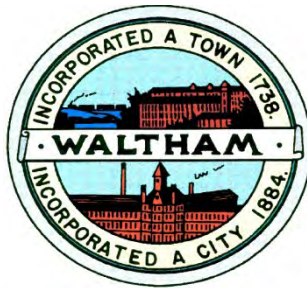


The City of Waltham



**Invites
Interested Parties
To propose the best offer and or bid
For the service or product herewith described:**

MacArthur School Playground Construction

The bid opening will be held: 10 AM Wednesday October 18, 2017

Pre-Bid Meeting: 10 AM Tuesday October 3, 2017

(Meet on site at 494 Lincoln Street, Waltham, MA)

Last Day For written Questions: 12 Noon Thursday October 5, 2017

(Via e-mail ONLY at jpedulla@city.waltham.ma.us)

SECTION 00 00 01

TABLE OF CONTENTS

DIVISION 0 – PROCUREMENT AND CONTRACTING

00 00 01 - Table of Contents
00 00 15 – List of Drawings
00 00 40 - Instructions to Bidders
00 00 50 - Invitation to Bid
00 00 60 – Agreement
00 10 10 – Summary of Work
00 10 25 – Measurements and Payments
00 10 28 – Change Order Procedure
00 10 40 – Control of Work
00 12 00 – Project Meetings
00 14 00 – Quality Control
00 15 00 – Temporary Facilities
00 16 00 – Construction Layout
00 17 00 – Project Closeout
00 18 00 – General Conditions
00 21 00 - Allowances
00 41 12 - Qualifications Data
00 41 13 – Bid Form
00 43 23 – Alternates
00 43 43 – Prevailing Wage Rates
00 60 10 - Performance Bond
00 60 20 - Payment Bond

DIVISION 1 - GENERAL REQUIREMENTS

00 33 00 – Submittals
01 32 33 – Photographic Documentation
01 50 00 - Affidavit of OSHA Compliance
01 51 11 – Progress Schedule
01 60 00 - Product Requirements
01 77 00 - Contract Closeout
01 78 39 – Project Record Documents
01 91 15 - General Testing Requirements
00 91 16 - Temporary Facilities and Controls

DIVISION 3 - CONCRETE

03 30 00 - Cast-In-Place Concrete

DIVISION 31- SITE WORK

31 10 00 - Site Clearing
31 20 00 - Earth Moving
31 23 21 - Sedimentation and Erosion Control
32 12 10 - Site Improvements
32 12 16 - Paving and Surfacing
32 92 00 – Lawns

DRAWINGS

PLAYGROUND EQUIPMENT LIST

END OF TABLE OF CONTENTS

DIVISION 00

Procurement and Contracting

SECTION 00 01 15

LIST OF DRAWINGS

PART 1 GENERAL

1.01 DRAWING LIST

A. List of Drawings for MacARTHUR SCHOOL PLAYGROUND

L-1	EXISTING CONDITIONS PLAN
L-2	SITE PREPARATION & DEMOLITION PLAN
L-3	LAYOUT & MATERIALS PLAN
L-4	GRADING & DRAINAGE PLAN
L-5	PLAYGROUND ENLARGEMENT AND INSTALLATION DETAILS

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 00 00 40

INSTRUCTIONS TO BIDDERS

- A. **FOREWORD:** The attention of all bidders is called to the provisions of Sections 26 - 29, inclusive, of Chapter 149 of the General Laws, as amended.
- B. **GENERAL:** The City of Waltham, Massachusetts, the Awarding Authority invites proposals for the Work described in the Contract Documents attached hereto. Before submitting his/her proposal each bidder shall visit the site, examine its conditions, thoroughly acquaint himself/herself with its obstacles and advantages for performing the Work, and compare the Contract Documents with the conditions found. All proposals submitted shall be subject to all applicable provisions of law, including, without limiting the generality of the foregoing, Chapter 149 of the General Laws, as amended.
- C. **QUESTIONS:** All questions as to the interpretation of the Contract Documents shall be submitted in writing to Jpedulla@city.waltham.ma.us . No questions will be answered unless received at least seven days, Saturdays, Sundays and legal holidays excluded prior to the expiration of the time set for filing Bids.
- D. **BID FORM:** The Bid Form to be used is included in the Project Manual.
- E. **CONTRACT DOCUMENTS:** The Awarding Authority will, upon deposit of the amount per set as designated in the Invitation to Bid for the return of same in good condition, furnish one (1) complete set of Contract Documents to each Bidder requesting same. No partial sets of Contract Documents will be issued.
- F. **REJECTION OF CERTAIN GENERAL BIDS:** The law requires that every bid, which are not accompanied by the prescribed bid deposit or which is not on a form furnished by the Landscape Architect or Awarding Authority or otherwise does not conform with Sections 26 to 29 inclusive, of Chapter 149 of the General Laws, as amended, or which is on a form not completely filled in or which is incomplete, conditional, or obscure, or which contains any addition not called for, shall be rejected by the Awarding Authority.
- G. **FURTHER RIGHT TO REJECT BIDS:** The Awarding Authority further reserves the right to reject any or all bids if it be in the public interest so
- H. **BIDS:** Bids must be submitted on the FORM FOR GENERAL BID, a sample of which is bound into the Contract Documents as Section 00 41 13 and may be removed and used for additional copies. The Bid shall be completely filled in, signed, enclosed in an envelope, sealed and plainly marked with the Project Name. The bid accompanied by a bid deposit in the amount of five percent (5%) of the bid price shall be filed with the Awarding Authority at the place designated in the Invitation to Bid. The bid shall be filed before the time designated in the Invitation to Bid for the opening of Bids.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- I. Bids shall be for the complete Work as specified and the Contractor shall be selected on the basis of such Bids.
4. If the bid is mailed, the Bidders shall enclose their sealed bid in an outer envelope and address as follows:

FROM: General Bidder's Name and Business Address

TO: Office of the Purchasing Agent
Purchasing Department
City Hall, 610 Main Street
Waltham, MA 02452

- I. **REQUIREMENTS FOR FOREIGN CORPORATIONS:** The attention of all bidders is called to the provisions of General Laws Chapter 30, Section 39L, which provides that the Awarding Authority may not enter into a contract for construction Work furnishing labor and materials for a part of any such Work a foreign corporation which has not complied with the requirements of Sections 3 and 5 of Chapter 181 of the General Laws. The term "foreign corporation" means a corporation not incorporated under the laws of the Commonwealth of Massachusetts.
- J. **SALES TAX:** Purchases of building materials and supplies to be used on this project are entitled to exemption from the Sales and Use Tax if the conditions imposed by Paragraph 6 (f) of Section I of Chapter I4 of the Acts of 1966 are otherwise satisfied. Bidders are instructed to submit proposals on the basis that no Massachusetts Sales and Use Tax will be imposed on purchases of building materials and supplies used in connection with this Project.
- K. **CONSTRUCTION TIME:** The Agreement will include a stipulation that the Work be completed in a period of **ninety (90) days** following receipt of the Owner's Notice to Proceed. If the Contractor fails to meet the construction deadline, the Contractor is responsible for all Owner and Landscape Architect costs associated with the deadline not being met. The Landscape Architect is to perform two on-site punch lists. If additional punch lists are needed, the Contractor shall be responsible for all Owner and Landscape Architect costs associated with the additional punch list visits.
- L. **LIQUIDATED DAMAGES:** The Contractor shall pay to the City of Waltham as liquidated damages the sum of five hundred dollars (\$500) per day for each calendar each day beyond the completion date for the project under the Contract.
- L. **BID CHECK LIST:** Bids submitted should include the following documents: **Bid Form, Bid Deposit or Bond, and Qualifications Data. Compliance section** A bidder may withdraw his bid, either personally or by written request, at any time prior to the scheduled time for opening bids. No bidder may withdraw his bid for a period of thirty calendar days after the date set for the opening thereof, and bids shall be subject to acceptance by the Owner during this period

- M. **WITHDRAWAL OF BIDS:** A bidder may withdraw his bid, either personally or by written request, at any time prior to the scheduled time for opening bids. No bidder may withdraw his bid for a period of thirty calendar days after the date set for the opening thereof, and bids shall be subject to acceptance by the Owner during this period.

N. **EXECUTION OF CONTRACT**

The form of Contract which the successful bidder will be required to execute is included in the Project Manual.

The bidder to whom the Contract is awarded shall, within fifteen calendar days after notice of award and receipt of Agreement forms from the Owner, sign and deliver required copies to the Owner.

At or prior to delivery of the signed Agreement, the bidder to whom the Contract is awarded shall deliver to the Owner those Certificates of Insurance required by the Contract Documents and such Labor and Materials Payment Bonds and Performance Bond as are required by the Owner.

Bonds and Certificates of Insurance shall be approved by the Owner before the successful bidder may proceed with the Work. Failure or refusal to provide Bonds or Certificates of Insurance in a form satisfactory to the Owner shall subject the successful bidder to loss of time from the allowable construction period equal to the time of delay in furnishing the required material.

- O. **METHOD OF AWARD:** The contract will be awarded to the lowest responsible and eligible general bidder on the basis of the proposed contract price if such exists, and if the Awarding Authority, in its sole discretion, decides to award on the basis of such alternate. Special attention is called to the provisions of the General Laws, Chapter 149, Sections 44A to 44H defining the term "lowest responsible and eligible bidder" and giving the Awarding Authority the right to require essential information in regard to qualifications.

- P. **TAX CERTIFICATION:** The successful Bidder will be required to submit a tax certificate as required by chapter 62C, Section 49A of the Massachusetts General Laws, as follows:

CERTIFICATE UNDER M.G.L. c.62C, S49A

I certify under the pains and penalties of perjury that _____
has/have complied with all laws of the Commonwealth of Massachusetts relating to taxes.

Employer Identification Number

Name

Date

Title of Business Officer (if Applicable)

END OF INSTRUCTIONS TO BIDDERS

Section 00 00 50

Invitation to Bid

The City of Waltham

Purchasing Department

REQUEST FOR QUOTATION (RFQ)

Under the rules of M.G.L. Chapter 30, 39M The Purchasing Department of the City of Waltham hereby requests sealed bids for:

MacArthur School Playground Construction

Price Proposals will be received at the office of the Purchasing Agent, City Hall, 610 Main Street, Waltham MA 02452, until

Thursday March 24, 2016 at 10 AM

At which time and place the bids will be publicly opened and read.

Specifications and information available at the Purchasing Agent's Office or in the Waltham Purchasing Department web site at www.city.waltham.ma.us/open-bids

BIDS MUST BE SIGNED AND ENCLOSED IN A SEALED ENVELOPE AND MARKED:

BID FOR: MacArthur School Playground Construction

If the Bidder is a corporation, state your correct corporate name and State of incorporation. If Bidder is a partnership, state names and addresses of partners. If Bidder is a trust or other legal entity, state correct names and addresses of trustees or names and address of those legally authorized to bid and enter into contracts.

EXCEPTION OR ALTERNATES TO SPECIFICATIONS, TERMS OF SALE, AND DISCOUNTS AVAILABLE, MUST BE INCLUDED IN THE BID PRIOR TO OPENING DATE.

Section 00 00 60
AGREEMENT

CITY OF WALTHAM

ARTICLE 1. This agreement, made this _____ day of _____, 2017 by and between the CITY OF WALTHAM, party of the first part, hereinafter called the CITY, by its MAYOR, and

hereinafter called the CONTRACTOR.

ARTICLE 2. Witnesseth, that the parties to this agreement, each in consideration of the agreement on the part of the others herein contained, do hereby agree, the CITY OF WALTHAM for itself, and said contractor for his heirs, executors, administrators and assigns as follows:

To furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished (except as otherwise specified) and deliver in and about the project and to do and perform all work in strict conformity with the provisions of this Contract and of the Notice to Bidders, bid, Project Manual, and Drawings hereto annexed. The said Notice to Bidders, bid, Project Manual, and Drawings are hereby made a part of this contract as fully and to the same effect as if the same had been set forth at length and incorporated in the contracts.

ARTICLE 3. In consideration of the foregoing premises the CITY agrees to pay and the CONTRACTOR agrees to receive as full compensation for everything furnished and done by the CONTRACTOR under this contract, including all work required by not included in the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such prices as are set forth in the accompanying bid.

This Agreement entered into as of the day and year first written above.

CITY OF WALTHAM, MASSACHUSETTS

FOR THE CITY

Jeannette A. McCarthy, MAYOR,
City of Waltham
Date: _____

John B. Cervone, City Solicitor
Date: _____
APPROVED AS TO FORM ONLY

Drew Echelson, School Superintendent
Date: _____

Joseph Pedulla, Purchasing Agent
Date: _____

Paul Centofanti, Auditor
Date: _____

FOR THE COMPANY

CONTRACTOR (Signature),
Date: _____

Company

Address

SECTION 001010

SUMMARY OF WORK

PART 1- GENERAL:

1.01 PROJECT DESCRIPTION

The project is the improvements to MacArthur School Playground as described in the Contract Documents. The work of this Contract is located at the MacArthur Elementary School, 494 Lincoln Street, Waltham, Massachusetts

1.011 SUMMARY

A. **In general and without limitation, the work to be done under this Contract includes clearing and demolition, erosion control, earthwork, bituminous concrete paving for walks, overlay bituminous pavement , pavement markings, rubberized safety play surface, fencing, site improvements, play equipment, benches, basketball goals, loaming and seeding. The work to be performed shall include the work shown on the Drawings and Details, as specified herein, and as indicated below.**

B. The Contractor shall submit shop drawings, data and samples and place his/her orders sufficiently early to permit consideration and approval by the Landscape Architect before materials are necessary for incorporation into the Work. Any delay resulting from the Contractor's failure to do so shall not be used as a basis of a claim against the Owner.

