial Park Trustees and acceptable to the members of the local Post 14. of the American Legion, and for moving the Moseley house. just acquired by the Town, from its present location to the location selected on :Memorial Park and to connect or replace and connect the plumbing, fixtures and heating apparatus, and to make such alterations and repairs in the building as may be found necessary to put the same in first class condition; also to provide a cesspool, grade and seed the grounds adjacent to the building, and the house when so moved to be known Memorial Park Headquarters, Post 14, and the Trustees of Memorial Park to make such regulations as may be necessary to give to Needham Post 14 of the American Legion and such of its auxiliaries and affiliated organizations as the Post may desire, the sole and exclusive use of said headquarters, and the Board of Memorial Park Trustees and John J. Coppinger, Amos H. Shepherdson and Coleman Hands of the Post are here-by constituted a committee with full powers to carry out the above and in the name of the Town to make such contracts as are found necessary to give this vote full force and effect.

1930

Article 56. To see if the Town will accept Chapter 37, Acts of the legislature of 1930 entitled "An Act relative to the use for an athlete of a part of Memorial Park in the Town of Needham."

Voted, That Chapter 37, Acts of the Legislature of 1930 entitled "An Act relative to the use, for an athletic field, of a part of Memorial Park in the Town of Needham," be and the same hereby is accepted.

2/12/1930

Chapter 37 AN ACT RELATIVE TO THE USE FOR THE AN ATHLETIC FIELD OF A PART OF MEMORIAL PARK IN THE TOWN OF NEEDHAM.

Be it enacted, etc. as follows:

SECTION 1. So much of the land in the town of Needham known as Memorial Park, under the jurisdiction of the Trustees of Memorial Park, and shall be designated for that purpose by said trustees, may be set apart for an enclosed athletic field. If any land is so set apart a plan showing the extent thereof shall be made and kept on file in the office of the. town clerk. Said trustees shall establish and maintain said athletic field, with suitable equipment, and may in their discretion permit its use for athletic games and other entertainments of a public nature, to which an admission fee may be charged, upon such terms and conditions as said trustees may impose.

SECTION 2. This act shall take effect upon its acceptance, during the current year, by vote of the said town; but, for the purposes of such acceptance, this act shall take effect upon its passage. Approved February 12, 1930.

Parking Agreement

INTER-DEPARTMENTAL AGREEMENT

This agreement is entered into between the School Committee and the Trustee of Memorial Park (Trustees) each of which is a department of the Town of Needham, a municipal corporation established under the laws of the Commonwealth of Massachusetts.

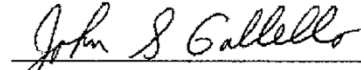
Whereas the School Committee obtained a special permit to expand the high school and a part of the permit requires that the School Committee obtain a license to use 116 parking spaces in the parking lot adjacent to Memorial Park as "overflow" parking for Needham High School students, be it agreed as follows:

The Trustees grant to the School Committee a license to use 116 parking spaces in the parking lot adjacent to Memorial Field as "overflow" parking for Needham High School students to park automobiles in relation to their attending the high school as students.

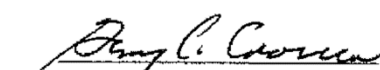
The School Committee agrees to direct and manage an attendant to oversee the students' use of these parking spaces.

Notwithstanding this agreement, the Trustees retain all of their rights and privileges pursuant to the Town Charter and in accordance with Massachusetts law.

TOWN OF NEEDHAM
MEMORIAL PARK TRUSTEES


CHAIRMAN

TOWN OF NEEDHAM
SCHOOL COMMITTEE


CHAIRMAN

Cost Estimate

(next page)



Needham Memorial Park - Field House Needham, MA

(Conceptual Design Cost Estimate)

Prepared for:

Winter Street Architects, Inc
Salem, MA

Prepared by:

**D G Jones International, Inc.
3 Baldwin Green Common, #202
Woburn, MA 01801
email : boston@dgjonesboston.com
Tel: 781-932-3131
Fax: 781-932-3199**

April 4, 2017

Notes

1. Brief project description:-
 - New 2 Story Field House Building complete wMEP and Site work.
2. The estimate is based on the following:-
 - Prevailing wage rates.
 - GC type project.
 - Receipt of 3# bona fide bids for each sub-contract.
 - Single contract.
 - Bid date of 2Q2018
 - Start of Construction 4Q2017
 - 9 month total construction period.
 - Mid-point of Construction - 2Q2018
3. The gross floor areas are based on the following:-
 - Measurement is taken to the outside face of the exterior wall, measured through all stair wells, elevator shafts and ducts.
4. Story heights:-
 - Varies.
5. General Requirements/General Conditions is calculated later in this document.
6. Special Conditions for this project are included with General Requirements/General Conditions.
7. Escalation is based on the following:-
 - Escalation is calculated at 4% per annum to the mid-point of construction.
8. Estimating Contingency is an allowance for future design modifications/additions, which alter the cost of the building as the design progresses, this percentage reduces as the design develops. It is based on a percentage of the sum of Sub-Total Construction, General Requirements/Special Conditions and Escalation. For this level of estimate the following has been included:-
 - 10.00%
9. Construction Contingency is an allowance for scope/design modifications made by the owner during construction and also for any unforeseen circumstances. It is based on a percentage of the sum of Sub-Total Construction, General Requirements/Special Conditions, Escalation and Design Contingency. The following has been included:-
 - By Owner

Notes (Cont'd)

10. This estimate has been prepared from the following design information:-
 - Drawing set dated 03/21/2017.
 - Project scope/naratives dated 03/21/2017.
 - Telephone conversations and meeting with Winter Street Architects, Inc
11. The estimate includes the following:-
 - See estimate.
12. The estimate excludes the following:-
 - Utility company backcharges.
 - Design consultants fees.
 - Emergency Generator.
 - Library Shelving - By Others
 - Fire Pump.
 - Sales Tax.
 - ***Audio Visual (Wiring and Equipment) - By Others.***
 - ***Security System (Wiring and Equipment) - By Others.***
 - ***Communications systems (Wiring and Equipment) - By Others.***
 - ***PV System (Wiring and Equipment) - By Others.***
 - ***Loose furniture, fittings and equipment.***
 - Decontamination of soil
 - Removal of Contaminated Soil Material
13. Allowances:-
 - See Estimate.
14. Assumptions:-
 - None.
15. Estimates by other firms:-
 - See Estimate.

Notes (Cont'd)

16. Common abbreviations included in this estimate:-
- cd = construction documents.
 - cf = cubic foot.
 - cte = connect to existing.
 - cy = cubic yard.
 - dd = design development.
 - ea = each.
 - eo = extra over
 - extg = existing
 - flr = floor.
 - gfa = gross floor area
 - lb = pound.
 - lf = linear foot.
 - ls = lump sum.
 - ly = linear yard.
 - mg = make good.
 - opg = opening.
 - rsr = riser.
 - sd = schematic design.
 - sf = square foot.
 - sy = square yard.
 - tn = ton.
17. Builders work in connection (BWIC) with conveying, mechanical and electrical systems includes the following:-
- Drilling and coring.
 - Chasing.
 - Cutting and patching.

SUMMARY

Gross Floor Area (sf)		11,179		
		<u>Elements (\$)</u>	<u>\$/sf</u>	<u>%</u>
<i>A Substructure</i>		267,986	23.97	7.60%
A10 Foundations		267,986	23.97	7.60%
A20 Basement Construction		0	0.00	0.00%
<i>B Shell</i>		1,254,679	112.24	35.60%
B10 Superstructure		390,894	34.97	11.09%
B20 Exterior Enclosure		634,038	56.72	17.99%
B30 Roofing		229,747	20.55	6.52%
<i>C Interiors</i>		545,930	48.84	15.49%
C10 Interior Construction		337,921	30.23	9.59%
C20 Stairs		47,329	4.23	1.34%
C30 Interior Finishes		160,681	14.37	4.56%
<i>D Services</i>		1,088,635	97.38	30.89%
D10 Conveying Systems		102,000	9.12	2.89%
D20 Plumbing		233,352	20.87	6.62%
D30 Heating, Ventilating and Air Conditioning (HVAC)		440,468	39.40	12.50%
D40 Fire Protection Systems		49,395	4.42	1.40%
D 50 Electrical Systems		263,420	23.56	7.47%
<i>E Equipment and Furnishings</i>		47,999	4.29	1.36%
E10 Equipment		17,800	1.59	0.51%
E 20 Furnishings		30,199	2.70	0.86%
<i>F Special Construction and Demolition</i>		151,474	13.55	4.30%
F10 Special Construction		0	0.00	0.00%
F20 Selective Demolition		151,474	13.55	4.30%
<i>G Building Sitework</i>		167,345	14.97	4.75%
G10 Site Preparation		39,297	3.52	1.12%
G20 Site Improvements		84,340	7.54	2.39%
G30 Site Civil/Mechanical Utilities		39,298	3.52	1.12%
G40 Site Electrical Utilities		4,410	0.39	0.13%
G90 Other Site Construction		0	0.00	0.00%
Sub Total Construction		3,524,048	315.24	100.00%
General Requirements/General Conditions		502,481	44.95	
Bonds	1.00%	40,265	3.60	
Insurance	1.15%	46,768	4.18	
Builders Risk Insurance		By Owner		
Permit Fee		By Owner		
Escalation to mid-point of construction 2Q2018	4.00%	164,542	14.72	
Design Contingency	10.00%	427,810	38.27	
GC's Fee	3.00%	141,177	12.63	
Construction Contingency		By Owner		
Total Construction Cost		4,847,093	433.59	

Deduct Savings to change to Pre-Fab building

(\$417,010)

* See Alternates sheet for detail

Description	Qty	Unit	Rate	Amount	Total
Summary					
<i>A Substructure</i>					
A10 Foundations				267,986	
A20 Basement Construction				0	
<i>B Shell</i>					
B10 Superstructure				390,894	
B20 Exterior Enclosure				634,038	
B30 Roofing				229,747	
<i>C Interiors</i>					
C10 Interior Construction				337,921	
C20 Stairs				47,329	
C30 Interior Finishes				160,681	
<i>D Services</i>					
D10 Conveying Systems				102,000	
D20 Plumbing				233,352	
D30 Heating, Ventilating and Air Conditioning (HVAC)				440,468	
D40 Fire Protection Systems				49,395	
D 50 Electrical Systems				263,420	
<i>E Equipment and Furnishings</i>					
E10 Equipment				17,800	
E 20 Furnishings				30,199	
<i>F Special Construction and Demolition</i>					
F10 Special Construction				0	
F20 Selective Demolition				151,474	
<i>G Building Sitework</i>					
G10 Site Preparation				39,297	
G20 Site Improvements				84,340	
G30 Site Civil/Mechanical Utilities				39,298	
G40 Site Electrical Utilities				4,410	
Sub-Total Building				3,524,048	

A10 Foundations

Excavation

Excavate & stockpile material on site for:-

Foundation Footing: -

Building excavation	259	cy	10.05	2,602	
Retaining Wall Footing - 6' 0" wide - 2' 0" high	194	cy	10.05	1,949	
Perimeter Wall Footing - 2' 0" wide - 1' 0" high	213	cy	10.05	2,140	
Interior grade beam - 2' 0" x 1' 0" deep	194	cy	10.05	1,949	
Column Footings - assume avg. 7' 0" x 7' 0" x 2' 0" high	251	cy	10.05	2,521	
EO for rock, allow 5% of excavated material	56	cy	44.10	2,470	
Water removal during excavation work	1	ls	1,093.68	1,094	
Temporary support (allow)				Excluded	
Filling around foundations with excavated material - allow	782	cy	8.33	6,514	
Stored excavated material on site for re-use				Removed off site	
Remove unsuitable material off site	329	cy	24.50	8,061	
Imported structural fill				Excluded	
Compacted sand/gravel below sog	6,423	sf	0.85	5,440	
Perimeter drainage system	105	lf	14.70	1,544	36,281

Cast-In-Place Concrete

Foundation Footing					
Retaining Wall Footing - 6' 0" wide - 2' 0" high	47	cy	166.60	7,830	
Perimeter Wall Footing - 2' 0" wide - 1' 0" high	18	cy	166.60	2,999	
Interior grade beam - 2' 0" x 1' 0" deep	43	cy	166.60	7,164	
Foundation Wall					