1.02 CONTRACT TIME

- A. The work of this contract shall be completed within **90 days** from the date of the Notice to Proceed
- B. The Contractor shall submit shop drawings, data and samples or place his/her order sufficiently early to permit consideration and approval by the Landscape Architect before materials are necessary for incorporation into the Work. Any delay resulting from the Contractor's failure to do so shall not be used as a basis of a claim against the Owner.

1.03 CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement, and include these Specifications and the Drawings, as prepared for City of Waltham, by Weston & Sampson Engineers, Inc.

1.04 INSPECTION OF THE SITE

It is a contract requirement of the Contractor that his/her subcontractor shall have thoroughly inspected the site during the bidding period. By submitting a bid they confirm that they are thoroughly familiar with the site and all existing conditions which impact and affect their work. Requests for extra compensation will not be considered for any work which could have been foreseen by a visual inspection of the site.

1.05 CONTRACTOR'S USE OF THE SITE

- A. The contractor will have full access to the site shown within the Contract Limit of Work Line.
 - 1. The Contractor, his/her Subcontractors, and their employees may park on the site inside the Contract Limit of Work Line, given that no such on-site parking interferes with the site work.
 - 2. The Contractor shall furnish his/her own toilet facilities on-site.
- B. The Contractor shall take all precautions necessary to protect all abutting properties during construction. Any and all damage caused by construction operations shall be repaired.
 - 1. The project site shall be kept clean and free from accumulation of waste material and debris.
 - 2. The Contractor, his/her Subcontractors, and their employees shall be respectful and courteous of the neighborhood while working on site.

1.06 ENCLOSURES

Provide at the earliest practical time temporary enclosure of materials, work in progress and completed portions of the work to provide protection to the work and the employees.

1.07 SAFETY AND SECURITY

- A. The Contractor shall be responsible for the safety and security of the site within the Contract Limit of Work Line and for the safety of all persons who enter within the Contract Limit of Work Line.
- B. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions & programs in connection with the work. He/she shall promulgate safety regulations and shall notify the Owner of particular hazards.
- C. The Contractor shall erect and maintain, as required by existing conditions and progress of work, all reasonable safeguards for safety and security. This includes the construction of barriers and the posting of danger signs and other warnings against hazards. By these and other necessary methods the Contractor shall stop unauthorized entry within the Contract Limit of Work Line.
- D. The Contractor shall cooperate with and maintain a close liaison with the Police Department and Fire Department, and he/she shall abide by safety or security related requests from any of these authorities.

1.08 WORK TO BE DONE

The work of this Contract includes construction of Improvements as indicated on the construction plans located within the confines of the MacArthur Playground

1.9 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall assume full responsibility for security of all his and his subcontractors' materials and equipment stored on the site. Contractor shall furnish his/her own toilet facilities on-site.
- B. Contractor shall limit use of premises to areas within the Contract work area. Do not disturb portions of the Project beyond areas in which the Work shall be conducted.
- C. If directed by the Owner, Contractor shall move stored items which interfere with operations of Owner.
- D. If necessary, Contractor shall obtain and pay for use of additional storage or work areas if needed to perform the Work.
- E. The Contractor shall take all precautions necessary to protect the abutting properties during construction. Any and all damage caused by construction operations shall be repaired.
- F. The project site shall be kept clean and free from accumulation of waste material and debris.
- G. The Contractor, his/her Subcontractors, and their employees shall be respectful and courteous of the neighborhood while working on site. The Contractor shall be responsible for providing workers adequate parking.

1.91 UNDERGROUND UTILITIES

- A. The underground utilities shown on the Drawings have been located by field survey and document records. All utilities interfered with or damaged shall be properly restored, at the expense of the Contractor, to the satisfaction of the Owner and the utility authority.

1.92 CITY OF WALTHAM NOISE ORDINANCE

- A. The Contractor is advised that the City of Waltham has a Noise Ordinance, Section 10-6, which has the authority to regulate the noise generating activities of this Contract. In general the Ordinance prohibits excessive noise created by construction, building, remodeling, excavating, land clearing, or by any of the equipment associated with such work. The Police Department considers the startup or idle running of truck engines and/or equipment prior to 7:00 AM a violation.

1.93 ENCLOSURES

- A. Provide at the earliest practical time temporary enclosure of materials, work in progress and completed portions of the work to provide protection to the work and the employees.

1.94 SAFETY AND SECURITY

- A. The Contractor shall be responsible for the safety and security of those areas

of the park site where construction is occurring and for the safety of all persons who enter within the Contract Limit Line.

1. The playground project shall be closed to the public throughout the duration of construction activity. Gates or other temporary openings in the fencing used to allow construction personnel or equipment access shall be maintained closed at all times to prevent access by the public.
 2. The Contractor shall provide signage, in locations as indicated on the Drawings and as described 01500-Temporary Controls & Facilities, indicating the temporary closure of the park.
 3. Safety measures shall include all those actions deemed necessary by the Contractor to ensure the safety of park users. These shall include but are not necessarily limited to:
 - (a) Temporary fencing at perimeter of the park as indicated on the Drawings.
 - (b) Filling in of all excavations at the end of the work day.
- B. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions & programs in connection with the work. He/she shall promulgate safety regulations and shall notify the Owner of particular hazards.
- C. The Contractor shall erect and maintain, as required by existing conditions and progress of work, all reasonable safeguards for safety and security. This includes the construction of barriers and the posting of danger signs and other warnings against hazards. By these and other necessary methods the Contractor shall stop unauthorized entry within the Contract Limit of Work Line, which for this project is defined by the temporary construction fencing shown on the Drawings.
- D. The Contractor is responsible for provision of additional safeguards not specifically required by the Drawings if these are necessary to protect health and safety.
- E. The Contractor shall cooperate with and maintain a close liaison with the School Department, Police Department and Fire Department, and he/she shall abide by safety or security related requests from any of these authorities.

--- END OF SECTION ---

SECTION 001025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL:

1.01 BASE BID

A. Measurement

1. Measurement for payment of the MacArthur Playground Improvements shall be on a lump-sum basis.

B. Payment

1. Payment of the lump-sum price under the Base Bid of the Proposal shall fully compensate the Contractor for furnishing all labor, materials, equipment and incidentals required for work described in SECTION 01010, SUMMARY OF WORK of these Specifications.
2. Contractor shall submit substantiated estimates for payment in an approved form at monthly intervals or when mutually agreed by Contractor and Landscape Architect/Engineer.

1.02 ADDITIONAL WORK

- A. Increases or decreases in the quantities of certain classes of work, when ordered or approved in writing by the Landscape Architect.
- B. Additional Work, if any shall be performed at a mutually satisfactory price agreed upon between the Landscape Architect/Engineer and Contractor.

- - - END OF SECTION - - -

SECTION 001028

CHANGE ORDER PROCEDURE

PART 1 - GENERAL:

1.01 GENERAL PROVISIONS

Attention is directed to the General Conditions of the Contract, all Divisions of the specifications, and the Contract Drawings, all of which apply to work of this section.

1.02 SCOPE OF WORK

Work included: Make such changes in the Work, in the Contract Sum, in the Contract Time of Completion, or any combination thereof, as are described in written Change Orders signed by the Owner and issued after execution of the Contract, in accordance with the provisions of this Section.

1.03 QUALITY ASSURANCE

Include within the Contractor's quality assurance program such measures as are needed to assure familiarity of the Contractor's staff and employees with these procedures for processing Change Order data.

1.04 SUBMITTALS

- A. Make submittals directly to the Landscape Architect at the address shown on the Project Manual.
- B. Submit the number of copies of required items requested stated in SECTION 01300, SUBMITTALS.

1.05 PRODUCT HANDLING

- A. Maintain a "Register of Bulletins and Change Orders" at the job Site, accurately reflecting current status of all pertinent data.
- B. Make the Register available to the Landscape Architect/Engineer for review at his/her request.

1.06 PROCESSING CHANGES INITIATED BY THE OWNER

- A. Should the City contemplate making a change in the Work or a change in the Contract Time of Completion, the Landscape Architect will issue a "Bulletin" to the Contractor.
 - 1. Bulletins will be dated and will be numbered in sequence.
 - 2. The Bulletin will describe the contemplated change, and will carry one of the following instructions to the Contractor:

- a. Make the described change in the Work at no change in the Contract Sum and no change in the Contract Time of Completion.
 - b. Make the described change in the Work, credit or cost for which will be determined in accordance with pertinent paragraphs of the General Conditions.
 - c. Promptly advise the Landscape Architect as to credit or cost proposed for the described change. This is not an authorization to proceed with the change.
- B. If the Contractor has been directed by the Landscape Architect to make the described change in the Work at no change in the Contract Sum and no change in the Contract Time of Completion, but the Contractor wishes to make a claim for one or both of such changes, the Contractor shall proceed with the change and shall notify the Landscape Architect.
- C. If the Contractor has been directed by the Landscape Architect to make the described change subject to later determination of cost or credit, the Contractor shall:
 - 1. Take such measures as needed to make the change.
 - 2. Consult with the Landscape Architect and reach agreement on the most appropriate method for determining credit or cost for the change.
- D. If the Contractor has been directed by the Landscape Architect to promptly advise him as to credit or cost proposed for the described change, the Contractor shall:
 - 1. Analyze the described change and its impact on costs and time.
 - 2. Secure the required information and forward it to the Landscape Architect for review.
 - 3. Meet with the Landscape Architect as required to explain costs and, when appropriate, determine other acceptable ways to achieve the desired objective.
 - 4. Alert pertinent personnel and subcontractors as to the impending change and, to the maximum extent possible, avoid such work as would increase the Owner's cost for making the change, advising the Landscape Architect in writing when such avoidance no longer is practicable.

1.07 PROCESSING CHANGES INITIATED BY THE CONTRACTOR

- A. Should the Contractor discover a discrepancy among the Contract Documents, a concealed condition, or other cause for suggesting a change in the Work, a change in

001028-2 CHANGE ORDER PROCEDURE

the Contract Sum, or a change in the Contract Time of Completion, he shall notify the Landscape Architect.

- B. Upon agreement by the Landscape Architect that there is reasonable cause to consider the Contractor's proposed change, the Landscape Architect will issue a Bulletin in accordance with the provisions described in Article 1.05 above.

1.08 PROCESSING BULLETINS

- A. Contractor shall make written reply to the Landscape Architect in response to each Bulletin.
 - 1. State proposed change in the Contract Sum, if any.
 - 2. State proposed change in the Contract Time of Completion, if any.
 - 3. Clearly describe other changes in the Work required by the proposed change, or desirable therewith, if any.
 - 4. Include full backup data such as subcontractor's letter of bid or similar information.
 - 5. Submit this response in single copy.
- B. When cost or credit for the change has been agreed upon by the Owner and the Contractor, or the Owner and Landscape Architect have directed that cost or credit be determined in accordance with the Contract, the Landscape Architect will issue a "Change Order" to the Contractor.

1.09 PROCESSING CHANGE ORDERS

- A. Change Orders will be dated and will be numbered in sequence.
- B. The Change Order will describe the change or changes, will refer to the Bulletin or Bulletins involved, and will be signed by the Owner and the Landscape Architect.
- C. The Landscape Architect will issue four copies of each Change Order to the Contractor.
 - 1. The Contractor promptly shall sign all four copies and return three copies to the Landscape Architect.
- D. Should the Contractor disagree with the stipulated change in Contract Sum or change in Contract Time of Completion, or both:
 - 1. The Contractor promptly shall return three copies of the Change Order, unsigned by him, to the Landscape Architect with a letter signed by the Contractor and stating the reason or reasons for the Contractor's disagreement.

2. The Contractor's disagreement with the Change Order shall not in any way relieve the Contractor of his/her responsibility to proceed with the change as ordered and to seek settlement of the dispute under pertinent provisions of the Contract Documents.

1.10 CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

1.11 BID OPENING INCLEMENT WEATHER

If, at the time of the originally scheduled bid opening, City Hall is closed to inclement weather or another unforeseeable event, the bid opening will be extended until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

1.12 CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

- - - END OF SECTION - - -

SECTION 001040

CONTROL OF WORK

PART 1 - GENERAL:

1.01 GENERAL PROVISIONS

Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.

1.02 PLANT

The Contractor shall furnish plant and equipment which will be efficient, appropriate, and of sufficient quantity to secure a satisfactory quality of work and a rate of progress which will insure the completion of the Work within the time stipulated in the Contract Documents. If at any time such plant appears to the Owner to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character, or increase the plant and equipment, and the Contractor shall conform to such order. Failure of the Owner to give such order shall in no way relieve the Contractor of his obligations to secure the quality of work and rate of progress required. In addition, the Contractor shall maintain his equipment, including mufflers, oil seals or gaskets, and air pollution control devices, in proper working order.

1.03 PROJECT MANAGEMENT

- A. The Work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient labor and equipment to complete all the necessary work requirements within a minimum period of time and as stated in the Contract Documents.
- B. Prior to the start of any work, the Contractor shall submit a Progress Schedule in a bar chart form at the preconstruction meeting to the Landscape Architect for completing the Work.
- C. The Contractor is fully responsible for the security and safety of partially completed work until the Project is finally accepted by the Owner and the Landscape Architect/Engineer.
- D. Hours of work for construction activities are limited to 7:00 AM to 4:00 PM Monday through Friday. Any changes to the work schedule shall be authorized by the Landscape Architect/Engineer.
- E. All work areas shall be secured, and materials and equipment shall be removed at the end of each work day.

- F. The Contractor shall retain on the Project during its progress, a competent full-time representative. This representative shall not be changed except with the consent of the Owner and Landscape Architect/Engineer. The representative shall be in full charge of the Work and all instructions given to him shall be binding.

1.04 SITE INVESTIGATION OF EXISTING CONDITIONS

- A. The Contractor acknowledges that he/she has satisfied him/herself as to the conditions existing at the Site of the Work, the type of equipment required to perform the Work, the quality and the quantity of the materials to be furnished insofar as this information is reasonably ascertainable from an inspection of the Site, as well as from information presented by the Specifications made a part of the Contract. Any failure of the Contractor to acquaint himself/herself with available information will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the Work.
- B. No claim for extra compensation or extension of time will be allowed due to the Contractor's failure to estimate properly the quantities, locations and measurements of all items required to complete the Work.
- C. Report any discrepancies to the Landscape Architect/Engineer and request her/his interpretation.

1.05 OWNER'S COOPERATION

The Owner will furnish the Contractor, without charge, three (3) copies of the Specifications. Additional copies requested by the Contractor will be furnished at cost.

1.06 PROTECTION OF WORK AREA

- A. The Contractor shall secure all work areas by 4:00 PM each work day.
- B. All of the Contractor's equipment, supplies, etc. left on-site, shall be secured daily, in no case shall the Owner assume responsibility for damage or loss of materials and equipment left on site.
- C. The Contractor shall take precautions to prevent injury to the public due to open excavations or excavated materials. All trenches, excavated materials, equipment, or other obstacles which could be dangerous to the public shall be secured in an agreed upon staging area.

1.07 LAWS AND REGULATIONS

- A. The Contractor shall keep himself fully informed of all State and Federal laws and Municipal ordinances and regulations in any manner affecting those engaged or employed in the Work, or the materials used in the Work, or in any way affecting the conduct of the Work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.

- B. If any discrepancy or inconsistency is discovered in the Plans, Specifications, or Contract for the Work in relation to any such laws, ordinances, regulations, orders or decrees, the Contractor shall forthwith report the same to the Landscape Architect/Engineer in writing. He/she shall at all times himself/herself observe and comply with, and shall cause all his/her agents and employees to observe and comply with all such laws, ordinances, regulations, orders, and decrees, and shall protect and indemnify the Owner and its officers, agents and servants against any claim or liability arising from or based on the violation of any such laws, ordinances, regulations, and orders or decrees, whether by himself/herself or his/her employees or subcontractors.

1.08 PROTECTION OF TREES AND SHRUBS

- A. The Contractor shall take particular care to avoid damage to trees in, along and adjacent to the Work area. Trees shall be protected from injury according to the specifications and the Contract Drawings. No trees or shrubs shall be removed or pruned without the approval of the Owner and the Landscape Architect. The Contractor shall be liable for all damage and/or disturbance to existing trees. Actual penalties for damage to plants shall be in accordance with the schedules defined herein, with assessed damages to be deducted from sums payable under the Construction Contract.
- B. Any measure required for the protection of trees and shrubs shall be considered to be part of the Work to be done under the various divisions of the Work in the Contract, and no separate payment will be made for this Work.

1.09 PERMITS AND CODES

- A. Under this Contract, all work shall be as shown in the Contract Drawings and Specifications and shall comply with applicable codes and regulations at the local, county, state, and federal levels. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided without additional cost to the Owner.
- B. Do not close any street, sidewalk, alley, or passageway. So conduct operations as to interfere as little as possible with the use ordinarily made of roads, driveways, alleys, sidewalks, or other facilities near enough to the Work to be affected thereby.
- C. Where code references are given, the latest issue of that Code in effect at the time of bidding shall be used. Code references are given to indicate the minimum quality and performance acceptable. Where Specifications and/or Contract Drawings indicate more stringent requirements, the Specifications or Contract Drawings shall govern.
- D. The Contractor, under this Contract shall be responsible for providing and filing all Plans, Specifications and other documents, pay all requisite fees and secure all permits, inspections and approvals necessary for legal installation and operation of the systems and or equipment furnished under this Contract.

- E. Comply also with applicable provisions of American National Standard Code for Building Construction ANSI A10.6.

1.10 INSPECTION AND TESTS

- A. Under this Contract the Contractor shall conduct and pay for all testing required by the Specifications.
- B. All material and workmanship shall be subject to inspection, examination, by the Landscape Architect/Engineer at any and all times during construction.
- C. All work that is unsatisfactory, or fails to comply with the Specifications in the opinion of the Landscape Architect/Engineer, shall be corrected by the Contractor at his own expense to the satisfaction of the Landscape Architect/Engineer.

1.11 SANITARY REGULATIONS

- A. The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the Site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work.
- B. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He/she shall vigorously prohibit the committing of nuisance on the Site of the Work, on lands of the Owner, or an adjacent property.

1.12 COORDINATION WITH UTILITIES

- A. The Contractor shall coordinate his/her Work with the utility companies to prevent damages or disruption to existing equipment and to coordinate new utility installations. The Contractor shall contact the utility companies owning underground equipment in the area of his work to prior to commencing excavation. Contact with the utility companies shall be made sufficiently in advance so they can properly locate their equipment.
- B. The Contractor shall contact Dig-Safe (1-888-344-7233) prior to the start of any prior to the start of construction, and obtain a Certificate verifying that the location work has been completed. Contact the City of Waltham Engineer to verify the location of additional on-site utilities.
- C. The contractor shall be responsible for locating all site items such as utilities that could be affected by this Contract prior to the start of construction.
- D. Site information: No representations are made indicating subsurface conditions. It is expressly understood that the Owner/Landscape Architect/Engineer will not be responsible for interpretations or conclusions drawn therefrom by the Contractor.

1.13 CONSTRUCTION FENCE

- A. The Contractor shall maintain a construction fence installed to secure the Site at all times. Existing fencing may be maintained in place or reused to the extent feasible to satisfy this requirement.
- B. Maintain construction fencing in place throughout length of construction period or as directed by the Landscape Architect/Engineer. After completion of construction, take down construction fencing and remove from the Site. Repair any damage caused by the fence removal, if any.

1.14 FIRE PROTECTION

Gasoline and other flammable liquids shall be stored in and dispensed from UL listed safety containers in conformance with the National Board of Fire Underwriters recommendations. Do not store flammables near buildings. No flammable shall be stored between 4 p.m. and 7 a.m. on workdays; nor anytime on non-workdays.

1.15 CLEAN UP

During the course of the Work, the Contractor shall keep the Site in as clean and neat a condition as possible. He/she shall dispose of all residue resulting from the work. At the conclusion of the day's work, the Contractor shall leave the entire Site of the Work in a neat and orderly condition.

--- END OF SECTION ---

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL:

1.01 GENERAL PROVISIONS

Attention is directed to the General Conditions of the Contract, all Divisions of the specifications, and the Contract Drawings, all of which apply to work of this section.

1.02 SCOPE OF WORK

Work included: To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, as long as deemed necessary by the Landscape Architect/Engineer and Owner throughout the construction period.

Related work: The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of Project Meetings content.

1.03 QUALITY ASSURANCE

For those persons designated by the Contractor to attend and participate in Project Meetings, provide required authority to commit the Contractor to solutions agreed upon in the Project Meetings.

1.04 MEETING NOTES

The Landscape Architect will compile minutes of each Project Meeting and will furnish copies to all the attendees, Contractor, and the Owner before next scheduled meeting.

PART 2 - EXECUTION:

2.01 MEETING SCHEDULE

- A. Except as noted below for Preconstruction Meeting, frequency of Project Meetings will be weekly, or as determined by the Owner, depending on work progress.
- B. Coordinate as necessary, to establish mutually acceptable schedule for meetings.

2.02 MEETING LOCATIONS

Project Meetings will be held at the job sites.

2.03 PRECONSTRUCTION MEETING

- A. The contractor shall arrange for a Preconstruction Meeting within 5 days after the award of contract. The limitations on the use of the premises, as outlined in SECTION

01010, SUMMARY OF WORK, will be discussed, and the Owner will describe the parking assignment, delivery procedures, toilet facilities, and other provisions he/she may wish to establish.

- B. Contractor is to coordinate attendance by authorized representatives of the Owner, the Contractor, site work subcontractors, and the Landscape Architect/Engineer.
- C. Minimum agenda: Data will be distributed and discussed on at least the following items:
 - 1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and Owner.
 - 2. Channels and procedures for communication.
 - 3. Construction schedule, including sequence of critical work.
 - 4. Contract Documents and revisions.
 - 5. Processing of Shop Drawings and other data submitted to the Owner for review.
 - 6. Processing of Bulletins, field decisions, and Change Orders.
 - 7. Procedures for safety, first aid, security, quality control, housekeeping, and related matters.
 - 8. Submittal of Construction Fence layout.
 - 9. Submittal of Progress Schedule, Tabulation of Submittals and
 - 10. Schedule of Values.

2.04 PROJECT MEETINGS

- A. Frequency: Project Meetings shall, in general, be held once a week. Meetings shall be chaired by the Landscape Architect/Engineer, who will also prepare the meeting agenda issued prior to the meeting.
- B. Attendance:
 - 1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at Project Meetings throughout progress of the Work.

2. Site work subcontractors, material suppliers, and others may be required to attend those Project Meetings in which their aspect of the Work is involved.

C. Minimum agenda:

1. Review progress of the Work since last meeting, including status of submittals for approval.
2. Identify problems which impede planned progress.
3. Develop corrective measures and procedures to regain planned schedule.
4. Complete other current business.

D. Revisions to Minutes:

1. Unless published minutes are challenged in writing prior to the next regularly scheduled Project Meeting, they will be accepted as properly stating the activities and decisions of the meeting.
2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
3. Challenge to minutes shall be settled at start of the next regularly scheduled meeting.

--- END OF SECTION ---

SECTION 001400

QUALITY CONTROL

PART 1 - GENERAL:

1.01 GENERAL PROVISIONS

Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Drawings, all of which apply to this section.

1.02. SCOPE OF WORK

- A. The scope of the work under this Specification section, without limiting the generality thereof, includes the furnishing of all labor, materials, equipment, services, and incidentals necessary to complete all of the work in accordance with the Contract Documents, which are intended to describe and provide for a finished piece of work.
- B. The work includes the following, without limiting the generality thereof;
 - 1. The making available to the Owner's testing laboratory any samples or specimens which the laboratory may require to perform quality control testing on concrete, fill materials, or other material as the Owner may elect.
 - 2. The coordinating and scheduling of work and the giving of timely notice so as to afford the Owner's testing laboratory the opportunity to take samples and make observations or tests.

1.03. TESTING LABORATORY

- A. The Owner will select, engage, and pay for the services of an independent testing laboratory to perform structural tests on concrete and such other materials as the Landscape Architect/Engineer may deem appropriate.
- B. Retesting of materials which fail the original test shall be paid for by the Contractor.

--- END OF SECTION ---

SECTION 001500

TEMPORARY FACILITIES

PART 1 - GENERAL:

1.01 GENERAL PROVISIONS

Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Contract Drawings, all of which apply to this section.

1.02 SCOPE OF WORK

- A. The scope of the work under this Specification section, without limiting the generality thereof, includes the furnishing of all labor, materials, equipment, services, and incidentals necessary to complete all of the work in accordance with the Contract Documents, which are intended to describe and provide for a finished piece of work.
- B. The work includes the following, without limiting the generality thereof;
 - 1. Temporary utilities.
 - 2. Field office (not required).
 - 3. Barriers and enclosures.
 - 4. Safety and security.

1.03 TEMPORARY UTILITIES

- A. The Contractor is responsible for all temporary electrical distribution, lighting, and water distribution from existing sources.
- B. The Contractor shall provide and pay for his own temporary telephone service within the Contract Limit Line.
- C. The provision for temporary toilets is included under SECTION 01010 - SUMMARY OF WORK.