Description	Qty	Unit	Rate	Amount	Total
Perimeter Foundation Wall - 12" thick	31	cy	171.50	5,317	
Retaining Wall - 16" thick (12' high)	62	cy	171.50	10,633	
Elevator Pit Wall - 16" thick	11	cy	171.50	1,887	
Slab edge detail	105	lf	9.80	1,029	
Column Footings - assume avg. 7' 0" x 7' 0" x 2' 0" high	25	cy	171.50	4,288	
Pier/Pilaster	3	cy	171.50	515	
Slab on grade					
5" concrete slab	98	cy	161.70	15,847	
12" Elevator slab	3	cy	161.70	485	
Saw cut control joint (1.25" deep)	6,423	sf	0.74	4,721	
EO for interior ramp	108	sf	14.70	1,588	
Trowel top of concrete slab	6,423	sf	0.83	5,350	69,650
Concrete Formwork					
Foundation Footing					
Retaining Wall Footing - 6' 0" wide - 2' 0" high	420	sf	9.65	4,054	
Perimeter Wall Footing - 2' 0" wide - 1' 0" high	480	sf	9.65	4,633	
Interior grade beam - 2' 0" x 1' 0" deep	1,162	sf	9.65	11,217	
Foundation Wall					
Perimeter Foundation Wall - 12" thick	1,673	sf	10.78	18,035	
Retaining Wall - 16" thick (12' high)	2,520	sf	10.78	27,166	
Elevator Pit Wall - 16" thick	432	sf	10.29	4,445	
Column Footings - assume avg. 7' 0" x 7' 0" x 2' 0" high	392	sf	12.74	4,994	
Pier/Pilaster	154	sf	12.74	1,962	
5" concrete slab	139	sf	5.88	817	
12" Elevator slab	36	sf	5.88	212	77,535
Concrete Reinforcement (Re-bar)					
Foundation Footing					
Retaining Wall Footing - 6' 0" wide - 2' 0" high	1,575	lb	1.10	1,736	
Perimeter Wall Footing - 2' 0" wide - 1' 0" high	3,600	lb	1.10	3,969	
Interior grade beam - 2' 0" x 1' 0" deep	4,949	lb	1.10	5,456	
Foundation Wall					
Perimeter Foundation Wall - 12" thick	5,437	lb	1.10	5,994	
Retaining Wall - 16" thick (12' high)	8,190	lb	1.10	9,029	
Elevator Pit Wall - 16" thick	1,600	lb	1.10	1,764	
Column Footings - assume avg. 7' 0" x 7' 0" x 2' 0" high	3,920	lb	1.10	4,322	
Pier/Pilaster	840	lb	1.10	926	
5" concrete slab	6,343	sf	1.10	6,993	
12" Elevator slab	80	sf	1.10	88	40,279
Special Foundations					
Special Foundations	No Special Foundations Required				
Other Items					
Moisture mitigation	Included with interior finish				
Waterproofing to exterior face for Elevator Pit wall	216	sf	9.80	2,117	
Waterproofing to exterior face for Retaining Wall	1,260	sf	9.80	12,348	
Dampproofing to perimeter foundation wall	837	sf	3.43	2,871	
Rigid insulation to face of foundation/retaining wall	2,313	sf	2.11	4,873	
Vapor barrier under sog (10mil)	6,423	sf	0.64	4,091	
Rigid insulation under sog (R-5)	6,423	sf	2.79	17,939	44,240
A10 Foundations	Total			267,986	267,986

A20 Basement Construction

Included with Foundations

Basement Construction

Included with Foundations

Description	Qty	Unit	Rate	Amount	Total
A20 Basement Construction	Total			0	0
B10 Superstructure					
B1010 Structural Framing					
Structural Steel members					
Floor Construction (CMU wall support - allow 8lb's/sf for miscellaneous steel)	19	ton	3,822.00	72,618	
Roof Construction Sloped Roof (Allow 5lb's/sf)	16	ton	3,822.00	61,152	
Roof Construction - Flat Roof (Allow 8lb's/sf)	7	ton	3,822.00	26,754	
Framing to supported deck at entry - allow 14lb's/sf	1	ton	3,822.00	3,822	
Allow for structural steel connections, fittings, etc. allow 7.5% of structural steel	3	ton	3,822.00	11,466	
Shear studs (assume 20 shear connectors per 100 sf)	2,577	ea	2.94	7,576	
Moment connection	20	ea	490.00	9,800	
Base plate	7	ea	343.00	2,401	
EO for shop paint and field touch-up paint after steel installation	1	ls	1,230.61	1,231	
Pitched wooden scissor-truss roof over two story structure - Framing	7,068	sf	9.80	69,266	
Miscellaneous Structural Items					
Loose steel to elevator hoistway, allow	1	ea	5,390.00	5,390	
Steel supports for mechanical equipment	2	ton	3,822.00	7,644	
Miscellaneous steel frames, assemblies, etc	3	ton	3,822.00	11,466	
Relieving angles/bent plates at exterior wall	3	ton	3,822.00	11,466	
Lintels over windows	2	ton	3,822.00	7,644	309,696
B1020 Floor and Roof Framing					
Suspended floor deck					
Second Floor					
3 1/2" deep 18ga composite metal deck	4,836	sf	4.07	19,668	
5 1/2" Light weight concrete topping to metal deck	4,836	sf	4.16	20,113	
Re-Bar -WWF 6x6-W2.9 x W2.9	3,143	lb	1.23	3,851	
Temporary prop to previous item	1	ls	2,137.94	2,138	
Floor deck edge closure pour stop	296	lf	3.92	1,160	
Finish concrete slab	4,836	sf	0.77	3,744	
Roof Decking					
Flat Roof	1,831	sf	3.43	6,280	
Soped Roof	7,068	sf	3.43	24,243	81,197
B1030 Structural Fireproofing					
Structural Fireproofing					
Fire protection (allow, gfa)				Not Required	
Intumescent paint to exposed steel, allow				Not Required	
Firestopping (allow, gfa)				Not Required	
B10 Superstructure	Total			390,894	390,894
B20 Exterior Enclosure					
B2010 Exterior Wall					
Exterior wall backup system					
Metal stud back-up exterior wall	4,280	sf	6.37	27,264	
CMU Block Wall	2,217	sf	17.64	39,108	
5/8" densglass sheathing	7,757	sf	1.81	14,063	
Air/vapor barrier	7,757	sf	4.41	34,208	
3" rigid insulation	7,757	sf	2.79	21,665	
Batt insulation	7,757	sf	1.23	9,502	
5/8" GWB	4,280	sf	2.30	9,857	
EO for Z-Grits/Framing to panel systems				Not Required	

Description	Qty	Unit	Rate	Amount	Total
Exterior Finish					
Exterior System (design to budget - \$35)	4,280	sf	35.00	149,800	
Brick Veneer complete w/anchors	3,477	sf	35.00	121,695	
Exterior Sills	162	lf	83.30	13,495	
Exterior Signage				Exclude	440,657
Roof Screen					
Mechanical equipment roof screen system				Not Required	
B2020 Exterior Window					
Double glazed insulated operable aluminum window system					
Double glazed insulated aluminum window system	1,026	sf	83.30	85,466	
Operable 'vendor' windows at Concessions	162	sf	14.70	2,381	
Louver System, allow	100	sf	78.40	7,840	
Exterior Sun Shade system, allow				Not Required	95,687
B2030 Exterior Doors					
Overhead Coiling Door System - 8' 0" x 8' 0" high	1	ea	4,076.80	4,077	
Garage Doors - 'Schweiss' - 'One-piece' Hydraulic doors - 9' 0" wide x 8' 0" high	3	ea	11,642.40	34,927	
Exterior Glazed DL Door - 6' 0" x 7' 0" high	3	ea	5,145.00	15,435	
Exterior DL Door - 6' 0" x 7' 0" high	3	ea	3,704.40	11,113	
Exterior SL Door - 3' 0" x 7' 0" high	3	ea	2,058.00	6,174	71,726
General Items					
Staging/Scaffolding	8,783	sf	Included w/rates above		
Exterior wall flashings	1,254	lf	8.82	11,060	
Exterior wall caulking and sealant	1,254	lf	2.60	3,257	
Exterior wall wood blocking	3,762	lf	3.10	11,650	
Expansion, control & isolation joints				Not Required	25,967
B20 Exterior Enclosure	Total			634,038	634,038

B30 Roofing

B3000 Roof Coverings

TPO Roofing System					
TPO roofing	1,831	sf	5.88	10,766	
Air/vapor barrier membrane	1,831	sf	4.41	8,075	
Tapered roofing insulation	1,831	sf	4.75	8,703	
Exterior roof sheathing	1,831	sf	1.62	2,961	
Sloped Roof System					
Asphalt shingle roof	7,068	sf	8.82	62,340	
Air/vapor barrier membrane	7,068	sf	4.41	31,170	
Exterior roof sheathing	7,068	sf	1.62	11,429	
Insulation	7,068	sf	2.79	19,741	
Roof Details					
Perimeter roof detail	480	lf	24.50	11,760	
Connection between roof and exterior wall	90	lf	14.70	1,323	
Roof Gutter System					
Gutter	200	lf	17.64	3,528	
Leader	136	lf	19.60	2,666	
Other Systems					
Exterior Soffit overhang system	1,039	sf	29.40	30,547	
Exterior Canopy, allow	126	sf	83.30	10,496	215,503

B3020 Roof Openings

Skylight System				Not Required	
-----------------	--	--	--	--------------	--

General Items

Roof accessories, allow					
-------------------------	--	--	--	--	--

Description	Qty	Unit	Rate	Amount	Total
Roof Hatch System - 30" x 96"	1	ea	2,793.00	2,793	
Miscellaneous flashings	570	lf	7.84	4,469	
Sealant	570	lf	1.96	1,117	
Blocking	1,710	lf	3.43	5,865	14,244
B30 Roofing	Total			229,747	229,747

C10 Interior Construction

Partitions

Interior drywall partitions					
Interior Partitions - 6" CMU Block	834	sf	17.64	14,712	
Interior Partitions - 8" CMU Block	675	sf	21.56	14,553	
Interior Partitions - CMU Block	2,330	sf	17.64	41,101	
Interior Partitions - General	6,449	sf	9.80	63,200	
EO for Interior Openings	1,236	sf	12.72	15,727	
EO for abuse resistant gwb	2,330	sf	1.96	4,566	
Interior glazing					
Interior Glazing System Wall System	411	sf	73.50	30,209	
Window sill detail	162	lf	39.20	6,350	
Sealant at openings	3,988	lf	1.23	4,885	
Blocking at openings	1,994	lf	2.60	5,178	200,482

C1020 Doors

Interior doors complete w/frame, hardware, paint, etc					
Interior DL Door - 6' 0" x 7' 0" high	5	ea	3,704.40	18,522	
Interior SL Door - 3' 0" x 7' 0" high	21	ea	1,955.10	41,057	
Interior Glazed DL Door - 6' 0" x 7' 0" high	2	ea	5,145.00	10,290	
Interior Glazed SL Door - 3' 0" x 7' 0" high	3	ea	2,469.60	7,409	
Barn door at Home Team - 11' 0" wide	1	ea	7,761.60	7,762	
Barn door at Chair Storage - 4' 0" wide	1	ea	2,822.40	2,822	
Sealant at openings	660	lf	1.23	809	
Blocking at openings	660	lf	2.60	1,714	90,384

Fittings

Visual Display Surfaces, allow					
Porcelain enamel marker boards				Not Required	
Tack boards				Not Required	
Toilet Enclosures					
Toilet cubicle, HC	4	ea	1,274.00	5,096	
Toilet cubicle, regular	9	ea	1,078.00	9,702	
Urinal screen	3	ea	686.00	2,058	
Bathroom accessories					
Toilet Room (multiple)	4	ea	1,225.00	4,900	
Toilet Room (single)	4	ea	833.00	3,332	
Building Signage, allow					
Door signage	33	ea	98.00	3,234	
Interior Directional Signage	1	ls	2,738.86	2,739	
Exterior Building Signage				Excluded	
Metal lockers				Excluded	
Guardrails					
Exterior Metal Guard Rail	36	lf	196.00	7,056	
Interior Metal Guard Rail	48	lf	161.70	7,762	
Fire extinguisher complete w/cabinet & mounting hardware, allow	6	ea	112.70	676	
Fire extinguisher complete w/ mounting hardware, allow	6	ea	83.30	500	47,054

C10 Interior Construction	Total			337,921	337,921
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Description	Qty	Unit	Rate	Amount	Total
C20 Stairs					
<i>Stair Construction</i>					
Steel stairs with concrete filled treads, landing complete w/concrete topping					
Egress Stairs - Interior (5' 0" wide, 21# risers)	1	flight	19,551.00	19,551	
Stairs - Interior (5' 0" wide, 4# risers)	1	flight	3,724.00	3,724	
Egress Stairs - Exterior (6' 3" wide, 13# risers)	1	flight	17,517.50	17,518	
Egress Stairs - Exterior concrete stair system (9' 6" wide, 4# risers)	1	flight	2,420.60	2,421	
Stair Treads and Landings					
Stair treads - Egress Stair	206	lf	15.68	3,234	
Stair landing - Egress Stair	90	sf	9.80	882	47,329
C20 Stairs	Total			47,329	47,329