1.04 FIELD OFFICE

- A. The contractor is responsible for his/her own office space, if deemed necessary.
- B. The Contractor shall provide appropriate survey equipment on site for use by the Engineer, field checking layouts and installations.

1.05 BARRIERS AND ENCLOSURES

- A. The Contractor shall maintain the construction fence and furnish warning signs around the work area to limit unauthorized entry within the Contract Limit Line.

- B. At the earliest practical time provide temporary enclosure of materials, equipment, work in progress and completed portions of the work to provide protection to the work and employees.

1.06 SAFETY AND SECURITY

- A. The Contractor shall be responsible for the safety and security of the building and the site within the Contract Limit Line, and for the safety of all persons who enter within the Contract Limit Line.
- B. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work.
- C. The Contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying the Owner of particular hazards.
- D. The Contractor shall cooperate with and maintain a close liaison with the Police Department and Fire Department, and he shall abide by safety-related requests from any of these agencies.

--- END OF SECTION ---

SECTION 001600

CONSTRUCTION LAYOUT

PART I - GENERAL

1.01 SCOPE OF WORK

- A. The work under this section shall consist of field staking the horizontal and vertical alignment of all essential features as shown on the plans by a registered Engineer or Land Surveyor. The Contractor shall familiarize himself with the existing conditions and shall be responsible for locating or re-establishing survey field ties, property lines, and benchmarks indicated on the plans.
- B. Existing survey tie information, if available, shall be provided by the City upon request.
- C. The individual retained to perform the work of this Section shall be as approved by the City Representative.

1.02 QUALIFICATIONS & SUBMITTALS

- A. The Contractor shall engage the services of a Professional Engineer or Land Surveyor Registered in the Commonwealth of Massachusetts and shall submit the name, address, and registration number of such person or persons to the Engineer in writing.
- B. Whenever reference is made on the plans or in these specifications to a Land Surveyor registered in the Commonwealth of Massachusetts, the Contractor may substitute a Registered Professional Engineer, qualified in the laying out of similar facilities.

PART II - MATERIALS

2.01 LAYOUT AND STAKING

- A. The Contractor shall be responsible for furnishing all stakes, pins, and grade markings as required to implement the work of layout and staking and shall make all field adjustments ordered by the Project Representative at no extra cost to the Owner.
- B. Upon request by the Project Representative, the Contractor shall make available to the Owner survey instruments necessary to check the proposed vertical and horizontal alignments at no extra cost.

PART III - EXECUTION

3.01 SURVEY LAYOUT

- A. The Contractor shall use the alignments shown on the plans to establish the layout of all proposed features and shall perform field adjustments as ordered by the Project Representative.

- B. The Surveyor shall lay out the essential or necessary grades and locations of all proposed site elements. The surveyor shall verify the location of any existing spikes, stakes, pipes, drill holes, etc. and shall be responsible for their accuracy. Proposed features shall be located in relation to dimensions shown on the drawings and as adjusted by the Project Representative.
- C. The Contractor shall inform the Project Representative when the general layout is completed and shall not begin excavation until the Project Representative approves the various alignments. Any discrepancies encountered in field conditions shall be reported to the Project Representative immediately and shall be adjusted as directed.
- D. The Contractor shall be responsible for maintaining the correct vertical and horizontal alignment of all elements, which responsibility shall not be waived by the Project Representative's approval of basic layout and stakeout.

- - - END OF SECTION - - -

SECTION 001700

PROJECT CLOSE-OUT

PART 1 - GENERAL:

1.01 GENERAL PROVISIONS

Attention is directed to the General Conditions of the Contract, all Divisions of the Specifications and the Drawings, all of which apply to this section.

1.02. SCOPE OF WORK

- A. The scope of work under this specification section, without limiting the generality thereof, includes the furnishing of all labor, materials, equipment, services, incidentals necessary to complete all of the work in accordance with the Contract Documents, which are intended to describe and provide for a finished piece of work.
- B. The type of work includes the following, without limiting the generality thereof:
 - 1. Substantial completion
 - 2. Final cleaning.
 - 3. Record drawings.
 - 4. Operating and maintenance data.
 - 5. Warranties.
 - 6. Maintenance materials.
 - 7. Final completion.

1.03 SUBSTANTIAL COMPLETION

- A. Prior to requesting Substantial Completion as provided in the General Conditions the Contractor shall make a thorough inspection of the Work. During this inspection the Contractor shall prepare a comprehensive list of all items remaining to be completed or corrected. This list shall include all remaining Contractor and Subcontractor items to be provided under the Contract Documents.
- B. Upon completion of the list, the Contractor shall notify, the Landscape Architect in writing, that the Work is Substantially Complete. The Landscape Architect shall then conduct a thorough inspection. If the Landscape Architect agrees that the Work is Substantially Complete, the Landscape Architect will promptly make a prepare a monetized punch list, setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable or incomplete. The Contractor shall coordinate all Subcontractors to achieve prompt completion of the punch list.
- C. The Contractor shall not be relieved of the responsibility to provide Contract items left off of the Landscape Architect's punch list.
- D. If the Landscape Architect determines that the Work is not Substantially Complete, the Landscape Architect shall inform the Contractor of those items that must be completed

before the Landscape Architect will prepare a monetized punch list. Upon completion of those items, the Contractor shall again request the Landscape Architect to prepare a punch list.

- E. When the punch list has been prepared, the Landscape Architect will arrange a meeting with the Contractor and Subcontractors to identify and explain all punch list items and answer questions on work which must be done before final acceptance.
- F. The Landscape Architect may revise the punch list, from time to time, to ensure that all items of Work are properly completed.

1.04 FINAL CLEANING

- A. Immediately prior to Substantial Completion of the work, the Contractor shall perform all cleanup work as follows:
 - 1. Remove all waste materials and rubbish from the site and legally dispose of it.
 - 2. Remove all tools, equipment, machinery, surplus material, temporary enclosures, and any other material belonging to the Contractor or his Subcontractors.
 - 3. Clean all surfaces, fixtures, and equipment within the work areas, and any surfaces outside the work area which have been made dirty by the work of the contract. Leave the entire site clean and ready for use.

1.05 RECORD DRAWINGS/AS-BUILT DRAWINGS

- A. During the course of the work the Contractor shall maintain, at the site, a clean set of black line prints of the contract drawings. This set of prints will be marked "Record Drawings" and shall be kept in a clean condition and separate from the drawings in general reference use. On these record drawings, the Contractor shall record all deviations from the work as described in the contract drawings, especially those deviations in utilities work.
- B. At the completion of the work, neat, clean and complete record drawings shall be prepared and submitted to the Owner as a condition precedent to final payment. At his own expense the Contractor shall obtain reproducibles of working drawing sheets from the Owner.

1.06 OPERATING AND MAINTENANCE DATA

At substantial completion of the project, the Contractor shall deliver to the Owner two sets of all operating and maintenance instructions for the various pieces of equipment or paints included in the project. This information shall be neatly bound in loose leaf notebooks for the Owner's permanent record.

1.07 WARRANTIES

At substantial completion of the project, the Contractor shall deliver to the Landscape Architect copies of all warranties for the various materials and pieces of equipment included in the project. These warranties shall be submitted in duplicate and shall be bound together with the operating and maintenance data called for above.

1.08 FINAL COMPLETION

- A. Related Requirements: The Contractor's attention is directed to the General Conditions of the Contract.
- B. Final Completion:
 - 1. Within 10 days after Substantial Completion, if any of the items on the Landscape Architect's punch list are not complete or if the Contractor has not provided the appropriate Record Drawings, Operating Manuals, Warranties, Guarantees, or Spare Parts, the Landscape Architect shall assign a monetary value for each incomplete item as well as any other items as provided by M.G.L. c.30 sec.39K.

1.1 Final Completion is 90 days from the date of the Notice-to-Proceed (NTP)

- 2. The Contractor shall provide the Landscape Architect with a Notarized Contractor's Certificate and Release and an appropriate Application for Payment. This Application shall be for an amount equal to the remaining balance of the Contract less the amount of the Landscape Architect's monetized punch list and any other items as provided under M.G.L. c.30 sec.39K.
- 3. The Contractor shall complete all remaining Work in accordance with the provisions of the General Conditions.
- 4. Upon completion of all remaining items, and after receipt of all appropriate Record Drawings, Operating Manuals, Warranties, Guarantees and Spare Parts required by the Contract Documents, The Contractor shall provide a notarized Contractor's Certificate and Release and a final Application for Payment to complement this close-out process.
- 5. The Contractor shall provide copies of Lien Waivers for all subcontractors and suppliers to obtain final payment. No final payment or release of retainage shall be made without notarized copies of all Lien Waivers for the completed project.

- - - END OF SECTION - - -

FORM 00 10 00

COMPLIANCE FORMS

(PLEASE COMPLETE AND SUBMIT THESE FORMS WITH YOUR RESPONSE)

NON-COLLUSION FORM AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word “person” shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. The undersigned certifies that no representations made by any City officials, employees, entity, or group of individuals other than the Purchasing Agent of the City of Waltham was relied upon in the making of this bid

_____, _____
(Signature of person signing bid or proposal) Date

(Name of business)

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, & 49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____, _____
Signature of person submitting bid or proposal Date

Name of business

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

**WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE**

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided, A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract. In addition, every contractor and subcontractor is required to submit, on a weekly basis, a copy of his or her weekly payroll records to the awarding authority. For every week in which an apprentice is employed, a photocopy of the apprentice's identification card must be attached to the payroll report. Once collected, the awarding authority is also required to preserve those reports for three years. In addition, each such contractor, subcontractor, or public body shall furnish to the awarding authority directly, within fifteen days after completion of its portion of the work, a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

_____, 201__

I _____,
(Name of signatory party) (Title)

I do hereby state that I pay or supervise the payment of the persons employed by

_____ On the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____, Title _____

Print _____, Date _____

DEBARMENT CERTIFICATION

In connection with this bid and all procurement transactions, by signature thereon, the respondent certifies that neither the company nor its principals are suspended, debarred, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts, procurement or non procurement programs from the Commonwealth of Massachusetts, the US Federal Government and /or the City of Waltham. "Principals" means officers, directors, owners, partners and persons having primary interest, management or supervisory responsibilities with the business entity. Vendors shall provide immediate written notification to the Purchasing Agent of the City of Waltham at any time during the period of the contract of prior to the contract award if the vendor learns of any changed condition with regards to the debarment of the company or its officers. This certification is a material representation of fact upon which reliance will be placed when making the business award. If at any time it is determined that the vendor knowingly misrepresented this certification, in addition to other legal remedies available to the City of Waltham, the contract will be cancelled and the award revoked.

Company Name _____

Address _____

City _____, State _____, Zip Code _____

Phone Number (____) _____

E-Mail Address _____

Signed by Authorized Company Representative: _____

_____ Print name. Date _____

Request for Taxpayer Identification Number and Certification

Give Form to the
requester. Do not
send to the IRS.

Complete #
1,2,3 4,5, 6 and 7

Print or type
See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
2 Business name/disregarded entity name, if different from above	
3 Check appropriate box for federal tax classification; check only one of the following seven boxes: <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner. <input type="checkbox"/> Other (see instructions) ▶ _____	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <small>(Applies to accounts maintained outside the U.S.)</small>
5 Address (number, street, and apt. or suite no.)	Requester's name and address (optional) Office of the Chief Procurement Officer Purchasing Department Waltham City Hall 610 Main Street Waltham, MA 02452
6 City, state, and ZIP code	
7 List account number(s) here (optional)	

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number									
				-					
or									
Employer identification number									
				-					

Fill in SS#
or EID

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here	Signature of U.S. person ▶	Date ▶

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at www.irs.gov/fw9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)

- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
- Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

10 HOURS OSHA TRAINING CONFIRMATION

Chapter 306 of the Acts of 2004

CONSTRUCTION PROJECTS

AN ACT RELATIVE TO THE HEALTH AND SAFETY ON PUBLIC

The undersigned hereby certifies that all employees to be employed at a worksite for construction, reconstruction, alteration, remodeling, repair, installation, demolition, maintenance or repair of any public work or any public building estimated to cost more than \$10,000.00 have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first payroll report for each employee and will comply with all laws and regulations applicable to awards of subcontracts subject to section 44F.

Company Name: _____

Address: _____

Signature: _____

Title: _____

Print Name _____

Date _____

See following Chapter 306 of the Acts of 2004

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package will be cause for the disqualification of your company.

COMPLETE ONLY IF YOUR COMPANY IS AN LLC

CERTIFICATE OF AUTHORITY LIMITED LIABILITY COMPANY

The undersigned, being (a/the) duly elected, qualified and active (member / manager) of _____,
a Massachusetts limited Liability Company (hereinafter "the Company")

Does Hereby Certify that

1. The Articles of Organization of the Company were duly filed with the Office of the Secretary of State of the State of Massachusetts on _____, and the Articles of Organization have not been (further) amended.
2. The Company has complied with the publication requirements contained in Section 67 of the Limited Liability Company Law.
3. There exists an Operating Agreement of the Company and that the said Operating Agreement has not been amended or repealed and that the said Operating Agreement remains in full force and effect as of this date.
4. Neither the Articles of Organization nor the Operating Agreement (as amended) require any further act to be taken or a meeting to be held by its members other than as follows:
5. All said requirements, whether as contained in the Articles of Organization or in the Operating Agreement or by operation of law as to the transaction of _____, 20____ have been met.
6. The following person or persons has/have been duly authorized by the Company to execute all documents in connection with said transaction and that the signature appearing to the right of their name(s) is his/her genuine signature.

NAME

OFFICE HELD

SIGNATURE

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

IN Witness Whereof, the undersigned has executed this Certificate of Authority this _____ day of _____, 20____.

(Signature)

STATE OF MASSACHUSETTS, COUNTY OF _____

On the ____ day of _____, 20____, before me, the undersigned personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/ they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Notary Public: _____

My Commission Expires: _____

Notary Stamp:

PROVIDE THREE (3) SERVICE APPROPRIATE REFERENCES

1. Company Name:

Address:

Contact Name:

Phone #

Type of service/product provided to this Company:

Dollar value of service provided to this Company:

2. Company Name:

Address:

Contact Name:

Phone #

Type of service/product provided to this Company:

Dollar value of service provided to this Company:

3. Company Name:

Address:

Contact Name:

Phone #

Type of service/product provided to this Company:

Dollar value of service provided to this Company:

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package will be cause for the disqualification of your company.

SECTION 00 18 00

GENERAL CONDITIONS

1. INFORMATION

All information shall come from the Office of the City Purchasing Agent. The Contractor shall inquire at this office for any information needed. Wherever the words “or equal as approved” are used, it is to be understood that the opinion of the City Purchasing Agent shall govern.

2. SUITS

The Contractor shall assume defense of and shall indemnify and hold the City and its agents harmless from all suits and claims against the City and its sub-contractors arising from the use of any invention, patent right labor or employment, or from any act of omission or neglect of the City, its agents, employees or any subcontractor in performing the work, under this contract.

3. LAWS AND REGULATIONS

The Contractor shall conform to all the applicable rules, regulations, laws and ordinances of the City of Waltham, the Commonwealth of Massachusetts, the United States of America and all agencies having jurisdiction over this contract.

4. PROTECTION OF PROPERTY

The Contractor shall take all proper precautions to protect the City’s property from damage and unnecessary inconvenience. Any City property damaged by the Contractor in carrying out the provisions of this contract shall be restored to its original condition, by and at the expense of the Contractor.

5. PROTECTION OF PERSONS

The Contractor shall take all proper precautions to protect persons from injury, unnecessary inconvenience, and shall be responsible for his failure to do so. The Contractor agrees to hold the City harmless from any and all liabilities of every nature and description, which may be suffered through bodily injury, including death, to any person, by reason of negligence of the Contractor, his agents or employees, or any subcontractor.

6. INSURANCE

A. WORKMAN'S COMPENSATION: The Contractor shall provide by insurance for the payment of compensation and furnishing of other benefits under Chapter 152 of the General Laws of the Commonwealth of Massachusetts to all persons to be employed under this contract, the premiums for which shall be paid by the Contractor.

B. COMPREHENSIVE GENERAL LIABILITY

Bodily Injury:	\$1,000,000 Each Occurrence \$2,000,000 Aggregate
Property Damage:	\$1,000,000 Each Occurrence

C. AUTOMOBILE (VEHICLE) LIABILITY Bodily Injury \$2,000,000 Aggregate
\$2,000,000 Each Occurrence Property Damage
\$1,000,000 Aggregate D.

D. UMBRELLA POLICY

General liability	\$2,000,000
-------------------	-------------

Your bid response must include a Certificate of Insurance with the above limits as a minimum. In addition, the Certificate of Insurance must have the following text contained in the bottom left box of the Certificate: "The City of Waltham is a named Additional Insured for all Insurance". The Certificate of Insurance must be mailed directly to:

Office of the Purchasing Agent
Purchasing Department
City of Waltham
610 Main Street
Waltham, MA 02452

7. LABOR AND MATERIALS BOND

The Contractor agrees to execute and deliver to the City, a Labor and Materials or Payment Bond equal to 100% of the contract value. This contract shall not be in force until said bond has been delivered and accepted by the City. Bond to be issued by a company licensed by the Commonwealth of Massachusetts.

8. **PERSONNEL:**

The Contractor shall employ a competent supervisor and all properly licensed personnel necessary to perform the services required in this contract. The City Purchasing Agent shall have the right to require the Contractor to remove and/or replace any of the personnel for nonperformance or for unprofessional behavior. The City Purchasing Agent may require the Contractor to submit a weekly performance record of the areas and of the work performed, on forms approved by the City Purchasing Agent. The Contractor or his supervisor shall be available to inspect such work as required by the City Purchasing Agent.

9. **PREVAILING WAGES**

The Contractor is required to pay the prevailing wages as determined under the provisions of Chapter 149, Sections 26 and 27D of the Massachusetts General Laws, including the submission of weekly payrolls to the awarding authority. Copies of the Prevailing Wage Schedule is found on line at www.city.waltham.ma.us/open-bids

10. **MATERIALS**

The City or its Agent reserves the right to approve or reject any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any rejected supplies, materials or equipment, to the satisfaction of the City or its Agents.

11. **TERMINATION OF CONTRACT**

This contract may be terminated by the City upon deliverance to the Contractor of a five-day written notice of said termination.

12. CONTRACT OBLIGATIONS

Contract obligations on behalf of the City are subject to an annual appropriation to cover the contract obligation.

13. BIDDER EXPERIENCE EVALUATION

Each bidder shall submit with his bid, all the information relative to their experience and qualifications in performing the work required under this contract and shall have been in business for a minimum of five (5) years, in order for their bid to be considered.

14. NOT-TO-EXCEED AMOUNT

The bid amount proposed in your company's response is a "not-to- Exceed" amount unless the City makes changes, in writing, to the scope of work to be performed. The Change Order must be signed and approved by the City's Purchasing Agent, City Auditor, Law Department and the Mayor prior to the commencement of the change order work. No work is to begin until the proper approvals have been obtained. A change order will be priced at the unit price. Failure to comply with this procedure will result in the cancellation of the contract and the non-payment of services provided

16. FINANCIAL STATEMENTS.

The City may require, within five (5) days after the bid opening, a complete and detailed Financial Statement prepared by a Certified Public Account, to determine a bidder's financial stability.

17 BREACH OF CONTRACT/ NON PERFORMANCE

If the Contractor shall provide services in a manner, which is not to the satisfaction of the City, the City may request that the Contractor refurnish services at no additional cost to the City until approved by the City. If the Contractor shall fail to provide services, which are satisfactory to the City, the City in the alternative may make any reasonable purchase or Contract to purchase services in substitution for those due from the Contractor. The City may deduct the cost of any substitute Contract for nonperformance of services together with incidental and consequential damages from

the Contract price and shall withhold such damages from sums due or to become due to the Contractor. If the damages sustained by the City exceed sums due or to become due, the Contractor shall pay the difference to the City upon demand. The Contractor shall not be liable for any damages sustained by the City due to the Contractor's failure to furnish services under the terms of this Contract if such failure is in fact caused by the occurrence of a contingency the nonoccurrence of which was a basic assumption under which this Contract was made, including a state of war, embargoes, expropriation of labor strike or any unanticipated federal, state or municipal governmental regulation of order, provided that the Contractor has notified the City in writing of such cause within seven (7) days after its occurrence.

18 RIGHT TO AUDIT

The City of Waltham has the right to review and audit documents related to this contract. This right extends to any subcontractor, supplier or other entity used by the prime contractor to fulfill the obligations under this contract.

19. CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

20. BID OPENING INCLEMENT WEATHER

If, at the time of the originally scheduled bid opening, City Hall is closed to inclement weather or another unforeseeable event, the bid opening will be extended until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

21 **FUNDS APPROPRIATION.**

THE CONTRACT OBLIGATION ON BEHALF OF THE CITY IS SUBJECT TO PRIOR
APPROPRIATION OF MONIES FROM THE GOVERNMENTAL BODY AND
AUTHORIZATION BY THE MAYOR.

22 **THE AWARDED AUTHORITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS,
OR ANY PART OF ANY BID, WHICH IN THE OPINION OF THE AWARDED
AUTHORITY, IS IN THE BEST INTERESTS OF THE CITY OF WALTHAM.**

SECTION 00 21 00

ALLOWANCES

PART 1- GENERAL

1.1 ALLOWANCE FOR POLICE DETAIL

- A. The Contractor shall include as a line item in his/her bid, an allowance in the amount of Five thousand dollars (\$5,000) for the cost of police detail. This sum shall be included in the total bid price proposed by the Contractor, and shall be shown as a line item on the Bid Form.
- B. This allowance will cover the cost to the Contractor for police detail, if required to complete the work of this Contract.
 - 1. The cost for police detail will be reimbursed to the Contractor.
- C. If the cost for Police Detail is more or less than the allowance, the Contract Sum shall be adjusted accordingly by Change Order.
- D. The allowance and reimbursement for police detail does not include any provisions for Contractor overhead and profit or other expenses related to police detail, other than the direct costs billed to the Contractor by the City of Waltham Police Department.

1.2 ALLOWANCE FOR UNFORSEEN CONDITIONS

- A. The intent of this Allowance is for changes in the work related to unsuitable soils, electrical overview and utilities which are necessary to complete the work of the project. The Sum to be included for this Allowance shall be fifteen Thousand dollars (\$15,000). This sum shall be included in the total bid price proposed by the Contractor, and shall be shown as a line item on the Bid Form.
- B. The work relating to this Allowance will be completed only when and as directed by the Owner. The Contractor may not proceed with any work under this Allowance without the written notice of the Owner, at a mutually agreed upon fair and equitable price for the change in the work.
- C. If at the completion of the project, the cost for this work is more or less than the Allowance, the Contract Sum shall be adjusted accordingly by Change Order.

END OF SECTION

Allowances
00 21 00 -1

SECTION 00 41 12

QUALIFICATION DATA

1) CONTRACT QUALIFICATION DATA

- a) List the exact name of your firm. _____
- b) How many years has your firm been in business under its present business name and business organization structure? _____ years
- c) How many years has your firm been regularly and actively engaged , performing the type of work described in the specification. _____ years
- d) Does your firm have a twenty-four (24) hour emergency number that is staffed by a person and not an answering machine? ☐ Yes ☐ No

If yes, please list number: () _____

Indicate below three (3) references that will serve to illustrate the ability of your firm to act as the primary contractor for the contract:

Client Name and Address	Contact Person and Telephone Number
1.	
2.	
3.	

SIGNATURE OF AUTHORIZED INDIVIDUAL _____

SECTION 00 41 13

BID FORM

TO: City of Waltham
Joseph Pedulla, CPO
Purchasing Department
City Hall, 610 Main Street
Waltham, MA 02452

FROM:

- A. The undersigned proposes to furnish all labor and materials required for the construction of:

MACARTHUR SCHOOL PLAYGROUND, Waltham, Massachusetts

in accordance with the accompanying Contract Documents (plans and specifications) prepared by the Landscape Architect, MARSHALL/GARY, INC, 17 Naumkeag Row, Danvers, Massachusetts for the Bid specified below, subject to additions and deductions according to the terms of the Contract Documents.

- B. This bid includes addenda numbered: _____, _____, _____, _____, _____, _____, _____.

- C. The proposed Total Not To Exceed Bid price for the MacArthur School Playground inclusive of \$5,000 Allowance for police details and an Unforeseen Conditions Allowance of \$15,000 as specified in Section 00 21 00 is:

BASE PRICE	\$ _____
Police Allowance	\$ 5,000.00
Unforeseen Conditions Allowance	<u>\$ 15,000.00</u>
TOTAL	\$ _____

- D. The subdivision of the Proposed Base Bid Price is as follows:

Item 1: Alternates

See Section 00 43 23, ALTERNATES for detailed descriptions of alternates.

1. Alternate No. 1 Play Area.
Add _____ Dollars (\$ _____)
2. Alternate No. 2 Brick Removal Area
Add _____ Dollars (\$ _____).
3. Alternate No. 3 Field, fencing and walk
Add _____ Dollars (\$ _____).

- D. TIME OF COMPLETION AND LIQUIDATED DAMAGES: The undersigned agrees to commence work within five business days after the receipt of Notice to Proceed, and to complete the Work within the time stipulated in the General Conditions, subject to adjustment of the Contract Time in accordance with the Contract Documents. In case the Work is not completed within the specified time, it is understood and agreed that the Contractor shall pay the Awarding Authority, not as a penalty but as liquidated damages, the amount set forth in the Contract Documents for each calendar day beyond the date on which completion was required that the work is not so completed, up to and including the day of Substantial Completion or Final Completion.
- E. The undersigned agrees that, if he is selected as General Contractor, he will within five days, Saturdays, Sundays and legal holidays EXCLUDED, after presentation thereof by the Awarding Authority, execute a Contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the sum of the contract price, the premiums for which are to be paid by the General Contractor and are included in the contract price.
- F.. The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that he will comply fully with all laws and regulations applicable to awards made subject to Section forty-four A.
- G. The undersigned hereby certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.
- H. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.
- I. The Bidder hereby certifies he shall comply with the minority manpower ratio and specific action steps contained in the Contract Documents, including compliance with the minority contractor compliance specified. The Contractor receiving the award of the contract shall be required to obtain from each of its subcontractors and submit to the contracting or administering agency prior to the performance of any work under said contract a certification by said subcontractor, regardless of tier, that it will comply with the minority manpower ratio and specific affirmative action steps contained in these Contract Documents.