C30 Interior Finishes

<i>C3010 Interior Wall Finish</i>					
Interior wall finish					
Paint to Wall	24,256	sf	0.98	23,771	
Ceramic Tile at Toilet Rooms (Level 2 only)	600	sf	15.68	9,408	
Wall fabric at corridors and 2 large meeting rooms (Level 2)				Not Required	
Chair Rail Banquet Rm w/paint	176	lf	24.50	4,312	37,491
<i>C3020 Interior Floor Finish</i>					
Interior floor finish:-					
Capet Tile	4,177	sf	5.44	22,741	
Concrete Sealant at Level 1	5,676	sf	1.96	11,125	
Ceramic Tile at Toilet Rooms (Level 2 only)	272	sf	17.64	4,798	
Sheet vinyl at kitchen	160	sf	8.82	1,411	
Moisture mitigation Allowance	4,177	sf	4.07	16,988	
Leveling & Protection to interior floors	10,125	sf	0.74	7,442	
Interior base finish					
Resilient	2,524	lf	4.41	11,131	
Ceramic Tile at Toilet Rooms (Level 2 only)	100	lf	18.62	1,862	77,498
<i>C3030 Interior Ceiling Finish</i>					
Ceiling finish					
Acoustic Tile Ceiling	3,724	sf	4.90	18,248	
GWB ceiling system complete w/framing	725	sf	9.80	7,105	
Painted exposed metal deck	5,836	sf	1.47	8,579	
Soffits					
GWB soffit, allow	500	lf	23.52	11,760	45,692
C30 Interior Finishes	Total			160,681	160,681

D10 Conveying Systems

<i>Conveying Systems</i>					
Hydraulic Passenger Elevators					
Passenger elevator, 2 stop front entry, 3000 lb	1	ea	100,000.00	100,000	100,000
Sub-Contractor Bid	Total			100,000	100,000
Builders work in connection with Conveying	1	ls	2,000.00	2,000	
General Contractor's overhead and profit			Included on Summary page		2,000

Description	Qty	Unit	Rate	Amount	Total
D10 Conveying Systems	Total			102,000	102,000
D20 Plumbing					
<i>Plumbing Fixtures</i>					
WC - Wall-Hung Water Closet (HC)	8	ea	1,250.00	10,000	
WC - Wall-Hung Water Closet (Regular)	9	ea	1,150.00	10,350	
LAV - Lavatory (Wall mounted)	10	ea	1,050.00	10,500	
LAV - Lavatory (Counter Mounted)				Not Required	
UR - Wall Hung Urinal	3	ea	800.00	2,400	
Mop Sink and Janitors	1	ea	900.00	900	
Sink at Kitchen	1	ea	900.00	900	
EWC - Electric Water Cooler	2	ea	925.00	1,850	
Floor Drain	10	ea	450.00	4,500	
Trench Drain	30	lf	55.00	1,650	
Hose Bibs	10	ea	550.00	5,500	
<i>Plumbing Equipment</i>					
Water heaters - electric point of use	1	ea	14,565.00	14,565	
Backflow preventer	1	ea	2,850.00	2,850	
Oil/Gas Separator	1	ls	2,250.00	2,250	
Reduced pressure zone backflow preventers	1	ea	3,000.00	3,000	
Domestic hot water pump	1	ea	4,369.50	4,370	
<i>Plumbing Fixture Piping</i>					
Piping	1,961	lf	35.00	68,635	
Piping Fittings	1	ls	17,158.75	17,159	
Piping Valves & Accessories	1	ls	15,442.88	15,443	
Piping Insulation	1,079	lf	10.00	10,786	
Special waste system, allow				Not Required	
<i>Allow for</i>					
Underground pipework	490	lf	15.00	7,350	
Gas Installation	11,179	sf	0.65	7,266	202,223
<i>Storm Water System</i>					
Rainwater systems	2	ea	550.00	1,100	
<i>Storm Piping, allow</i>					
Storm Piping	170	lf	65.00	11,050	
Piping Fittings	1	ls	3,038.00	3,038	
Piping Valves & Accessories	1	ls	2,430.00	2,430	
Piping Insulation	170	lf	10.00	1,700	19,318
<i>General</i>					
Hydrants, clean outs,etc	1	ls	1,500.00	1,500	
Allow for seismic restraint & vibration isolation	1	ls	1,250.00	1,250	
Permit fees				Not Required	
Test & balance	1	ls	4,485.82	4,486	7,236
<i>Sub Bid</i>	Total			228,777	228,777
Builders work in connection with Plumbing @ 2%	1	ls	4,575.54	4,576	
General Contractor's overhead and profit				GC Fee Carried in Summary	4,576
D20 Plumbing	Total			233,352	233,352

D 30 Heating, Ventilating, and Air Conditioning (HVAC)

Equipment

Description	Qty	Unit	Rate	Amount	Total
HVAC Equipment - Allow (GFA)	11,179	lf	13.00	145,327	145,327
Ductwork					
Galvanized steel ductwork w/accessories, fittings, hangers, etc (22ga):-					
Supply/Return/Exhaust System	6,707	lb	9.65	64,726	
Duct Fittings/Waste	1,677	lb	9.65	16,183	
Insulation to supply/return duct	3,668	sf	4.00	14,672	
EO for stainless steel ductwork				Not Required	
EO for black steel to Kitchen ductwork				Not Required	
Diffusers/grilles/registers	15	ea	350.00	5,250	
Dampers, allow					
Volume	15	ea	125.00	1,875	
Fire	5	ea	250.00	1,250	
Smoke	5	ea	850.00	4,250	108,206
Pipework					
HVAC Piping System					
Refrigerant piping	1,118	lf	20.00	22,360	
Hotwater piping	699	lf	40.00	27,960	
Condensate piping	262	lf	32.00	8,384	
Allow for: -					
Pipe Fittings	1	ls	14,676.00	14,676	
Piping Accessories	1	ls	11,740.80	11,741	
Piping Insulation	2,079	lf	10.00	20,790	105,911
Automatic Control System					
Automatic Temperature Control System	1	ls	61,484.50	61,485	61,485
General					
Commissioning by Third Party	1	ls	1,052.32	1,052	
Allow for seismic restraint & vibration isolation	1	ls	1,383.27	1,383	
Test & balance	1	ls	8,467.29	8,467	10,903
Sub Bid					
	Total			431,832	431,832
Builders work in connection with HVAC @ 2%	1	ls	8,636.63	8,637	
General Contractor's overhead and profit			GC Fee Carried in Summary		8,637
D 30 Heating, Ventilating, and Air Conditioning (HVAC)	Total			440,468	440,468

D40 Fire Protection Systems

Fire Protection Systems					
Wet sprinkler system (gfa)	11,179	sf	3.50	39,127	
Fire Pump					
Standpipes will be located within each egress stairwell				Included w/rate above	
Double check backflow preventer	1	ls	4,850.00	4,850	
Tamper switches	1	ls	3,000.00	3,000	
Allow for seismic restraint	1	ls	500.00	500	
Permit fees				Not Required	
Test and balance	1	ls	949.53	950	48,426
Sub Bid					
	Total			48,426	48,426
Builders work in connection with F. Protection @ 2%	1	ls	968.52	969	
General Contractor's overhead and profit @ 5%			GC Fee Carried in Summary		969
D40 Fire Protection Systems	Total			49,395	49,395

Description	Qty	Unit	Rate	Amount	Total
D50 Electrical Systems					
Equipment, Panelboards, etc.					
Pad mounted transformer				By Utility	
Emergency Generator				Excluded	
Emergency Power Distribution				Excluded	
Normal Power Distribution	11,179	sf	2.00	22,358	
Building should be 'solar ready'	1	ls	5,000.00	5,000	27,358
Feeders					
Secondary Service - Wiring (Within site)	50	lf	100.00	5,000	
Electrical feeders	11,179	sf	1.50	16,769	21,769
Small Power					
Small Power	11,179	sf	2.50	27,948	
Electrical power to					
HVAC Equipment	1	ls	14,532.70	14,533	
Plumbing Equipment	1	ls	2,703.45	2,703	
Other Miscellaneous Equipment	1	ls	5,000.00	5,000	50,184
Lighting					
Lighting System					
LED lighting throughout Building complete with wiring	11,179	sf	7.00	78,253	
Security lighting at exterior	1	ls	15,000.00	15,000	
Lighting controls	11,179	sf	1.25	13,974	107,227
Fire Alarm					
Fire Alarm System, allow	11,179	sf	2.35	26,271	26,271
Security system (Empty Conduit System)					
Empty Conduit System & Pull String	11,179	sf	0.30	3,354	
Security Headend Equipment				By Owner	
Intrusion detection system - control points				By Owner	
Access control system - control points				By Owner	
Video Surveillance				By Owner	3,354
Communications systems (Empty Conduit System)					
Empty Conduit System & Pull String	11,179	sf	0.50	5,590	
Head-end Equipment				By Owner	
Communications systems - Outlet & Wiring				By Owner	5,590
PV system					
Empty Conduit System & Pull String	11,179	sf	0.25	2,795	
Equipment, wiring and installation				By Owner	2,795
Audio Visual (Empty Conduit System)					
Audio Visual, allow (Conduit and pull string)	11,179	sf	0.20	2,236	
Wiring and Equipment				By Owner	2,236
General					
Allow for:-					
Lightning protection (gfa)	11,179	sf	0.30	3,354	
Grounding (gfa)	11,179	sf	0.15	1,677	
Seismic bracing	1	ls	750.00	750	
Commissioning by Third Party	1	ls	629.53	630	
Permit fees				Not Required	
Testing	1	ls	5,063.83	5,064	11,474
Sub Bid	Total			258,255	258,255

Description	Qty	Unit	Rate	Amount	Total
Builders work in connection with Electrical @ 2%	1	ls	5,165.10	5,165	
General Contractor's overhead and profit @ 5%			GC Fee Carried in Summary		5,165
D50 Electrical Systems	Total			263,420	263,420

E10 Equipment

Commercial Equipment

Food Service Equipment Not Required

Theater Equipment

Not Required Not Required

Other Equipment

Install Owners Equipment Not Required
Miscellaneous Equipment 1 ls 5,000.00 5,000 5,000

Residential Appliances

Kitchenette
Refrigerator 1 ea 1,150.00 1,150
Microwave 1 ea 750.00 750
Stove – residential grade 1 ea 1,000.00 1,000
Dishwasher – residential grade 1 ea 800.00 800
Upper and lower cabinets **Included w/Casework**
Concessions
Refrigerators 1 ea 2,500.00 2,500
Freezers 1 ea 2,500.00 2,500
Microwave 1 ea 1,000.00 1,000
Stove 1 ea 1,850.00 1,850
Dishwasher 1 ea 1,250.00 1,250
S.S. Counters and lower cabinets **Included w/Casework**
S.S. shelving at storage **Excluded - By Owner** 12,800

Projector Screens

Projector Screens, allow **Excluded - By Owner**

Audio Visual

Audio Visual Equipment **By Owner**

E10 Equipment	Total			17,800	17,800
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E20 Furnishings

Roller Shades

Mechoshades - manual 1,026 sf 7.35 7,541 7,541

Casework

Fixed Casework systems
Kitchenette
Plam upper and lower cabinets 8 lf 607.60 4,861
Solid Surface Counters at Kitchen 8 lf 161.70 1,294
Concessions
S.S. Counters and lower cabinets 26 lf 490.00 12,740
S.S. shelving at storage **Excluded - By Owner**
Loose Furniture - **Excluded by Owner**
Cage storage **Excluded - By Owner**

Description	Qty	Unit	Rate	Amount	Total
Banquet Seating – Assume 100				<i>Excluded - By Owner</i>	
54" Banquet Tables – Assume 16				<i>Excluded - By Owner</i>	
Conference tables and seating as shown				<i>Excluded - By Owner</i>	
Team Seating – Assume 100 plastic folding Chairs				<i>Excluded - By Owner</i>	
Meeting Rooms – Furniture as shown				<i>Excluded - By Owner</i>	18,894
Fixed Audience Seating					
Not Required				Not Required	
Entry Mats					
Walk-off matt at main entrance foyer					
Resilient at Concessions and Concession stores	1	ea	470.40	470	
Resilient at P&F Crew and WC	1	ea	470.40	470	
Resilient in all WC	2	ea	470.40	941	
Polished Concrete	2	ea	940.80	1,882	3,763
E20 Furnishings	Total			30,199	30,199

F10 Special Construction

No work in this Element

F10 Special Construction	Total			0	0
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F20 Selective Demolition

Selective Demolition - Existing Building Demolition

Demolition a portion of existing buildings:-

Demolish and remove existing Building	115,116	cf	0.34	39,485	
Demolish and remove existing concrete slab	6,343	sf	2.94	18,648	
Demolish and remove existing foundations	294	lf	24.50	7,203	
Loading & removing off site including dump fees	426	cy	22.05	9,393	74,730

Hazardous Material Removal

Hazardous Material Removal - Allow \$8/sf	1	ls	76,744.00	76,744	76,744
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F20 Selective Demolition	Total			151,474	151,474
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G10 Site Preparation

Remove and dispose

Building Demolition				Not Required	
General Site Clearing	12,558	sf	0.74	9,230	
Allow for					
Hazardous Material Removal	1	ls		Excluded	
Miscellaneous demolition	1	ls	4,900.00	4,900	
Terminating & capping extg utilities	1	ls		Excluded	
Protecting & maintaining in operation extg fire main & hydrants serving	1	ls		Not Required	
Removal of rubbish off site	1	ls	1,384.75	1,385	15,515