(Name of Bidder)

By: _____
(Authorized Signature and Title)

Print Name

(Business Street Address)

(City, State and Zip Code)

Email Address

Phone

Date

END OF SECTION

SECTION 00 43 23

ALTERNATES

PART 1 GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

1.02 DESCRIPTION OF WORK

- A. Definition: "Alternates" are alternate products, materials, equipment, systems, methods, units of work or major elements of the construction, which may, at the Owner's option and under the terms established by the Contract or Agreement, be selected for the work in lieu of the corresponding requirements of the Contract Documents.
- B. Alternate Requirements: A Schedule of Alternates is included at the end of this Section. Each alternate is defined using abbreviated language, recognizing that the Contract Documents define the requirements. Coordinate related work to ensure that work affected by each alternate is complete and properly interfaced with work of each selected alternate.
- C. Provide written proposals for each alternate on the Form of Proposal for Owner's consideration. Each proposal amount shall include the entire cost of the alternate portion of the work including overhead, profit, taxes, insurance, and other costs including cost of interfacing and coordinating the alternate with related and adjacent work.
- D. The Contractor and Subcontractors shall be responsible for examining the scope of each Alternate generally defined herein and for recognizing modifications to the work caused by the Alternates and including the cost thereof in the bid price.
- E. The Owner will accept or reject each Alternate at the time of Contract Award.
- F. The Alternates will be accepted by their numerical order.

1.03 DESCRIPTION OF ALTERNATES

- A. **Alternate No.1 – Play Area.** State the amount of money to be added to the Base Bid for repair of surface cracks and repaving of play area, painting kick-ball and basketball lines, replacing two existing basketball goals with adjustable goals. Should this Alternate not be accepted no work will be done in the paved play area.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. Alternate No.2 – Brick Removal Area** State the amount of money to be added to the Base Bid for removing brick surfacing, paving with bituminous concrete and painting hop scotch and four square on the pavement. Should this Alternate not be accepted no work will be done in the brick replacement area.
- B. Alternate No. 3 – Field, fencing and walk.** State the amount of money to be added to the Base Bid for replacing the broken eight foot high fence, renovating the existing field and construction a walk. Should this Alternate not be accepted no work will be done in the field area including the fencing, field and walk.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

Section 00 43 43

Massachusetts State Wage Rates

The prevailing wage rates for this project are found at
www.city.waltham.ma.us/open-bids

DIVISION 1

General Requirements

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General Conditions, and all Sections of Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, the following:
 - 1. Administrative and procedural requirements for submittal of Shop Drawings, Product Data, Samples, and other required submittals as called for in the Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which effect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:
 - 1. Section 01 91 15 - General Testing Requirements
 - 2. Section 01 60 00 - Product Requirements

1.04 GENERAL REQUIREMENTS

- A. Prior to submittal of any shop drawings, product data or samples the Contractor shall submit to the Landscape Architect for approval, within 15 business days after being awarded the Contract, a complete submittal log and a schedule of submissions of shop drawings and miscellaneous. The Landscape Architects review period, including those of his consultants, will not exceed 15 days from the established date of each submission of shop drawings, product data, and samples, plus the additional time, if any, for distribution by the Contractor and receipt of submissions by the Landscape Architect. The Contractor shall be required to strictly adhere to the dates established in the schedule.
- B. Following approval of submittal log and schedule, submit to the Landscape Architect shop drawings, product data and samples required by each specification Section.
- C. When the phrase "By Others" (or similar expression) appears on a submittal and refers to any of the Contract Work, it shall be interpreted to mean "by the General Contractor or another

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

Subcontractor". The Landscape Architect's review of any submittal containing such phrase shall not be considered permission to delete any Work from the Contract.

- D. Review and approval of shop drawings by the Landscape Architect does not indicate approval of changes in the Contract, Time or Cost

1.05 SHOP DRAWINGS

- A. Original drawings, prepared by The Contractor, Subcontractor, Supplier or distributor which illustrate some portion of the Work; showing fabrication, layout, setting or erection details.
 - 1. Prepare drawings in a clear and thorough manner.
 - 2. Identify details by reference to sheet and detail numbers shown on Contract Drawings
- C. Provide layout verification plans for site utilities, walks, walls and fencing

1.06 PRODUCT DATA

- A. Manufacturer's standard schematic drawings:
 - 1. Modify drawings to delete information which is not applicable to project.
 - 2. Supplement standard information to provide additional information applicable to project.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.
 - 1. Clearly mark each copy to identify pertinent materials, products or models.
 - 2. Show dimensions and clearances required.
 - 3. Show performance characteristics and capacities.

1.07 SAMPLES

- A. Physical examples to illustrate materials, products, units of Work, equipment or Workmanship, and to establish standards by which completed Work is to be judged. Provide samples of sufficient size and quality to clearly illustrate functional characteristics of product or material, with integrally related parts and attachment devices.

1.08 CONTRACTOR RESPONSIBILITIES

- A. Review Shop Drawings, Project Data and Samples prior to submission.
- B. Verify:
 - 1. Field measurements
 - 2. Field construction criteria
 - 3. Catalog numbers and similar data

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- C. Coordinate each submittal with requirements of Work and of Contract Documents.
- D. Contractor's responsibility for errors and omissions in submittals is not relieved by Landscape Architect's review of submittals.
- E. Contractor's responsibility for deviation in submittals is not relieved by Landscape Architect review of submittals, unless the Landscape Architect gives written acceptance of specific deviations.
- F. Notify Landscape Architect, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.
- G. Furnish miscellaneous submittals (non-administrative) including, but not limited to warranties, maintenance agreements, Workmanship bonds, project photographs, survey data and reports, physical Work records, quality testing and certifying reports, copies of industry standards, record Documents, field measurement data, operating and maintenance materials, overrun stock, and similar information, devices and materials applicable to the Work.

1.09 SUBMISSION REQUIREMENTS

- A. Schedule submissions to permit time for review and resubmission.
- B. Submit one reproducible transparency and opaque print of Shop Drawings, and number of copies of Product Datum which Contractor requires for distribution plus 4 copies which will be retained by Landscape Architect.
- C. Submit number of Samples specified in each of specification Sections.
- D. Accompany submittals with transmittal letter, in duplicate, containing:
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Specification Section number, paragraph and item number
 - 5. The number of each Shop Drawing, Product Datum and Sample submitted
 - 6. Notification of deviations from Contract Documents
 - 7. Manufacturer's name or source of supply
 - 8. Trade name
 - 9. Catalog number
 - 10. Contractor's certification that he has checked all samples for compliance with Contract requirements and availability of material
 - 11. Name and address of Landscape Architect, Subcontractor, and supplier
 - 12. Other pertinent data
- E. Submittals shall include:

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1. Date and revision dates
 2. Project title and number
 3. The names of:
 - a. Landscape Architect
 - b. Contractor
 - c. Subcontractor
 - d. Supplier
 - e. Manufacturer
 - f. Separate detailer when permitted
 4. Identification of product or material.
 5. Relation to adjacent structure or materials.
 6. Field Dimensions clearly identified as such.
 7. Specification Section number, paragraph and item number.
 8. Applicable standards, such as ASTM number or Federal Specification.
 9. A blank space, 3" x 3", for Landscape Architect/Engineer's stamp.
 10. Identification of deviations from Contract Documents.
 11. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.
- G. The Landscape Architect will complete the review and return the record sepias and product data to the Contractor.
- H. The Contractor shall be fully responsible for delay in the delivery of materials or progress of Work caused by late review of shop drawings due to failure of the Contractor to submit, revise, or resubmit shop drawings in adequate time to allow the Landscape Architect reasonable time (up to 15 calendar days) for normal checking and processing of each submission or resubmission.
- I. The Contractor shall assume full liability for delay attributed to insufficient time for delivery and/or installation of material or performance of the Work when approval of pertinent shop drawings and product data is withheld due to failure of the Contractor to submit, revise, or resubmit items in adequate time to allow the Landscape Architect reasonable time, not to exceed fifteen (15) calendar days, for normal checking and processing of each submission or resubmission.
- 1.10 NOT USED
- 1.11 LANDSCAPE ARCHITECTS REVIEW ACTIONS
- A. Submittals Marked "Reviewed as Required by Construction Contract Documents And Approved":
1. Submittals which require no corrections by the Landscape Architect will be marked "Reviewed as Required by Contract Documents and Approved". Reviewed as required by Contract Documents and approved, but only for conformance to the design concept of the

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

Work, and subject to further limitations and requirements contained in the Construction Documents.

B. Submittals Marked "Furnish as Corrected":

1. Submittals which require only a minor amount of correcting will be marked "Furnish as Corrected". This mark means that checking is complete and all corrections are obvious without ambiguity. Fabrication will be allowed on Work "Furnish as Corrected", provided such action will expedite construction and noted corrections are adhered to. If fabrication is not made strictly in accordance with corrections noted, the item shall be rejected in the field and the Contractor will be required to replace such Work and that of other Contractor's, in accordance with corrected submittals, at his own expense.

C. Submittals Marked "Revise and Resubmit":

1. When submittals are marked "Revise and Resubmit" details of items noted by Landscape Architect shall be further clarified before full approval can be given and noted items must not be fabricated until corrected and approved.

D. Submittals Marked "Rejected":

1. When submittals are contrary to Contract requirements or too many corrections are required, they shall be marked "Rejected". No Work shall be fabricated under this mark. The Landscape Architect shall list his reasons for non approval on the submittal or in a transmittal letter accompanying their return. The submittals must be corrected and resubmitted for approval.

E. Submittals Marked "Review":

1. Submittals sent for information only will be marked "Reviewed". No approval or disapproval is given unless requested by Contractor.

F. Return of Submittals To Contractor Unchecked:

1. The Landscape Architect may return submittals to the Contractor unchecked for any of the following reasons, in which case the submission will not be considered official:
 - a. Submittal in violation of specified procedure or product
 - b. Inadequately checked by Contractor
 - c. Inaccurate and in substantial error

1.12 RESUBMISSION REQUIREMENTS**A. Shop Drawings:**

1. Revise initial drawings as required and resubmit as specified for initial submittal.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

2. Indicate on drawings any changes which have been made other than those requested by Landscape Architect/Engineer.

- B. Product Data and Samples: Submit new data and samples as required for initial submittal.

1.13 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

- A. Distribute copies of Shop Drawings and Product Data which carry Landscape Architect/Engineer's stamp, to:

1. Contractor's Job site file
2. Record Documents file
3. Subcontractors and/or suppliers
4. Owner
5. Testing Agency (where applicable)

- B. Distribute samples as directed.

1.14 LANDSCAPE ARCHITECT/ENGINEER'S DUTIES

- A. Review submittals with reasonable promptness.

- B. Review for:

1. Design concept of project
2. Information given in Contract Documents

- C. Review of separate item does not constitute review of an assembly in which item functions.

- D. Affix stamp and initials or signature certifying to review of submittal.

- E. Return submittals to Contractor for distribution.

1.15 EMERGENCY ADDRESSES

- A. Within 15 days of Notice to Proceed, submit to the Owner and the Landscape Architect, in writing, the name, addresses and telephone numbers of key members of their organization including Superintendent and personnel at the site, to be contacted in the event of emergencies at the building site, which may occur during non-Working hours.

PART 2 - PRODUCTS**2.01 SUBSTITUTIONS**

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- A. Contractor's request for changes in products, materials and methods of construction required by Contract Documents are considered requests for "substitutions" and are subject to requirements specified under Section 01 60 00 – Product Requirements.

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 01 32 33

PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 1 - General Requirements, apply to the Work of this Section.

1.02 PHOTOGRAPHY REQUIRED

- 1. Provide photographs at various times, but no less than every two weeks during construction.
- B. Photography types and quantities required:
 - 1. Provide 3 prints of each view, each month.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which effect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:
 - 1. Section 01 00 00 - General Requirements
 - 2. Section 01 78 39 - Project Record Documents

1.04 QUALITY ASSURANCE

- A. Provide services of a competent photographer to take record photographs periodically during the course of Work.

1.05 COSTS OF PHOTOGRAPHY

- A. Contractor shall pay all costs for photography including electronic copies.

1.06 SUBMITTALS

- A. Provide submittals in accordance with requirements of Section 01 33 00

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 01 50 00

AFFIDAVIT OF OSHA COMPLIANCE

The undersigned agrees that if he is selected as the contractor, he will comply with the provisions of M.G.L. Chapter 30, Section 39S.

The undersigned certifies, under penalties of perjury, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

Date: _____

(Name of General Bidder)

By: _____
(Name of Person Signing Bid and Title)
Signature is Required

(Business Address)

(City and State)

(Telephone Number)

SECTION 01 51 11

PROGRESS SCHEDULE

PART I - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section shall include, but not be limited to, the following:
 - 1. Administrative and procedural requirements for the Contractor's Progress Schedule

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which affect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:
 - 1. Section 01 00 00 - General Requirements
 - 2. Section 01 78 39 - Project Record Documents

1.04 PRELIMINARY SCHEDULE

- A. Preliminary Submittal: Submit, within 10 calendar days following receipt of the Notice to Proceed, a detailed Project Schedule, in bar chart format.

1.05 PROGRESS SCHEDULE SUBMITTALS

- A. Prepare the Progress Schedule required by the General Conditions.
 - 1. Milestone dates
- D. Upon approval of the draft submittal prepare the schedule with spreadsheet information.
 - 1. Correlate the Progress Schedule with the Schedule of Values required under Section 01 00 00 – General Requirements. so that the value of the Work in place at any time can be definitively determined. Each activity on the schedule shall appear on the Schedule of Values.
 - 2. Submit the full detailed schedule to the Landscape Architect for review and approval within 10 days following receipt of the Notice to Proceed, and at least 25 working days before the first Application for Payment is submitted. The Landscape Architect will not review any Application for Payment until the schedule has been submitted and approved.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- E. Submit 3 color copies in format acceptable to the Landscape Architect, of the schedule for review by Landscape Architect. Make changes as directed by the Landscape Architect and resubmit within 10 calendar days.
 - 1. Acceptance and approval of the Construction Schedule by the Owner and Landscape Architect is a prerequisite to certification of the first Application for Payment.
 - 2. The Landscape Architect's approval of the Construction Schedule shall not relieve the Contractor of responsibility for timing, planning and scheduling of the Work, nor impose any duty on the Landscape Architect or Owner with respect to the timing, planning or scheduling of the Work.
- F. After the initial schedule has been approved, print, and distribute colored copies of the approved schedule to the Landscape Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Place one copy in the job site file and post copies in the Project meeting room and temporary field office.
 - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities,

1.06 PROGRESS SCHEDULE, CONTENT AND FORMAT

- A. The Start Date for the Progress Schedule shall be the date of the Notice to Proceed. The date for Final Completion shall be 10 days after the date scheduled for Substantial Completion.
- B. Classes of Work: List as separate classes of work on the spreadsheet and schedules:
 - 1. Each category of work listed in the Schedule of Values
 - 2. Activities by others that have to be coordinated with Contractor's work, such as:
 - a. Inspections by the Owner's Testing and Inspection Agency
 - b. Work by separate contractors
 - c. Landscape Architect's inspection at the time of Partial Completions and at the time of Substantial Completion
 - d. Additional subdivisions of work as the Contractor deems necessary to control the progress of the Work, or as requested by the Owner or Landscape Architect.
- C. Spreadsheet: On the spreadsheet for the Project, for each activity included in the spreadsheet, as a minimum the following information:
 - 1. A code number for the activity.
 - 2. Description of the activity
 - 3. Early and late start dates. These dates may not be changed after the activity has commenced and the actual start date has been inserted (see item 10).
 - 4. Duration
 - 5. Early and late finish dates. These dates may not be changed after the activity has been completed, and the actual finish date has been inserted (see item 10).
 - 6. Activity float
 - 7. Percentage completion
 - 8. Remaining duration
 - 9. Predecessor activities and successor activities, including start constraints for activities with no predecessor.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

10. Blank columns for Actual Start and Actual Finish dates, to be filled in with each monthly submission.
11. Dollar amount for the activity.
12. Number of tradesmen and laborers required for each activity ("manpower loading")

1.07 MONTHLY REPORTS

- A Report progress for the Project on a bi-weekly basis. Evaluate the status of the work as of the 25th of each month to show actual progress and identify problem areas. Include Change Orders and Construction Change Directives within the updated schedule. With each Contractor Application for Payment, submit one three (3) colored copies of the complete update schedule, accompanied by a written narrative.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General Conditions, and all Sections of Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. Products, which include materials, equipment, and systems of assemblies of materials and equipment, shall conform to the requirements listed in each of Section of the Specifications
 - 1. Where available, provide standard products of types which have been produced and used previously and successfully on other projects and in similar applications.
 - 2. Where additional amounts of a product, by nature of its application, are likely to be needed by Owner at a later date for maintenance and repair or replacement Work, provide a standard, domestically produced product which is likely to be available to Owner at such later date.
- B. Products are specified by:
 - 1. The descriptive method: Listing qualities that they must possess
 - 2. The reference standard method: Listing published product standards
- C. Where a reference standard is specified, the edition of the standard in the current governing building code shall be followed. Where the standard is not listed in the building code, follow the edition current with the issue date of these Specifications.

1.03 PRECEDENCE: QUALITY, REFERENCE STANDARD, AND SOURCE

- A. Qualities:
 - 1. For the products specified by stated qualities or by the description, as well as by the reference standard or by the source, the specified qualities or description shall take precedence.
 - 2. For a product specified only by stated qualities or by the description, provide materials, equipment or fabrications conforming to those qualities and description, suitable for the uses shown on the Drawings.

PRODUCT REQUIREMENTS

01 60 00 1

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

B. Reference Standards:

1. For product specified by reference to a published standard, as well as buy the source, the reference standard shall take precedence over the source.
2. For a product described only by reference standard, provide material, equipment or fabrications conforming to that reference standard, suitable for the use shown on the Drawings.

C. Procedures for Selecting Products: Contractor's options for selecting products are limited to Contract document requirements and governing regulations and are not controlled by industry traditions or procedures experienced by Contractor on previous construction projects. Required procedures include, but are not limited to, the following for various methods of specifying:

1. For a product described by manufacturer, manufacturer's brand name, or origin, with or without catalog number or model number, provide a product that conforms to the specified qualities and reference standards.
2. For a product specified by one or more source names and "or approved substitute", provide one of the specified products, or, submit a request for substitution for a product not named which the Contractor can demonstrate to be of equal or higher quality.
3. Performance Requirements: Provide products which comply with specific performances indicated, and which are recommended by manufacturer for overall application indicated. Overall performance of a product is implied where product is specified with only certain specific performance requirements.
4. Prescriptive Requirements: Provide products which have been produced in accordance with prescriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in manufacturing process.

1.04 CONTRACTOR'S OPTION

- A. Where an option (or choice) is specified, provide one or the other of the options. The choice of an option is the Contractor's. Where submittals are required, he shall state which option has been chosen by him.
- B. For economy of drawing, only one option is usually shown on the Drawings. If another option is elected by the Contractor, he shall adjust details, dimensions and physical settings to conform. The Contractor will review adjustments and details with the Landscape Architect before implementation.

1.05 SPECIAL WARRANTIES AND SERVICE

- A. In addition to the warranty and correction Work provisions of the General Conditions, provide the following as specified:

PRODUCT REQUIREMENTS

01 60 00 2

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1. Special Warranties: A warranty or guarantee provide by the manufacturer, fabricator, supplier or installer and the Contractor providing specific representation of quality and fitness for a specific period of time. When also specified, a special warranty lists the actions the Contractor, his installer, supplier or manufacturer shall take to correct defective Work.
 2. Service: Specific programs of service that a manufacturer, fabricator, supplier or installer and the Contractor will provide for a specific period of time. Service programs shall, as, specified, provide such Work as inspections, reports, parts, materials, and other products or Work needed to render the services.
- B. The Landscape Architect and Owner reserve the right to not accept unrequested warranties and guarantees offered by the Contractor, his installers or suppliers.
- C. Special warranties will not be required to cover failure from:
1. Hurricane, floods or acts of God;
 2. Misuse or improper maintenance by the Owner;
 3. Vandalism or misuse by the public after time of Substantial Completion.
- D. When defective Work is corrected under the special warranty provisions, the warranty period shall be extended by the period of time between Substantial Completion and the correction of the Work.
- 1.06 CERTIFICATION BY MANUFACTURERS OR INSTALLERS
- A. Provide where specified, as a submittal, certification by the manufacturer or installer that the product and its method of installation are suitable for:
1. The type of construction and use of this product
 2. For the New England climate
 3. For the design intent expressed in the Contract Documents
- 1.07 PRODUCT DELIVERY, STORAGE AND HANDLING
- A. Deliver handle and store products in accordance with manufacturer's recommendations and by methods which prevent damage, deterioration and loss, including theft.
- B. Control delivery schedule to minimize long term storage of products at site and overcrowding of construction spaces. Provide delivery/installation coordination to ensure minimum holding or storage times for products that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.
- 1.08 SUBSTITUTION REQUEST PROCEDURE

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- A. For a period of 60 days after the start of Contract Time, the Landscape Architect will review written requests from the Contractor for changes in products, materials and methods of construction required by Contract Documents. These changes are considered request for "substitutions", and are subject to requirements hereof. Substitutions received after the 60 day commencement of Work may be considered rejected at the discretion of the Landscape Architect.
- 1. Work not defined as Substitutions: The requirements for substitutions do not apply to the following:
 - a. Specified Contractor options on products and construction methods.
 - b. Revisions to Contract Documents requested by Owner or Landscape Architect are "changes" not "substitutions".
 - c. Requested substitutions during bidding period, which have been accepted prior to Contract Date and included in Contract Documents.
 - d. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders, except as provided for in Contract Documents.
- B. Requests for Substitutions: Submit 3 copies of substitution request form provided herein fully identified for product or method being replaced by substitution, including related specification Section and drawing number(s), and fully documented to show compliance with requirements for substitutions. Include product data/drawings, description of methods, samples where applicable, Contractor's detailed comparison of significant qualities between specified item and proposed substitution, statement of effect on construction time and coordination with other affected Work, cost information or, proposal, fabrication and installation procedures and Contractor's statement to the overall Work as a substitute to or -better-than Work originally indicated.

Conditions: Contractor's request for substitution will be received and considered when extensive revisions to Contract Documents are not required and changes are in keeping with the general intent of Contract Documents; when timely, fully documented and properly submitted

CONTRACTOR'S REQUEST, WITH SUPPORTING DATA

1. Section of Specifications to which this request applies: _____
6 digit Section number

____ Product data for proposed substitution is attached (description of product, reference standards, performance and test data).

____ Sample is attached. _____ Sample will be sent if requested by Landscape Architect

2. Itemized comparison of proposed substitution with product specified.

ORIGINAL PRODUCT

SUBSTITUTION

Name, brand

Catalog No.

Manufacturer

Significant
Variation

3. Unit cost of original product and proposed substitution. State whether cost is for _____ material only, or _____ material installed.

Original Product: \$ _____ per _____ Substitution: \$ _____ per _____

4. Proposed change in Contract Sum:

Credit to Owner: _____ Additional cost to Owner:

5. Proposed change in Contract Time:

Reduce/Increase Contract time by _____ days.

6. Effect of the proposed substitute on other parts of the Work, or on other Contracts:

PRODUCT REQUIREMENTS

01 60 00 5

7. Reason for requesting substitution:

CONTRACTOR'S STATEMENT OF CONFORMANCE OF PROPOSED SUBSTITUTION TO CONTRACT REQUIREMENTS:

I/we have investigated the proposed substitution. I/we

1. believe that it is equal or superior in all respects to the originally specified product, except as stated in 2. above;
2. will provide the same warranty as required in the General Conditions 4.1.5;
3. will provide the same special warranty or guaranty as specified;
4. have included all cost data and cost implications of the proposed substitution;
5. will pay redesign and special inspection costs caused by the use of this product;
6. will pay additional costs to other Contractors caused by substitution;
7. will coordinate the incorporation of the proposed substitution in the Work;
8. will modify other parts of the Work as needed, to make all parts of the Work complete and functioning.
9. waive further claims for added cost to Contractor caused by the proposed substitution.

Contractor _____ Date _____

LANDSCAPE ARCHITECT REVIEW AND ACTION

- A. Provide more information in the following categories. Resubmit.
- B. Sign Contractor's Statement of Conformance. Resubmit.
- C. The proposed substitution is approved, with the following condition.
- D. The following changes will be made by change order:
 1. Addition/Deduction from the Contract Sum:
 2. Addition/Deduction from Contract Time:

Marshall/Gary, Landscape Architects _____

Date: _____

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General Conditions, and all Sections of Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, the following:
 - 1. Supplementary instructions regarding preparation for Contract closeout, including Punch-List, prerequisites to Substantial Completion and Final Inspection, Substantial Completion, Affidavit in regard to liens, submittals of guarantees and other Documents and instruction to Owner's personnel.
 - 2. Specific requirements for individual units of Work are specified in Sections of Division 2 through 3. Time of closeout is directly related to "Substantial Completion" and therefore may be either a single time period for the entire Work or a series of time periods for individual parts of the Work which have been certified as substantially complete at different dates.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which effect the Work of this Section.
- B. Other Specifications Sections which directly relate to the Work of this Section include, but are not limited to, the following:
 - 1. Section 00 00 03 - Summary of Work
 - 2. Section 00 33 00 - Submittals
 - 3. Section 01 60 00 - Product Requirements

1.04 PUNCH-LIST AND FINAL INSPECTION

- A. In accordance with requirements of the General Conditions, when the Contractor considers the Work to be substantially complete, (for either entire Work or portions thereof), he shall notify the Owner and the Landscape Architect in writing that the Work will be ready for final inspection on a definite date which shall be stated in the notice. Such notice shall be given at least 10 days prior to the date stated for final inspection.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1. Written notice shall also be given to Owner and Landscape Architect by the Contractor upon completion of any Work which was determined, in the above-mentioned final inspection, to be incomplete, incorrect or unsatisfactory.
2. On receipt of such notice from the Contractor, additional inspection(s) will be made until completion of all Contract requirements is effected.