Temporary work

Construction fence	483	lf	11.76	5,680	
EO DL gate	1	ea	931.00	931	
Site Entrance and access road during construction	1	ls	1,470.00	1,470	
Sediment & erosion control along temporary swale	483	lf	5.88	2,840	10,921

Earthwork

Description	Qty	Unit	Rate	Amount	Total
Strip topsoil & store on site	12,558	sf	0.15	1,846	
Cut Site to achieve new proposed grade levels and store for reuse	163	cy	8.33	1,358	
Cut & Fill at Paving and planting/lawn areas	112	cy	8.33	937	
Fill areas of site with excavated material to achieve new grade levels	275	cy	5.73	1,579	
Remove surplus excavated material off site	55	cy	19.60	1,078	
EO for excavating rock	14	cy	45.57	638	
Import fill to achieve proposed grade levels	55	cy	24.50	1,348	
Grade over entire site to achieve final levels	12,558	sf	0.15	1,846	
Proof Roll/Compact Building Slab-On-Grade area	6,343	sf	0.29	1,865	
Water removal during excavation works	1	ls	367.32	367	12,861
G10 Site Preparation	Total			39,297	39,297

G20 Site Improvements

Exterior Improvements

Asphalt paving at vehicular drives and parking lot	3,159	sf	6.25	19,736	
Concrete Paving	1,395	sf	10.29	14,355	
Concrete Pavers				Not Required	
Precast Concrete Curb	166	lf	30.63	5,084	
Seeding/Loam	1,661	sf	0.74	1,221	
Trees/Shrubs/Planting, allow	1	ls	8,138.90	8,139	
Connect to existing paving	114	lf	7.84	894	
Concrete filled bollards	10	ea	539.00	5,390	
18" concrete retaining wall (form lined concrete wall)	322	sf	88.64	28,543	
Stairs attached to building			Included w/stair section above		
Pavement Marking, Traffic and Pedestrian signage, allow	1	ls	980.00	980	84,340
G20 Site Improvements	Total			84,340	84,340

G30 Site Civil/Mechanical Utilities

Site Utilities

Storm System					
Stormwater Management System - adapt/amend existing	1	ls	2,940.00	2,940	
Storm - Catch Basin	1	ea	2,205.00	2,205	
Storm - Manhole	1	ea	4,753.00	4,753	
Storm - Storm line	200	lf	53.90	10,780	20,678
Fire /Water Service					
Connect to existing System	1	ls	9,800.00	9,800	9,800
Sanitary Service					
Connect to existing System	1	ls	5,390.00	5,390	5,390
Gas Service					
Connect to existing System	1	ls	3,430.00	3,430	3,430
General Items					
Connect to existing services				Not Required	
Trenching and backfill to utility lines				Not Required	
Police detail for utility connections				Not Required	
G30 Site Civil/Mechanical Utilities	Total			39,298	39,298

G40 Site Electrical Utilities

Site Electrical

Transformer				By Utility	
Primary Service - Conduit and Ductbank Only				ETR	
Secondary Service - Conduit and Ductbank Only	50	lf	88.20	4,410	
Tel/data service - Conduit and Ductbank Only				ETR	

Needham Memorial Park, Needham, MA
Conceptual Cost Estimate: Estimate

April 4, 2017

Description	Qty	Unit	Rate	Amount	Total
Site Lighting				Not Required	
Police detail for utility connections				Not Required	4,410
G40 Site Electrical Utilities	Total			4,410	4,410
G90 Other Site Construction					
No Work in this Division					
G90 Other Site Construction	Total			0	0

Gross Floor Areas

	<u>GFA (sf)</u>	<u>Perimeter (lf)</u>
<u>New Addition</u>		
Level 1	6,343	334
Level 2	4,836	296
Total	11,179	

Description	Qty	Unit	Rate	Totals
Cost Summary				
Alternates				
Alt #1 - Savings to change to Pre-Fab building	1	ls		(\$417,010)
Alt #1 - Savings to change to Pre-Fab building				
Deduct				
B10 Superstructure	1	ls	-316,277.97	(316,278)
B20 Exterior Enclosure	1	ls	-466,624.44	(466,624)
B30 Roofing	1	ls	-168,266.98	(168,267)
Add				
Pre-Fabricated Building - Standard metal panel exterior wall and roof system	11,179	sf	55.00	614,845
Net Add				(\$336,324)
General Requirements/General Conditions	3.00%			(10,090)
Bonds	1.00%			(3,464)
Insurance	1.15%			(4,024)
Permit Fee				Excluded
Escalation to mid-point of construction 2Q2018	4.00%			(14,156)
Design Contingency	10.00%			(36,806)
GC's Fee	3.00%			(12,146)
Construction Contingency				By Owner
Alt #1 - Savings to change to Pre-Fab building			Total - Gross Add/Deduct	(417,010)

Hazardous Materials Report

(next page)



300 Wildwood Avenue
Woburn, MA 01801

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April 28, 2017

Mr. Mark Meche, AIA
Senior Principal
Winter Street Architects, Inc.
27 Congress Street, Suite 201
Salem, MA 01970

RE: TRC Project 277027
Hazardous Building Materials Survey Report
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts

Dear Mr. Meche:

The enclosed report presents the findings of the hazardous building materials survey performed at the above-referenced location by TRC Environmental (TRC). The survey was performed on April 12, 2017 in support of the Memorial Park Building and Grounds Feasibility Study.

Should you have any questions or require additional information, please call at your convenience.

Sincerely,
TRC Environmental

Thomas E. Roche
Senior Project Manager

Reviewed By:

Jennifer L. Archacki, LEED Green Associate
Senior Project Manager

Enc.

Hazardous Building Materials Survey Report

**Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts**

Prepared For:

Winter Street Architects
27 Congress Street, Suite 201
Salem, MA 01970

Prepared By:

TRC Environmental
300 Wildwood Avenue
Woburn, Massachusetts

TRC Project 277027

April 28, 2017

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Appendix A: Analytical Laboratory Report for Asbestos Bulk Samples

Appendix B: Lead Paint Testing Results by XRF Analysis

Appendix C: Summary of Observed Potentially Hazardous / Regulated Building Materials

EXECUTIVE SUMMARY

TRC Environmental (TRC) performed a survey for asbestos-containing materials (ACM), testing for lead paint and a visual inspection for mercury-containing devices, liquid polychlorinated biphenyl (PCB) containing electrical equipment, and other building materials that may require special handling and/or disposal as part of the Memorial Park Building and Grounds Feasibility Study, Needham, Massachusetts. The asbestos survey and the hazardous/regulated building materials assessment was performed on April 12, 2017 by Commonwealth of Massachusetts Department of Labor Standards (MA DLS) certified asbestos inspector Mr. Robert Thomson (Certification No. AI-031431). The lead paint testing was performed by Mr. Thomas Roche on April 12, 2017. Mr. Roche is a Massachusetts Department of Public Health licensed lead inspector (License # 1676) and is factory trained in the use of the X-Ray Fluorescence (XRF) Spectrum Analyzer.

Asbestos Survey

Representative bulk samples of suspect ACM were collected from accessible interior and exterior areas of the building and analyzed to determine asbestos content. Asbestos-containing materials identified at the site include interior window glazing compound in the first floor kitchen and restroom and exterior caulk associated with the overhead garage doors on the South Elevation.

Due to the limited nature of the asbestos survey, additional site inspection and bulk sampling using destructive sampling methods is required prior to the start of any future renovation/demolition activities.

All identified and assumed ACM should be removed from the building prior to the start of any planned renovation/demolition activities that may disturb the materials. Note that additional suspect ACM may be present in buried areas, the roof or otherwise inaccessible building locations. If additional suspect ACM is encountered during renovation activities, then precautions should be taken to prevent disturbance and the material should be tested to determine asbestos content.

Lead Paint Testing

Lead paint testing was performed using an x-ray fluorescence spectrum analyzer (XRF) to determine the lead content of accessible interior and exterior painted building components. The purpose of the lead paint testing is to provide information for compliance with OSHA and US EPA requirements during renovation or demolition activities where painted surfaces will be disturbed. Renovation/demolition work that disturbs lead requires compliance with the OSHA lead standard (29 CFR 1926.62).

The lead content of the surfaces tested range from less than the lower limit of quantification for the XRF instrument of less than 0.05 milligrams per square centimeter of sampled surface area (mg/cm²) to 4.2 mg/cm². Demolition waste containing lead must be characterized to determine disposal requirements (as construction debris or as hazardous waste). This can be accomplished by performing the toxicity characteristic leaching procedure (TCLP) or using other methods that accurately characterize the lead content of such waste.

Hazardous/Regulated Building Materials

TRC visually inspected accessible building areas and observed suspect potentially hazardous/regulated building materials including, but not limited to, fluorescent lamps and ballasts; a mercury thermostat, flow meters, a ceiling mounted heater, white goods, an electrical transformer, air conditioners and a hot water heater. These items should be removed from the building and either recycled or disposed in accordance with the Massachusetts Department of Environmental Protection (MA DEP) hazardous waste regulations, 310 CMR 30.000 and other applicable regulations.

1.0 SURVEY DESCRIPTION

1.1 Introduction

TRC Environmental (TRC) performed a survey for asbestos-containing materials (ACM), testing for lead paint and a visual inspection for mercury-containing devices, liquid polychlorinated biphenyl (PCB) containing electrical equipment, and other building materials that may require special handling and/or disposal as part of the Memorial Park Building and Grounds Feasibility Study, Needham, Massachusetts.

The asbestos survey and the hazardous/regulated building materials assessment was performed on April 12, 2017 by Commonwealth of Massachusetts Department of Labor Standards (MA DLS) certified asbestos inspector Mr. Robert Thomson (Certification No. AI-031431). The lead paint testing was performed by Mr. Thomas Roche on April 12, 2017. Mr. Roche is a Massachusetts Department of Public Health licensed lead inspector (License # 1676) and is factory trained in the use of the X-Ray Fluorescence (XRF) Spectrum Analyzer.

1.2 Purpose and Scope of Work

An asbestos survey was performed to determine the locations and approximate quantities of ACM in the building as part of the Memorial Park Building and Grounds Feasibility Study. The survey included accessible interior and exterior areas of the building to determine the location, type, condition and quantity of ACM, presumed ACM, and otherwise suspect ACM. Bulk samples of suspect ACM were collected and submitted for analysis to determine asbestos content. Due to the limited nature of the asbestos survey, additional site inspection and bulk sampling using destructive sampling methods is required prior to the start of any future renovation/demolition activities.

TRC performed testing of representative accessible interior and exterior painted building components to determine lead content using an x-ray fluorescence (XRF) spectrum analyzer.

TRC performed a visual inspection of accessible interior and exterior building areas and noted the presence of building materials that may require special handling and disposal prior to, or in conjunction with building renovations.

1.3 Survey Procedures

The asbestos survey was performed using guidelines established by the EPA guidance document "Guidance for Controlling Asbestos-Containing Materials in Buildings" (EPA 5605-85/024), 40 CFR Part 61 National Emission Standards for Hazardous Air Pollutants (NESHAP), Paragraph 61.145, Standard for Demolition and Renovation, EPA AHERA 40 CFR 763 and OSHA 1926.1101 regulations.

A visual survey was conducted of accessible interior and exterior areas of the building to identify the types, locations, and approximate quantities of ACMs, presumed ACM (as defined in 29 CFR 1926.1101), and otherwise suspect ACM. Building materials including thermal systems insulation; surfacing materials, and miscellaneous building materials were assessed as potential ACM. Where feasible, bulk samples of suspect ACM were collected in a random manner and submitted for laboratory analysis to determine asbestos content.

Note that multiple bulk samples are collected from each homogenous area of suspect ACM observed. In accordance with U.S. EPA guidelines, a minimum of two samples are collected from each homogenous area of miscellaneous and thermal system insulation materials and either three, five, or seven samples for each type of surfacing materials, depending on the quantity. If one percent or more asbestos is detected in any sample within a homogenous area of suspect ACM, then all of the suspect ACM within that homogeneous area must be treated as asbestos-containing material.

Concentrations of lead in paint were measured on site by portable XRF analysis. Lead paint testing was performed to determine the lead content of selected painted building components that may be impacted by demolition activities and may not be used to determine compliance with the Massachusetts Department of Public Health Childhood Lead Poisoning Prevention Program Regulations.

Visual observations of potentially hazardous/regulated materials were made to inventory these materials. Sampling of any suspect liquids or bulk materials was not performed as part of the inventory.

1.4 Analytical Methods

Asbestos bulk sample analysis was performed by TRC Environmental's (TRC) laboratory located in Woburn, Massachusetts, using Polarized Light Microscopy with Dispersion Staining (PLM/DS) in accordance with the United States Environmental Protection Agency (US EPA) "Method for the Determination of Asbestos in Bulk Building Materials", EPA/600/R-93/116. The TRC laboratory is accredited through the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (No. 101781). The TRC laboratory is certified by the Massachusetts DLS as a provider of asbestos analytical services. The bulk sample analysis report is provided as Appendix A.

The lead content of painted surfaces was determined using a portable XRF Spectrum Analyzer (NITON XLp 303AW; Serial No. 18580). The XRF Spectrum Analyzer uses a radioactive source to excite the electrons of lead atoms (if present) in paints. As the lead atom electrons return to their normal state, they emit X-rays, which are counted by the XRF Spectrum Analyzer. This data is processed and the results are converted to milligrams of lead per square centimeter (mg/cm²) of sampled surface area. Lead paint testing results are provided as Appendix B.

2.0 ASBESTOS SURVEY RESULTS

2.1 Summary of Observed Asbestos-Containing Materials

The US EPA defines ACM as any material that contains greater than one percent asbestos. The Massachusetts Department of Environmental Protection (DEP) defines ACM as any material that contains greater than or equal to one percent asbestos. A summary of observed suspect ACM, location, approximate quantity and laboratory analysis results are presented in the following summary table.

Summary of Observed Suspect Asbestos-Containing Materials
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts
April 12, 2017

Material Description	Location(s)	Approx. Quantity	Analytical Result	Condition
Textured plaster on CMU wall	Men's and Women's Restroom	NQ	NAD	Good
Gypsum board and associated joint compound	First floor, kitchen, front garage storage room and front garage	NQ	NAD	Good
Sand textured ceiling material on gypsum	Front garage	NQ	NAD	Good
Brown sheet flooring and associated adhesive	First floor, kitchen	NQ	NAD	Good
Wall base molding and associated adhesive	First floor, kitchen	NQ	NAD	Good
Sink basin coating	First floor, kitchen	NQ	NAD	Good
Interior window glazing compound	First floor, kitchen and restroom	5 windows	Positive 2% Chrysotile Asbestos	Good
Caulk between wall base and side walk	East side	NQ	NAD	Good
Exterior door frame caulk	Men's room and south side door	NQ	NAD	Good
Exterior caulk on snack window frame	South side	NQ	NAD	Good
Exterior caulk associated with overhead door	South side	3 doors	Positive 2% Chrysotile Asbestos	Good

Summary of Observed Suspect Asbestos-Containing Materials
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts
April 12, 2017

Material Description	Location(s)	Approx. Quantity	Analytical Result	Condition
Textured material on gypsum wall	Second floor, hall, meeting room and legion room	NQ	NAD	Good
Gypsum board, ceiling and wall	Second floor, hall, meeting room and legion room	NQ	NAD	Good
Residual black mastic on concrete floor	Second floor, rear storage	NQ	NAD	Good
Sink basin coating	Second floor, kitchen	NQ	NAD	Good
Carpet glue	Second floor, hall	NQ	NAD	Good
Roofing material	Roof	NQ	Assumed ACM	

Table Notes:

NAD = No Asbestos Detected

NQ = Not Quantified

Note that additional suspect ACM may be present in the building in inaccessible areas including the space behind walls, above solid ceilings, in chases, below finished flooring, or in areas not included in our scope of work. Due to the limited nature of the asbestos survey, additional site inspection and bulk sampling using destructive sampling methods is required prior to the start of any future renovation/demolition activities.

2.2 Asbestos Recommendations

TRC recommends the following:

1. Perform additional asbestos inspection using destructive inspection techniques prior to any future renovation or demolition activities.
2. A Massachusetts DLS certified Project Designer should prepare a work plan for removal of all ACM that may be disturbed by any future renovation/demolition activities.
3. Additional suspect materials may be present in inaccessible areas such as within mechanical and electrical components, behind floor, wall, and ceiling finishes, inside chases and soffits, buried areas, etc. If additional suspect materials are encountered

during building maintenance, renovation, or demolition activities, then precautions should be taken to prevent disturbance of the suspect materials and bulk sampling and laboratory analysis should be performed to determine the materials asbestos content.

4. The US EPA Regulation 40 CFR Part 61 National Emission Standards for Hazardous Air Pollutants (NESHAP), Paragraph 61.145, Standard for Demolition and Renovation, and MassDEP requires that all regulated ACM be removed from a building prior to the start of renovation or demolition activities if the materials may be disturbed by these activities. Removal of ACM must be performed by a licensed asbestos removal contractor in accordance with federal, state, and local regulations.
5. A copy of this survey report must be maintained by the Town of Needham at the building for review by or submittal to the MassDEP upon request at all times during any related asbestos abatement activities and for a minimum of two years following completion of abatement activities.

3.0 OTHER POTENTIALLY HAZARDOUS MATERIALS

TRC performed a visual inspection in representative, readily accessible interior areas for suspect mercury containing devices and suspect liquid polychlorinated biphenyl (PCB) containing electrical components and other potentially hazardous/regulated materials. Note that sampling and laboratory analysis was not performed to confirm our visual observations for mercury and PCB or other potentially hazardous building materials, except for lead paint, which was tested in the field using a portable XRF analyzer.

3.1 Mercury

Fluorescent lamps, a thermostat, flow meters associated with the gas and water meters and a ceiling mounted natural gas fueled heater are present in the building and are assumed to contain mercury.

All suspect mercury containing devices that are removed from the building should be treated by retort and distillation processes to recover and recycle the elemental mercury at an EPA permitted facility. Fluorescent lamps should be stored in containers specially designed for the intact storage of fluorescent lamps. Properly packaged fluorescent lamps may be stored for up to one year in a secure building location. Dispose of spent lamps at an authorized recycler, hazardous waste transporter, or other universal waste handler within one year of the date marked on the storage containers.

3.2 Polychlorinated Biphenyls (PCB)

A visual inspection of electrical equipment/components was performed to identify components that may contain suspect liquid PCBs. PCB-containing lamp ballasts are

assumed present in the light fixtures. Other suspect PCB-containing equipment include an exterior transformer.

Light fixture ballasts should be inspected for labels indicating “no-PCBs”. If ballasts are unmarked, they must be assumed to contain PCBs. At the time of the inspection, dismantling of fluorescent lamps was not performed to inspect for ballasts indicating “no-PCBs” due to building use and occupancy. Note that various sizes of fluorescent lamps were observed in the building including 4' and 8'.

3.3 Additional Hazardous Materials

TRC noted the presence of other potentially hazardous/regulated building materials or stored items that may require special handling and/or disposal prior to future renovation/demolition activities.

White goods, refrigerants, smoke detectors, and exit signs were observed on the first and second floor of the building. Prior to any renovation or demolition, these items should be removed from the building, properly stored and evaluated for proper disposal.

White goods are banned from disposal by the Massachusetts DEP. Refrigerants are required to be removed from appliances in accordance with EPA protocols.

3.4 Potentially Hazardous/Regulated Materials Recommendations

Prior to any future renovation activities, mercury-containing lamps should be removed for recycling in accordance with MA DEP Universal Waste Rule, 310 CMR 30.1000.

All potentially hazardous building materials and stored items must be removed from the building prior to renovation activities for proper disposal in accordance with MA DEP hazardous waste regulations, 310 CMR 30.000 and other applicable federal and state regulations.

4.0 LEAD PAINT TESTING

4.1 Lead Paint Testing Results

Testing for lead paint was performed on representative interior and exterior painted surfaces. The lead content of painted surfaces was determined using a portable XRF Spectrum Analyzer. The results of the XRF testing are presented in Appendix B in milligrams of lead per square centimeter (mg/cm^2) of sampled surface area. XRF testing results indicate that levels of lead on the surfaces tested range from less than $0.05 \text{ mg}/\text{cm}^2$ (the lower limit of quantification of the XRF) to $4.2 \text{ mg}/\text{cm}^2$.

4.2 Lead Recommendations

1. Renovation/demolition work that disturbs lead requires compliance with the OSHA lead standard (29 CFR 1926.62). This standard applies to demolition where an employee may be occupationally exposed to lead. This standard does not establish a minimum threshold for the lead content below which an initial exposure assessment is not required. Note that specific work practices required under the OSHA Lead Construction Standard (29 CFR 1926.62) will depend on the actual worker's lead exposures, which are determined by initial exposure monitoring during the work activity.
2. Minimum OSHA requirements for workers exposed to lead include having a competent person, monitoring and documenting worker exposures, having a written lead compliance program, using proper housekeeping (e.g. HEPA vacuuming/wet cleaning methods), providing hygiene facilities (e.g. hand/face wash station), and hazard communication training for lead. Additional requirements apply to workers exposed above the lead Action Level or the Permissible Exposure Level (PEL) and to some trigger activities (torch burning, etc.).
3. Debris containing lead generated from construction activities must be characterized to determine disposal requirements (construction debris or hazardous waste). This can be accomplished by performing the toxicity characteristic leachate procedure (TCLP) or using other methods, which accurately characterize the waste.

5.0 LIMITATIONS

Services performed by TRC were conducted in a manner consistent with "state of the industry" practices, recognizing that even the most comprehensive inspection may not detect all suspect materials in a building. Reasonable measures were taken to detect the presence of normally suspect materials within the inspection areas, however, additional materials may be enclosed in solid walls and ceilings, or otherwise may be inaccessible and materials that are not normally suspect may contain hazardous materials. TRC cannot act as an insurer or certify that the site is free of asbestos or other hazardous materials. No expressed or implied representation or warranty is included in our report except that the services were performed within the limit of the scope of work authorized by the client and the encountered site conditions.

Lead testing was performed to evaluate OSHA worker protection requirements and may not be used to determine compliance with the Massachusetts Department of Public Health Childhood Lead Poisoning Prevention Program.

TRC did not disassemble mechanical or electrical equipment. Sampling and analysis of other suspect materials was not included in our scope of work.

APPENDIX A

ANALYTICAL LABORATORY REPORT FOR BULK SAMPLES

CLIENT: WINTER STREET ARCHITECTS
27 CONGRESS STREET
SUITE 201
SALEM, MA 01970

LOCATION: MEMORIAL PARK BUILDING AND GROUNDS BUILDING
NEEDHAM, MASSACHUSETTS

PROJECT: 277027 - 555983
DATE RECEIVED: 04/12/17
ANALYZED: 04/18/17
COLLECTED BY: TRC
COLLECTED: 04/12/17

ANALYTICAL RESULTS OF BULK SAMPLES

LAB ID	SAMPLE DESCRIPTION	COLOR LAYERED	ANALYTICAL RESULTS	
555983	FIELD ID: 01A MATERIAL: TEXTURED PLASTER ON CMU WALL LOCATION: MEN'S RESTROOM	GY N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
555984	FIELD ID: 01B MATERIAL: TEXTURED PLASTER ON CMU WALL LOCATION: MEN'S RESTROOM	GY N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
555985	FIELD ID: 01C MATERIAL: TEXTURED PLASTER ON CMU WALL LOCATION: WOMEN'S RESTROOM	GY N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
555986	FIELD ID: 02A MATERIAL: JOINT COMPOUND ON GYPSUM CEILING LOCATION: 1ST FL, KITCHEN	WH N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
555987	FIELD ID: 02B MATERIAL: JOINT COMPOUND ON WALL LOCATION: FRONT GARAGE STORAGE ROOM	WH N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
555988	FIELD ID: 02C MATERIAL: JOINT COMPOUND ON CEILING LOCATION: FRONT GARAGE	WH N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
555989	FIELD ID: 03A MATERIAL: GYPSUM BOARD CEILING LOCATION: 1ST FL, KITCHEN	MU Y	NO ASBESTOS DETECTED FIBROUS GLASS CELLULOSE NONFIBROUS MATERIAL	02 % 15 % 83 %

LAB ID	SAMPLE DESCRIPTION	COLOR LAYERED	ANALYTICAL RESULTS	
555990	FIELD ID: 03B MATERIAL: GYPSUM BOARD WALL LOCATION: FRONT GARAGE STORAGE ROOM	MU Y	NO ASBESTOS DETECTED FIBROUS GLASS CELLULOSE NONFIBROUS MATERIAL	 02 % 15 % 83 %
555991	FIELD ID: 03C MATERIAL: GYPSUM BOARD ON CEILING LOCATION: FRONT GARAGE	MU Y	NO ASBESTOS DETECTED FIBROUS GLASS CELLULOSE NONFIBROUS MATERIAL	 02 % 15 % 83 %
555992	FIELD ID: 04A MATERIAL: SAND TEXTURED CEILING ON GYPSUM LOCATION: FRONT GARAGE	MU Y	NO ASBESTOS DETECTED CELLULOSE NONFIBROUS MATERIAL	 10 % 90 %
555993	FIELD ID: 04B MATERIAL: SAND TEXTURED CEILING ON GYPSUM LOCATION: FRONT GARAGE	MU Y	NO ASBESTOS DETECTED CELLULOSE NONFIBROUS MATERIAL	 10 % 90 %
555994	FIELD ID: 04C MATERIAL: SAND TEXTURED CEILING ON GYPSUM LOCATION: FRONT GARAGE	MU Y	NO ASBESTOS DETECTED CELLULOSE NONFIBROUS MATERIAL	 10 % 90 %
555995	FIELD ID: 05A MATERIAL: BROWN SHEET FLOORING LOCATION: 1ST FL, KITCHEN	MU Y	NO ASBESTOS DETECTED FIBROUS GLASS CELLULOSE NONFIBROUS MATERIAL	 10 % 25 % 65 %

LAB ID	SAMPLE DESCRIPTION	COLOR LAYERED	ANALYTICAL RESULTS
555996	FIELD ID: 05B MATERIAL: BROWN SHEET FLOORING LOCATION: 1ST FL, KITCHEN	MU Y	NO ASBESTOS DETECTED FIBROUS GLASS 10 % CELLULOSE 25 % NONFIBROUS MATERIAL 65 %
555997	FIELD ID: 06A MATERIAL: ADHESIVE ON BROWN SHEET FLOORING LOCATION: 1ST FL, KITCHEN	YL N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL 100 %
555998	FIELD ID: 06B MATERIAL: ADHESIVE ON BROWN SHEET FLOORING LOCATION: 1ST FL, KITCHEN	YL N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL 100 %
555999	FIELD ID: 07A MATERIAL: WALL BASE MOLDING LOCATION: 1ST FL, KITCHEN	GY N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL 100 %
556000	FIELD ID: 07B MATERIAL: WALL BASE MOLDING LOCATION: 1ST FL, KITCHEN	GY N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL 100 %
556001	FIELD ID: 08A MATERIAL: WALL BASE ADHESIVE LOCATION: 1ST FL, KITCHEN	YL N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL 100 %
556002	FIELD ID: 08B MATERIAL: WALL BASE ADHESIVE LOCATION: 1ST FL, KITCHEN	YL N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL 100 %
556003	FIELD ID: 09A MATERIAL: SINK BASIN COATING LOCATION: 1ST FL, KITCHEN	GY N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL 100 %

LAB ID	SAMPLE DESCRIPTION	COLOR LAYERED	ANALYTICAL RESULTS	
556004	FIELD ID: 09B MATERIAL: SINK BASIN COATING LOCATION: 1ST FL, KITCHEN	TN N	NO ASBESTOS DETECTED SYNTHETIC NONFIBROUS MATERIAL	 10 % 90 %
556005	FIELD ID: 10A MATERIAL: INTERIOR WINDOW GLAZING COMPOUND LOCATION: 1ST FL, KITCHEN	TN N	ASBESTOS - CHRYSOTILE NONFIBROUS MATERIAL	02 % 98 %
556006	FIELD ID: 10B MATERIAL: INTERIOR WINDOW GLAZING COMPOUND LOCATION: FRONT GARAGE RESTROOM	TN N	ASBESTOS - CHRYSOTILE NONFIBROUS MATERIAL	02 % 98 %
556007	FIELD ID: 11A MATERIAL: CAULK BETWEEN WALL BASE AND SIDE WALK LOCATION: EAST SIDE	GY N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	 100 %
556008	FIELD ID: 11B MATERIAL: CAULK BETWEEN WALL BASE AND SIDE WALK LOCATION: EAST SIDE	GY N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	 100 %
556009	FIELD ID: 12A MATERIAL: EXTERIOR DOOR FRAME CAULK LOCATION: MEN'S ROOM	BR N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	 100 %
556010	FIELD ID: 12B MATERIAL: EXTERIOR DOOR FRAME CAULK LOCATION: SOUTH DOOR	BR N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	 100 %
556011	FIELD ID: 13A MATERIAL: EXTERIOR CAULK ON SNACK WINDOW FRAME LOCATION: SOUTH SIDE	BR N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	 100 %

LAB ID	SAMPLE DESCRIPTION	COLOR LAYERED	ANALYTICAL RESULTS	
556012	FIELD ID: 13B MATERIAL: EXTERIOR CAULK ON SNACK WINDOW FRAME LOCATION: SOUTH SIDE	BR N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
556013	FIELD ID: 14A MATERIAL: EXTERIOR CAULK ASSOCIATED WITH OVERHEAD DOOR LOCATION: SOUTH SIDE	TN/WH Y	ASBESTOS - CHRYSOTILE NONFIBROUS MATERIAL	02 % 98 %
556014	FIELD ID: 14B MATERIAL: EXTERIOR CAULK ASSOCIATED WITH OVERHEAD DOOR LOCATION: SOUTH SIDE	TN/WH Y	ASBESTOS - CHRYSOTILE NONFIBROUS MATERIAL	02 % 98 %
556015	FIELD ID: 15A MATERIAL: TEXTURED ON GYPSUM WALL LOCATION: 2ND FLOOR HALL	WH N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
556016	FIELD ID: 15B MATERIAL: TEXTURED ON GYPSUM WALL LOCATION: 2ND FLOOR MEETING ROOM	WH N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
556017	FIELD ID: 15C MATERIAL: TEXTURED ON GYPSUM WALL LOCATION: 2ND FLOOR LEGION ROOM	WH N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
556018	FIELD ID: 15D MATERIAL: TEXTURED ON GYPSUM WALL LOCATION: 2ND FLOOR LEGION ROOM	WH N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	100 %
556019	FIELD ID: 16A MATERIAL: GYPSUM WALL LOCATION: 2ND FL HALL	MU Y	NO ASBESTOS DETECTED FIBROUS GLASS CELLULOSE NONFIBROUS MATERIAL	02 % 15 % 83 %

LAB ID	SAMPLE DESCRIPTION	COLOR LAYERED	ANALYTICAL RESULTS	
556020	FIELD ID: 16B MATERIAL: GYPSUM WALL LOCATION: 2ND FL MEETING ROOM	MU Y	NO ASBESTOS DETECTED FIBROUS GLASS CELLULOSE NONFIBROUS MATERIAL	 02 % 15 % 83 %
556021	FIELD ID: 16C MATERIAL: GYPSUM WALL LOCATION: 2ND FL LEGION ROOM	MU Y	NO ASBESTOS DETECTED FIBROUS GLASS CELLULOSE NONFIBROUS MATERIAL	 02 % 15 % 83 %
556022	FIELD ID: 17A MATERIAL: RESIDUAL BLACK MASTIC ON CONCRETE FLOOR LOCATION: 2ND FL REAR STORAGE	BK N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	 100 %
556023	FIELD ID: 17B MATERIAL: RESIDUAL BLACK MASTIC ON CONCRETE FLOOR LOCATION: 2ND FL REAR STORAGE	BK N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	 100 %
556024	FIELD ID: 18A MATERIAL: SINK BASIN COATING LOCATION: 2ND FL KITCHEN	TN N	NO ASBESTOS DETECTED WOLLASTONITE NONFIBROUS MATERIAL	 03 % 97 %
556025	FIELD ID: 18B MATERIAL: SINK BASIN COATING LOCATION: 2ND FL KITCHEN	TN N	NO ASBESTOS DETECTED WOLLASTONITE NONFIBROUS MATERIAL	 03 % 97 %
556026	FIELD ID: 19A MATERIAL: CARPET GLUE LOCATION: 2ND FL HALL	YL N	NO ASBESTOS DETECTED NONFIBROUS MATERIAL	 100 %

LAB ID	SAMPLE DESCRIPTION	COLOR	ANALYTICAL RESULTS	
		LAYERED		
556027	FIELD ID: 19B	YL	NO ASBESTOS DETECTED	
	MATERIAL: CARPET GLUE	N	NONFIBROUS MATERIAL	100 %
	LOCATION: 2ND FL HALL			

NOTES: N/A=NOT APPLICABLE

COLOR CODES: BG BEIGE BR BROWN GY GRAY OR ORANGE RD RED WH WHITE GD GOLD
BK BLACK CL CLEAR MU MULTI PI PINK SI SILVER YL YELLOW
BL BLUE GN GREEN N/A NONE PR PURPLE TN TAN MA MAROON

LABORATORY CERTIFICATIONS: MA #AA000006 RI #AAL-129 ME #LB-0071 CT #PH-0248

ACCREDITATION: NVLAP #101781-0

DATE OF ISSUE: 04/26/17

APPROVED SIGNATORY:  KEVIN T. MCKENZIE, LABORATORY MANAGER

THESE SAMPLES WERE ANALYZED BY POLARIZED LIGHT MICROSCOPY WITH DISPERSION STAINING (PLM/DS) ACCORDING TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (US EPA) "INTERIM METHOD FOR THE DETERMINATION OF ASBESTOS IN BULK INSULATION SAMPLES" (EPA-600/M4-82-020) AND "METHOD FOR THE DETERMINATION OF ASBESTOS IN BULK BUILDING MATERIALS" (EPA-600/R93/116). THESE METHODS ARE CONSIDERED SENSITIVE TO THE PRESENCE OF ASBESTOS AT LESS THAN ONE PERCENT.

THIS REPORT RELATES ONLY TO THOSE SAMPLES ANALYZED, AND MAY NOT BE INDICATIVE OF OTHER SIMILAR APPEARING MATERIALS EXISTING AT THIS, OR OTHER SITES.

FLOOR TILES AND RESINOUSLY BOUND MATERIALS ANALYZED BY EPA METHOD 600/R93/116, "METHOD FOR THE DETERMINATION OF ASBESTOS IN BULK BUILDING MATERIALS," MAY YIELD FALSE NEGATIVE RESULTS DUE TO DIFFICULTIES IN ISOLATING SUSPECT FIBERS AND SUBSEQUENTLY IDENTIFYING THEM BENEATH THE MATRIX MATERIAL WHICH ENCAPSULATES THEM.

THE EPA REQUIRES THAT FRIABLE SAMPLES WITH ASBESTOS CONTENTS OF LESS THAN 10%, DETERMINED BY A VISUAL ESTIMATION, BE VERIFIED USING THE POINT COUNTING TECHNIQUE OR OTHERWISE BE ASSUMED TO CONTAIN GREATER THAN 1% ASBESTOS BY THE BUILDING OWNER OR OPERATOR. IF ANALYTICAL RESULTS INDICATE THE PRESENCE OF 1% OR LESS ASBESTOS IN A FRIABLE MATERIAL, THAT MATERIAL MUST BE TREATED AS ASBESTOS-CONTAINING MATERIAL UNLESS THESE QUANTITIES ARE VERIFIED USING THE POINT COUNTING TECHNIQUE. FRIABLE SAMPLES WILL BE POINT-COUNTED UPON REQUEST BY THE CLIENT. POINT COUNTING IS NOT REQUIRED FOR THOSE SAMPLES IN WHICH NO ASBESTOS IS DETECTED DURING ANALYSIS BY PLM.

ALL SAMPLES ARE STORED AT THE TRC LABORATORY FOR A PERIOD OF THREE MONTHS. FURTHER ANALYSIS OR RETURN OF SAMPLES MUST BE REQUESTED WITHIN THIS THREE-MONTH PERIOD TO GUARANTEE THEIR AVAILABILITY.

THIS REPORT MAY NOT BE REPRODUCED EXCEPT IN ITS ENTIRETY, WITHOUT PERMISSION OF THE TRC ENVIRONMENTAL LABORATORY DIRECTOR OR ONE OF THE LABORATORY SIGNATORIES. THIS REPORT MAY NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

300 Wildwood Avenue, Suite 230, Woburn, MA 01801
Phone 781.933.2555 Fax 781.932.9402

Asbestos Bulk Chain of Custody

TRC Project No. 277027		Client: Winter Street Architects		Turnaround (circle) same day 24-hr standard (5 day)	
Samples Collected by: B. Thomas		Project Name and Location: Memorial Park Bldg & Grounds Bldg, Needham, MA		Contact: T. Kolve	
License # AT 051431		Stereoscopic Visual		Phone	
Date(s) Collected: 11-12-17		Fiber Ref. Ind.		Fax	
DO NOT WRITE IN SHADED AREAS		%Asbestos Fiber Present		Email	
Sample ID	DESCRIPTION	Optical Properties	Fiber Ref. Ind.	% Non Asbestos Present	
Field ID #		M E S B P O		Fibrous Glass	Other
Lab ID #		H o m g		Cellulose	Synthetic
01A	MATERIAL: Textured plaster on cnu wall	20 FY			
SSS983	LOCATION: men's Restroom				100
01B	MATERIAL: Textured plaster on cnu wall	20 FY			
SSS984	LOCATION: men's Restroom				100
01C	MATERIAL: Textured plaster on cnu wall	20 FY			
SSS985	LOCATION: women's Restroom				100
02A	MATERIAL: Joint compound on gypsum ceiling	20 FY			
SSS986	LOCATION: Kitchen 1st floor				100
02B	MATERIAL: Joint compound on wall	20 FY			
SSS987	LOCATION: front garage Storage area				100
02C	MATERIAL: Joint compound on ceiling	20 FY			
SSS988	LOCATION: front garage				100

Relinquished by: [Signature] Date: 4-12-17 Received by: [Signature] Date: 4-12-17

Accept _____ Reject _____ Comments _____ Analyst's Signature [Signature] Date(s) Analyzed: 4-12-17 Temp: 26C

Rev 08/26/14

TRC Project No. 277027		Client: Winter Street Architects		Turnaround (circle) same day 24-hr standard (5 day)	
Samples Collected by: R. Thompson		Project Name and Location: Memorial Park Bldg & Grounds, Needham, MA		Contact: T. Roche	
License # AT 031431		Stereoscopic and Location: Visual		Phone	
Date(s) Collected: 4-12-17		Fiber Ref. Ind.		Fax	
DO NOT WRITE IN SHADED AREAS		% Asbestos Fiber Present		Email	
Sample ID	DESCRIPTION	C	%	T	H
Field ID #		o	A	s	b
Lab ID #		i	s	t	o
03A	MATERIAL: Gypsum board	M	24	2	
555989	LOCATION: Kitchen 1st flr				
03B	MATERIAL: Gypsum board	M	24	2	
555990	LOCATION: First garage Storage Room				
03C	MATERIAL: Gypsum board	M	24	2	
555991	LOCATION: Ceiling 1st garage				
04A	MATERIAL: Sand textured	M	24	2	
555992	LOCATION: Ceiling on 1st garage				
04B	MATERIAL: Sand textured	M	24	2	
555993	LOCATION: Ceiling on 1st garage				
04C	MATERIAL: Sand textured	M	24	2	
555994	LOCATION: Ceiling on 1st garage				

Relinquished by: [Signature]		Date: 4-12-17	Received by: [Signature]	Date: 4-12-17
Accept		Reject	Comments	
Date(s) Analyzed: 4-18-17		Temp: 24	Rev. 08/26/14	

Asbestos Bulk Chain of Custody

TRC Project No. <u>277027</u>		Client: <u>Winter Street Architects</u>		Turnaround (circle) same day 24-hr standard (5 day)																				
Samples Collected by: <u>R. Thompson</u>		Project Name <u>Memorial Park Bldg & Grounds</u>		Contact <u>T. Roche</u>																				
License # <u>AT 031431</u>		and Location: <u>Needham, MA</u>		Phone _____																				
Date(s) Collected: <u>4-12-17</u>				Fax _____																				
				Email _____																				
Sample ID	DO NOT WRITE IN SHADED AREAS	Stereoscopic Visual		% Asbestos Fiber Present		% Non Asbestos Present																		
Field ID #	DESCRIPTION	C	%	T	H	M	E	S	B	P	O	Fiber Ref. Ind.	C	A	C	T	R	A	Fibrous Glass	Cellulose	Hair	Synthetic	Other	Non Fibrous
05A	MATERIAL: Brown Sheet LOCATION: 1st floor kitchen	05A	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
05B	MATERIAL: Brown Sheet LOCATION: 1st floor kitchen	05B	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
06A	MATERIAL: Adhesive Brown Sheet Floor LOCATION: 1st floor kitchen	06A	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
06B	MATERIAL: Adhesive Brown Sheet Floor LOCATION: 1st floor kitchen	06B	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
07A	MATERIAL: wall base molding LOCATION: 1st floor kitchen	07A	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
07B	MATERIAL: wall base molding LOCATION: 1st floor kitchen	07B	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TRC Project No. <u>277027</u>		Client: <u>Winter Street Architects</u>		Turnaround (circle) same day 24-hr standard (5 day)		
Samples Collected by: <u>R. Thompson</u>		Project Name and Location: <u>Memorial Park Bldg & Grounds Bldg, Needham, MA</u>		Contact <u>T. Roche</u>		
License # <u>AT031431</u>				Phone _____		
Date(s) Collected: <u>4-12-17</u>				Fax _____		
				Email _____		
Sample ID	DO NOT WRITE IN SHADED AREAS	Stereoscopic Visual	Optical Properties	Fiber Ref. Ind.	% Asbestos Fiber Present	% Non Asbestos Present
Field ID #	DESCRIPTION	C % T H o A s b i l o r	M E S B P O		A C T C R M O C H R Y S	Fibrous Glass
Lab ID #						
<u>08A</u>	MATERIAL: wall base					
<u>SS6001</u>	LOCATION: 1st floor Kitchen	<u>27</u>				
<u>08B</u>	MATERIAL: wall base					
<u>SS6002</u>	LOCATION: 1st floor Kitchen	<u>27</u>				
<u>09A</u>	MATERIAL: sink basin					
<u>SS6003</u>	LOCATION: 1st floor Kitchen	<u>27</u>				
<u>09B</u>	MATERIAL: sink basin					
<u>SS6004</u>	LOCATION: 1st floor Kitchen	<u>27</u>				
<u>10A</u>	MATERIAL: Interior window glazing compound					
<u>SS6005</u>	LOCATION: Kitchen 1st floor	<u>27</u>				
<u>10B</u>	MATERIAL: Interior window glazing compound					
<u>SS6006</u>	LOCATION: front garage Restroom	<u>27</u>				

Relinquished by: [Signature] Date: 4-12-17 Received by: [Signature] Date: 4-12-17

Accept Reject Comments _____ Analyst's Signature [Signature] Date(s) Analyzed: 4-12-17 Temp: 24C

Rev 08/06/14

TRC Environmental
300 Wildwood Avenue, Suite 230, Woburn, MA 01801
Phone 781.933.2555 Fax 781.932.9402

Asbestos Bulk Chain of Custody

TRC Project No. 277027		Client: Winter Street Architects		Turnaround (circle) same day 24-hr standard (5 day)								
Samples Collected by: R. Thompson		Project Name and Location: Memorial Park Bldg & Grounds		Contact: T. Koske								
License # AI 051415		Stereoscopic Visual		Phone								
Date(s) Collected: 4-12-17		Fiber Ref. Ind.		Fax								
DO NOT WRITE IN SHADED AREAS		% Asbestos Fiber Present		Email								
Sample ID	Field ID #	Lab ID #	DESCRIPTION	Optical Properties	Fiber Ref. Ind.	% Asbestos Fiber Present	Fibrous Glass	Cellulose	Hair	Synthetic	Other	Non Fibrous
11A	556007		MATERIAL: Caulk between wall base & side walk LOCATION: East side	C o o r	T e x t u r e	H o m o g e n e o u s						100
11B	556008		MATERIAL: Caulk between wall base & side walk LOCATION: East side	C o o r	T e x t u r e	H o m o g e n e o u s						100
12A	556009		MATERIAL: Exterior door frame caulk LOCATION: north side	C o o r	T e x t u r e	H o m o g e n e o u s						100
12B	556010		MATERIAL: Exterior door frame caulk LOCATION: south side	C o o r	T e x t u r e	H o m o g e n e o u s						100
13A	556011		MATERIAL: Exterior caulk on crack window frame LOCATION: south side	C o o r	T e x t u r e	H o m o g e n e o u s						100
13B	556012		MATERIAL: Exterior caulk on crack window frame LOCATION: south side	C o o r	T e x t u r e	H o m o g e n e o u s						100

Relinquished by: [Signature] Date: 4-12-17 Received by: [Signature] Date: 4-12-17
Accept: [Signature] Reject: [Signature] Analyst's Signature: [Signature] Date(s) Analyzed: 4-12-17 Temp: 26C
Rev. 08/26/14

TRC Project No. 277027		Client: Winter Street Architects		Turnaround (circle) same day 24-hr standard (5 day)																			
Samples Collected by: R. Thompson		Project Name: Memorial Park Bldg & Grounds		Contact: J. Roche																			
License # AI 031431		Project Name and Location: Needham, MA		Phone																			
Date(s) Collected: 4-12-17				Fax																			
				Email																			
Sample ID	DO NOT WRITE IN SHADED AREAS	Stereoscopic Visual		% Asbestos Fiber Present		% Non Asbestos Present																	
Field ID #	DESCRIPTION	C	%	H	M	E	S	B	P	O	Fiber Ref. Ind.	C	A	C	T	A	C	Fibrous Glass	Cellulose	Hair	Synthetic	Other	Non Fibrous
14A	MATERIAL: Exterior Caulk Asoc with over head door LOCATION: South side	TZ	LN	W	11	+	LN				15/6 1553 Z												98
556013																							
14B	MATERIAL: Exterior Caulk Asoc with over head door LOCATION: South side	TZ	LN	W	11	+	LN				15/6 1553 Z												98
556014																							
15A	MATERIAL: Textured or gypsum wall	WN	FY																				100
556015	LOCATION: 2nd floor hallway																						
15B	MATERIAL: Textured or gypsum ceiling	WN	FY																				100
556016	LOCATION: 2nd floor meeting room																						
15C	MATERIAL: Textured or gypsum ceiling	WN	FY																				100
556017	LOCATION: 2nd floor lecture room																						
15D	MATERIAL: Textured or gypsum wall	WN	FY																				100
556018	LOCATION: 2nd floor lecture room																						

Asbestos Bulk Chain of Custody

TRC Project No. 277027		Client: Winter Street Architects		Turnaround (circle) same day 24-hr standard (5 day)																					
Samples Collected by: R. Therson		Project Name: Memorial Park Bldg & Grounds		Contact: J. Rowe																					
License # AI 031431		Project Name and Location: Needham, MA		Phone: _____																					
Date(s) Collected: 4-12-17				Fax: _____																					
				Email: _____																					
Sample ID	DO NOT WRITE IN SHADED AREAS	Stereoscopic Visual		% Asbestos Fiber Present		% Non Asbestos Present																			
Field ID #	DESCRIPTION	C	A	T	H	M	E	S	B	P	O	Fiber Ref. Ind.	C	A	C	T	A	C	T	Fibrous Glass	Cellulose	Hair	Synthetic	Other	Non Fibrous
Lab ID #		% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos	% Asbestos
160A	MATERIAL: Gypsum Ceiling																								
556019	LOCATION: 2nd Floor Hall																								
110B	MATERIAL: Gypsum Ceiling																								
556020	LOCATION: 2nd floor meeting room																								
160C	MATERIAL: Gypsum Ceiling																								
556021	LOCATION: 2nd floor Legion Room																								
177A	MATERIAL: Residual Black mastic on concrete floor																								
556022	LOCATION: 2nd floor Room Storage																								
177B	MATERIAL: Residual Black mastic on concrete floor																								
556023	LOCATION: 2nd floor Room Storage																								
187A	MATERIAL: 5th floor Basis																								
556024	LOCATION: 2nd floor Kitchen																								

Page 8 of 8

Relinquished by: [Signature] Date: 7-12-17 Received by: [Signature] Date: 7-12-17

Accept ☐ Reject ☒ Comments _____ Analyst's Signature [Signature] Date(s) Analyzed: 7-18-17 Temp: 26c

Rev. 08/26/14

APPENDIX B

LEAD PAINT TESTING BY XRF ANALYSIS

Lead Testing Results by XRF
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts
April 12, 2017

<u>Location/Component</u>	<u>Substrate</u>	<u>Result (mg/cm²)</u>
South Elevation		
Door	Metal	< 0.05
Door frame	Metal	< 0.05
Overhead door frame	Wood	< 0.05
Overhead door	Metal	< 0.05
Overhead door frame	Wood	< 0.05
Overhead door	Metal	< 0.05
Railing	Metal	< 0.05
Door frame	Metal	< 0.05
Door	Metal	< 0.05
Service window frame	Metal	< 0.05
Shutter	Metal	< 0.05
East Elevation		
Wall	CMU	< 0.05
Wall	CMU	< 0.05
Window grate	Metal	< 0.05
Window grate	Metal	0.16
Window sill	Concrete	< 0.05
Window sill	Concrete	< 0.05
Stair stringer	Wood	< 0.05
Handrail	Wood	< 0.05
Baluster	Wood	< 0.05
Tread	Wood	< 0.05
Door	Metal	< 0.05
Door frame	Metal	< 0.05
Soffit	Wood	< 0.05
North Elevation		
Trim	Metal	< 0.05

Lead Testing Results by XRF
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts
April 12, 2017

<u>Location/Component</u>	<u>Substrate</u>	<u>Result (mg/cm²)</u>
West Elevation		
Window grate	Metal	0.06
Window sill	Concrete	< 0.05
Overhead door	Metal	< 0.05
Frame	Wood	< 0.05
Lintel	Metal	< 0.05
Lintel	Metal	< 0.05
Wall	CMU	< 0.05
Rear Garage		
Door frame	Wood	< 0.05
Door frame	Wood	0.05
Overhead door	Metal	< 0.05
Wall	CMU	< 0.05
Wall	CMU	< 0.05
Foundation wall	Concrete	< 0.05
Foundation wall	Concrete	< 0.05
Wall	CMU	< 0.05
Door	Metal	< 0.05
Door frame	Metal	< 0.05
Overhead door	Wood	< 0.05
Overhead door	Wood	< 0.05
Door frame	Wood	< 0.05
Door frame	Wood	0.06
Front Garage		
Wall	CMU	< 0.05
Wall	CMU	< 0.05
Wall	CMU	< 0.05
Door	Wood	< 0.05
Door	Wood	< 0.05

Lead Testing Results by XRF
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts
April 12, 2017

<u>Location/Component</u>	<u>Substrate</u>	<u>Result (mg/cm²)</u>
Door	Wood	< 0.05
Door frame	metal	< 0.05
Door frame	metal	0.11
Door frame	metal	< 0.05
Lally column	Metal	< 0.05
Lally column	Metal	< 0.05
Lally column	Metal	< 0.05
Ceiling	Gypsum	< 0.05
Ceiling	Gypsum	< 0.05
Serving Area		
Wall	Plastic	< 0.05
Wall	Plastic	< 0.05
Cabinets	Wood	< 0.05
Cabinets	Wood	< 0.05
Door	Wood	< 0.05
Door frame	Metal	0.07
Ceiling	Gypsum	< 0.05
Restroom		
Ceiling	Gypsum	< 0.05
Wall	CMU	2.0
Wall	CMU	3.5
Wall	Brick	4.2
Wall	Brick	2.5
Window sash	Metal	1.7
Door	Wood	< 0.05
Door frame	Metal	0.26
Storage Garage		
Wall	Gypsum	< 0.05
Wall	Gypsum	< 0.05

Lead Testing Results by XRF
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts
April 12, 2017

<u>Location/Component</u>	<u>Substrate</u>	<u>Result (mg/cm²)</u>
Overhead door	Metal	< 0.05
Door	Wood	< 0.05
Door casing	Wood	< 0.05
Second Floor		
Ceiling	Gypsum	< 0.05
Ceiling	Gypsum	< 0.05
Ceiling	Gypsum	< 0.05
Ceiling	Gypsum	< 0.05
Ceiling	Gypsum	< 0.05
Wall	Gypsum	< 0.05
Wall	Gypsum	< 0.05
Wall	Gypsum	< 0.05
Wall	Gypsum	< 0.05
Wall	Gypsum	< 0.05
Door	Wood	< 0.05
Door	Wood	< 0.05
Door	Wood	< 0.05
Door frame	Wood	< 0.05
Door frame	Wood	< 0.05
Door frame	Wood	< 0.05
Baseboard	Wood	< 0.05
Baseboard	Wood	< 0.05
Baseboard	Wood	< 0.05
Floor	Wood	< 0.05
Floor	Wood	< 0.05
Floor	Concrete	< 0.05
Floor	Concrete	< 0.05
Window sash	Vinyl	< 0.05
Window sash	Vinyl	< 0.05

Lead Testing Results by XRF
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts
April 12, 2017

<u>Location/Component</u>	<u>Substrate</u>	<u>Result (mg/cm²)</u>
Window sash	Vinyl	< 0.05
Window sill	Wood	< 0.05
Window sill	Wood	< 0.05
Window sill	Wood	< 0.05
Cabinets/kitchen	Wood	< 0.05
Cabinets/kitchen	Wood	< 0.05
Cabinets/kitchen	Wood	< 0.05
Cabinets/kitchen	Wood	< 0.05
Second Floor, Bathroom		
Wall tile	Ceramic	< 0.05
Wall tile	Ceramic	< 0.05
Wall tile	Ceramic	< 0.05
Wall tile	Ceramic	< 0.05
Floor tile	Ceramic	< 0.05
Floor tile	Ceramic	< 0.05
Floor tile	Ceramic	< 0.05
Floor tile	Ceramic	< 0.05
Door	Metal	< 0.05
Door frame	Metal	< 0.05
Handrail	Wood	< 0.05
Handrail	Wood	< 0.05

- <0.05 = less than the limit of quantification of the XRF.
- mg/cm² = milligrams of lead per square centimeter of sampled surface area.

APPENDIX C

INVENTORY OF OBSERVED POTENTIALLY HAZARDOUS/REGULATED BUILDING MATERIALS

Inventory of Observed Potentially Hazardous Equipment and Stored Items
Town of Needham
Memorial Park Building and Grounds Feasibility Study
92 Rosemary Street
Needham, Massachusetts
April 12, 2017

Item	Size	Approximate Quantity
Fluorescent lamps	4' x 2	18 each (18 PCB ballasts)
	4' x 4	4 each (4 PCB ballasts)
	1' x 1	1 each
	8' x 2	8 each (8 PCB ballasts)
CFLs	N/A	46 each
Stored lamps	8'	4 each
Emergency light	N/A	2 each
Gas meter	N/A	1 each
Water meter	N/A	1 each
Mercury thermostat	N/A	1 each
Ceiling mounted heater, gas fueled	N/A	2 each
Electric hot water heater	N/A	1 each
Freezer (chest)	N/A	2 each
Freezer (upright)	N/A	1 each
Refrigerator	N/A	4 each
Microwave oven	N/A	1 each
Alarm panels	N/A	2 each
Window air conditioning unit	N/A	1 each
Exterior air conditioning unit	N/A	1 each
Gas hot air furnace	N/A	2 each
Electric cook stove	N/A	1 each
Exit signs	N/A	2 each
Smoke detector	N/A	1 each

Geotechnical Memorandum

(next page)



Memorandum

Date: May 1, 2017

Recipient: Winter Street Architects, Inc.
27 Congress Street; Suite 201
Salem, MA 01970

Attention: Mr. Mark Meche, AIA

Sender: Harry J. Berlis; Chris M. Erikson, P.E.

Project: Needham Memorial Field House; Needham, Massachusetts

Project No: 6382.2.00

Subject: Foundation Design Recommendations

This memorandum provides our geotechnical-related foundation design recommendations associated with the proposed construction of the new Needham Memorial Field House building located in Needham, Massachusetts.

The recommendations provided herein should be considered preliminary and subject to our on-site observation during the construction phase of the project and confirmation the anticipated soil conditions as described herein.

Existing Site Conditions

The existing field house building consist of a two-story building which occupies an approximate 6,100 square-foot plan area with no below grade space. In general, the existing building is bounded by residential property and Rosemary Street to the north, a parking lot and Highland Avenue to the west, the Needham High School synthetic football field to the south and the Needham High School campus to the east. The ground surface across the project site slopes downward from the High School Campus to the east to Highland Avenue to the west. The ground surface surrounding the existing building footprint consist of an asphalt paved area to the west with landscaped areas along the north, east and south sides of the building.

Proposed Construction

The propose construction is understood to consist of the demolition of the existing field house building followed by the construction of a new 2-story building. The new building will occupy an approximate 6,000 square-foot plan area with no below grade space and will be located in the same general area as the existing building.



Memorandum

Subsurface Conditions

Based on the available information provided to McPhail Associates, LLC, (McPhail) consisting of the logs of two test pit excavations performed to the south of the existing field house building and from our foundation design and construction experience on the addition to the Needham Public Library located about 600 to 700 feet to the west of the project site, the existing ground surface is anticipated to underlain by a granular fill deposit that extends to depths ranging from 3 to 5 feet below the existing ground surface. The fill deposit is anticipated to be underlain by a natural glacial outwash soil deposit. Groundwater is anticipated to be located from 5 to 10 feet below the existing ground surface.

Foundation Design Recommendations

Based on the above, new foundations should consist of conventional spread footings which bear directly on the glacial outwash deposit or on structural fill which is placed directly over the natural glacial outwash deposit utilizing an allowable bearing pressure of 2 tons per square-foot.

The new ground floor slab should be designed as a slab-on-grade underlain by a polyethylene vapor barrier with properly sealed joints and edges that is installed over a minimum 6-inch thickness of compacted gravel fill. The gravel fill should consist of a well-graded sand and gravel containing less than 10 percent passing the No. 200 sieve which is obtained from an off-site source.

All perimeter foundations and interior foundations located adjacent to unheated areas should be provided with a minimum 4-foot thickness of soil cover as frost protection. Interior foundations in heated areas should be located such that the top of the foundation concrete is a minimum of 6 inches below the underside of the lowest level slab.

All foundations should generally be located such that they are below a theoretical line drawn upward and outward at 2 to 1 (horizontal to vertical) from the bottom exterior edge of all adjacent existing or proposed footings, structures and utilities.

Where proposed footings are to be supported on structural fill, the lateral limits of the excavation should extend beyond the outside edge of the footing for a horizontal distance equal to the depth from the bottom of the proposed footing to the surface of the undisturbed outwash deposit, plus two feet in all plan directions.

All structural fill placed within the footprint of the proposed building should be placed in lifts having a compacted thickness of 6 inches and be compacted to a minimum of 95 percent of its maximum modified Proctor dry density. The placement and compaction of structural fill for support of new foundations and ground floor slab should be monitored by a registered design professional or his designated representative in accordance with the provisions of the Massachusetts State Building Code.



Memorandum

Depressions in the lowest level slab, such as elevator pits, extending below the ground floor slab should be provided with properly tied continuous water stops in all construction joints and cementitious waterproofing on properly prepared interior surfaces.

Below-grade foundation walls receiving lateral support at the top and bottom (i.e. restrained walls) should be designed for a lateral earth pressure corresponding to an equivalent fluid density of 60 pounds per cubic foot (pcf). Similarly, cantilevered site retaining walls should be designed utilizing a lateral earth pressure corresponding to an equivalent fluid density of 40 pcf. To these values must be added the pressures attributable to earthquake forces per Section 1610.2 of the Code and any applicable surcharges from adjacent structures. The cantilevered walls should also be backfilled with free-draining gravel fill and be provided with a drain line or weep holes to preclude hydrostatic pressures from acting on the walls.

Lateral forces can be considered to be transmitted from the structure to the soil by passive pressure against the foundation walls utilizing an equivalent fluid density of 120 pounds per cubic-foot providing that the walls are designed to resist these pressures. Lateral force can also be considered to be transmitted from the footing to the soil by friction on the base of footings using a coefficient of 0.40, to which a safety factor of 1.5 should be applied.

For the purposes of determining parameters for structural seismic design, this site is considered to be a Site Class D as defined in Section 1613.5 of the Code. The bearing strata on the proposed site is not considered to be subject to liquefaction during an earthquake based on the criterion of Section 1806.4 of the Code.

Foundation Construction Considerations

The primary foundation construction considerations include preparation of the foundation bearing surfaces, removal of existing foundations, re-use of excavated on-site soil, construction dewatering, and off-site disposal of excess excavated soil.

Preparation of the footing bearing surfaces should include the removal of fill from the footing locations for the placement of structural fill. To minimize the disturbance of the outwash deposit, it is recommended that the final excavation to expose the surface of the bearing stratum at footing locations be performed utilizing an excavator that has a smooth-edged "toothless" bucket. All footing bearing surfaces should be covered with a minimum 4-inch layer of compacted $\frac{3}{4}$ -inch crushed stone to protect the bearings surfaces during subsequent forming activities.

All existing foundation should be removed where they interfere with new construction. Where the existing foundations do not interfere with new construction they should be removed to at least two feet below the proposed finish ground surface.

It is anticipated that excavated fill and natural glacial outwash soil may be re-used on-site as structural fill for support of footings and the ground floor slab and as backfill around footings and as ordinary fill outside the building footprint provided that the fill and glacial outwash soil is maintained in a dry condition and can be properly compacted. Therefore, it is recommended



Memorandum

that stockpiles of excavated soil intended for reuse be protected against increases in moisture content by securely covering the stockpiles at all times when they are not in use. The placement and compaction of fill should be completed during relatively dry and non-freezing conditions. If, due to any of the above conditions, the excavated material is unsuitable for reuse, an off-site fill gravel fill should be used.

Groundwater at the site is anticipated to be located about 5 to 10-feet below the existing ground surface. Should groundwater be encountered it is anticipated that temporary construction dewatering could be accomplished by conventional sumping methods in conjunction with on-site recharge.

Should off-site disposal of excess excavated Regulated soil from the site become necessary, chemical analysis of the excess soil is recommended in order to conform with the regulations and policies of the Commonwealth of Massachusetts Department of Environmental Protection (DEP). The requirement to perform chemical analysis in preparation for off-site disposal would not be present if the excess excavated material remains on site.

Final Comments

McPhail has been retained to provide design assistance during the final design phase of this project. The purpose of this involvement would be to review the structural foundation drawings and foundation notes for conformance with the recommendations herein.

McPhail has also been retained to be present during the earthwork phase of the project to, observe the preparation of the foundation bearing surfaces for conformance with the recommendations provided herein.

This report has been prepared on behalf of and for the exclusive use of Winter Street Architects, Inc. for specific application to the proposed construction of the new Needham Memorial Field House located in Needham, Massachusetts in accordance with generally accepted soil and geotechnical engineering practices. No other warranty, expressed or implied, is made.

In the event that any changes in nature or design of the proposed construction are planned, the conclusions and recommendations contained in this memorandum should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by McPhail Associates, LLC.

The analyses and recommendations presented in this report are based upon the data obtained from the subsurface exploration performed at the approximate locations of explorations referenced herein. If variations in the nature and extent of subsurface conditions between the widely spaced explorations become evident during the course of construction, it will be necessary for a re-evaluation of the recommendations of this report to be made after performing on-site observations during the construction period and noting the characteristics of any variations.



Memorandum

We trust that the above is sufficient for your present requirements. Should you have any questions, please call us.

HJB/cme

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