- B. The Landscape Architect will review the Contractor's "punch-lists" and verify "Substantial Completion". The final inspection is intended to be a last review to determine that the Work included in the Contract has indeed been executed in accordance with the Contract Documents. Requests to render "Final Inspection" of an incomplete installation or to prepare the Contractor's "punch-list", will not be honored.

1.05 SUBSTANTIAL COMPLETION

- A. Upon determination of Substantial Completion by the Landscape Architect, the Certification of Substantial Completion will be prepared by the Landscape Architect, in accordance with the General Conditions. The date thus established for Substantial Completion shall be the date of commencement for all equipment warranties and all guarantees, unless specifically provided otherwise in the Certificate of Substantial Completion.

1. When the date of Substantial Completion is claimed by the Contractor, the Contractor shall show 100% completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these construction Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100% completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

1.06 SUBMITTAL OF DOCUMENTS AND PROCEDURAL REQUIREMENTS

- A. At the "Substantial Completion Stage" of the Contract, the Contractor shall submit the following items to the Landscape Architect for transmission to the Owner:
1. Application for reduction in retainage, and consent of surety.
 2. List of incomplete Work, which is to be attached to the Landscape Architects Certificate of Substantial Completion as a clarification.
 3. Complete project Operational and Maintenance Manuals, assembled in three ring binders.
 4. One copy of each special warranty required by the Contract Documents, endorsed by the Contractor, and in a form reasonably acceptable to the Landscape Architect. If the Landscape Architect accepts unbound warranties at this time, those warranties will be returned to the Contractor for binding into the Warranty Binders specified below.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- a. Warranties required by the Contract Documents for Work cited as not complete on the punch list shall commence when such Work is accepted as complete by the Landscape Architect, unless otherwise provided in the Certificate of Substantial Completion.
 - B. Remove construction facilities and temporary controls, except those that are required to complete punch-list Work.
 - C. At "Final Completion" the Contractor shall prepare closeout submittals and submit to the Landscape Architect prior to "Final Completion", allowing at least 15 Working days time for review.
 1. Project record Documents marked with changes made during construction.
 2. Copy of approved shop drawings or installed drawings for all phases of the Work.
 3. Project warranties (guarantees) and maintenance agreements, assembled in 3 ring binders.
 4. Spare parts neatly wrapped or packaged in standard sizes and clearly labeled.
 5. Final construction photographs.
 7. Certificate of insurance for products and completed operations.
 8. Consent of Surety to Final Payment.
 9. An affidavit that all bills and indebtedness connected with the Work has been paid.
 10. Typed list of Subcontractors and major Material Suppliers. (Shall include address, telephone number and name of individual to Contract regarding this project.)
 11. Waivers of lien from all Subcontractors and suppliers, or bond satisfactory to the Owner indemnifying Owner against all liens or other claims.
 12. Proof that all taxes, fees and similar obligations have been paid.
 15. Deliver tools, spare parts, extra stock, and similar items.
 16. Complete final clean-up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred and exposed finishes.
 - D. Complete punch list items or, if acceptable to the Owner, furnish proposed schedule for completion and assurances that Work not completed and accepted will be completed without undue delay. The Landscape Architect will re-inspect the Work to determine whether it is complete.
 - E. The Contractor shall complete all of the items stated in the Closeout Procedures within 45 days of date of the Certificate of Substantial Completion. Failure to complete the closeout requirements within the allowed time frame shall require the Owner to charge back all costs of the Landscape Architect and other Consultants which the Owner requires for the completion of the project closeout. The Landscape Architect will process this by preparing a Final Change Order, reflecting adjustments to the Contract Sum not previously made by other Change Orders.
- 1.07 AFFIDAVIT IN REGARD TO LIENS
- A. A valid "Contractor's Affidavit in regard to Liens", which certifies the following, must be submitted with "Request for Final Payment".

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1. The undersigned hereby certifies that all Work required under the above Contract has been performed in accordance with the terms thereof, that all material, men, Subcontractors, mechanics and laborers have been paid and satisfied in full and that there are no outstanding claims of any character arising out of the performance of the Contract which have been paid and satisfied in full.
2. The undersigned further certifies that to the best of his knowledge or belief, there are no unsatisfied claims for damages resulting from injury or death to any employees, Subcontractors or the public at large arising out of the performance of the Contract, or any suits or claims for any other damage of any kind, nature or description which might constitute a lien upon the property of the Owner.
3. Contractor shall provide a written guarantee in a form acceptable to the Owner and Landscape Architect at Substantial Completion.

1.08 OPERATIONAL AND MAINTENANCE MANUALS

- A. Prior to date of substantial completion, submit to the Landscape Architect maintenance and operational manuals. Generally, include operations and maintenance information for all items of equipment, and maintenance information for all products which may require special care, such as carpet and special finishes, whether or not a submittal is specifically required by technical Sections of these specifications.
 2. Include instructions for installation, start-up, operation, inspection, maintenance, parts lists and data sheets.
 3. On manufacturer's printed literature, where the literature covers more than one model, indicate by check mark or circle in ink the correct model number and data base for the model number.
- B. Arrange manuals, instruction books diagrams, etc., in order and manner prescribed by the Owner. In the absence of other instructions from the Owner, organize the operation and maintenance manuals as described in this article.

1.09 FINAL INSPECTION

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following: List exceptions in the request.
 1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and complete operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

3. Submit a certified copy of the Landscape Architects final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and the list has been endorsed and dated by the Landscape Architect.
5. Submit consent of surety to final payment.
6. Submit final liquidated damages settlement statement.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General Conditions, and all Sections of Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section shall include, but not be limited to, maintaining at the site for the Building Superintendent one record copy of the following:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other Modifications to the Contract
 - 5. Landscape Architect's Field Orders or written instructions
 - 6. Approved Shop Drawings, Product Data and Samples
 - 7. Field Test Records

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all the Contract Documents for requirements which effect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:
 - 1. Section 00 33 00 - Submittals
 - 2. Section 01 60 00 - Product Requirements

1.04 GENERAL REQUIREMENTS

- A. Record Documents shall not be used for construction purposes.
- B. Make Documents and samples available at all times for inspection by Landscape Architect.

1.05 RECORDING

- A. Label each document "PROJECT RECORD" in neat large printed letters located in the bottom right hand corner.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. Record information concurrently with construction progress.
 - 1. Do not conceal any Work until required information is recorded.
- C. Drawings shall be legibly marked daily to record actual construction, as follows:
 - 1. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Field changes of dimensions and detail.
 - 3. Changes made by Field Order or by Change Order.
 - 4. Details not on original Contract drawings.
 - 5. Record Drawings shall be updated each Working day. Monthly pay requisitions shall not be processed if record drawings are not up to date.
- D. Individual Specification Sections and Contract Document Addenda shall be legibly marked to record the following:
 - 1. Manufacturer, trade name, catalogue number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Field Order or by Change Order.

1.06 SUBMITTALS

- A. Prior to Substantial Completion, deliver Record Documents to the Landscape Architect for review and approval.
- B. Upon receipt of approval, the General Contractor and the Subcontractors shall transfer the as-built information shown on the Record Drawings onto compact disc, in a format compatible with equipment and programs provided under the Work of Section 00 91 16 – Temporary Facilities and Controls.
- C. Submission of accurate record drawings and their approval shall be a condition precedent to final payment.
- D. Submittals of Record Documents shall be accompanied with transmittal letter in duplicate, containing the following information:
 - 1. Date
 - 2. Title and number of each Record Document
 - 3. Signature of Contractor or his authorized representative

1.07 OPERATIONS AND MAINTENANCE MANUALS

- A. Prior to date of Substantial Completion, submit Operation and Maintenance (O&M) manuals to the Landscape Architect for review. Generally, included operation and maintenance

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. information for all items of the equipment, and maintenance information for all products which may require special care, such as the synthetic turf, whether or not a submittal is specifically required by the technical Sections of these specifications.
 - 1. Include instructions for installation, start-up. Operation, inspections, maintenance, parts lists and data sheets.
 - 2. On manufacturer's printed literature, where the literature covers more than one model, indicate by check mark or circle in ink the correct model number and data for the model number.
- B1. Arrange manuals, instruction books, diagrams, etc. in the order and manner prescribed by the Owner. In the absence of other instructions from the Owner, organize the operation and maintenance manuals as described in this Article.
- C. Bind instruction books in hard durable covers supplied by the manufacturer, or in 3-ring binders with vinyl covers.
 - 1. Identify each volume on front and spine with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS," title of Projects, identity of subject matter covered in each particular volume.
 - 2. Inside cover and Title Page shall repeat information on the cover and identify the General Contractor, name of responsible principal, address and telephone number.
 - 3. Provide Table of Contents for each volume, arranged in systematic order, neatly type written. Organize information by systems, following the sequence of the table of contents of the Project Manual.
 - 4. Separate products and systems within the binder by tabbed and labeled dividers.
 - 5. For each item or system, Include the name, address and phone number of the subcontractor who furnished and/or installed the equipment, the name(s) and telephone numbers of the Subcontractor's representative to be contacted in the event of an emergency, and the name, address and phone number of the nearest service facility authorized by the manufacturer.
- D. Require each manufacturer to prepare/provide information on its own products. In those instances where equipment or controls are job-assembled by a Subcontractor, then require that the Subcontractor prepare maintenance instructions.
- E. Information for complex systems, such as elevators and handicap lifts, may be separately bound. Include a tabbed divider for the system and insert a page directing the reader to the separate volume, or include a clear cross reference in the table of contents.
- F. Submittal:
 - 1. Submit one review copy of the fully compiled data in final form. The Landscape Architect will review the copy and return it with comments.
 - 2. Upon review and acceptance by the Landscape Architect, resubmit three corrected bound copies.

MacArthur School Playground
WALTHAM, MASSACHUSETTS
Marshall/Gary Project No. 1702

1.08 WARRANTIES AND GUARANTEES

- A. Assemble 2 executed copies of each warranty, bond, and service and maintenance Contract required for the project. Warranties are specified in the respective trade Sections of the specifications.
- B. Bind these in 3-ring loose leaf binders with vinyl covers
 - 1. Identify each volume on front and spine with typed or printed title "WARRANTIES," title of Projects, identity of subject matter covered in each particular volume.
 - 2. Inside cover and Title Page shall repeat information on the cover and identify the General Contractor, name of responsible principal, address and telephone number.
 - 3. Table of contents: For each volume, arrange in systematic order, neatly type written.
- C. For items of Work delayed beyond Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.09 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
- B. Deliver to Project site and place in location directed. Obtain receipt prior to final payment.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 01 91 15

GENERAL TESTING REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General Conditions, and all Sections of Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, the following:
 - 1. General testing requirements and procedures.
 - 2. Responsibilities of the Contractor.
 - 3. Responsibilities of the Owner.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which effect the Work of this Section.

1.04 REQUIRED TESTING

- A. The Contractor will employ independent testing agencies to perform field and lab tests unless otherwise specified or indicated in other Sections of these Specifications. This testing will be paid for by the Contractor, unless otherwise specified or indicated. Employment of Testing Laboratory shall in no way relieve Contractor of his obligation to perform Work in accordance with the Contract.
- B. More detailed testing requirements are given in individual specification Sections. The Owner shall retain the right to make any additional tests the Landscape Architect deems necessary or appropriate. The scope of tests required shall include, but not be limited to, the following:
 - 1. Earthwork: Lab tests to determine suitability of all fill materials. (4 sieve analysis)
 - 2. Earthwork: Proctor tests for compaction. (6 compaction tests)
 - 3. General Concrete Work: Concrete mix design testing.
 - 4. Bituminous concrete paving.

1.05 TESTING PROCEDURES

- A. The Contractor shall fully cooperate with testing agencies and permit free access to all areas at all times. The Contractor shall permit taking samples at any time during construction, either before or after installation. The Contractor shall furnish casual labor and facilities to provide access to Work being tested, to obtain and handle samples at the site to facilitate inspections and tests and provide for Laboratory's exclusive use storage and curing for test samples

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. The Contractor shall distribute test results as follows:
 - 1. Contractor (2 copies)
 - 2. Landscape Architect (2 copies)
- C. The final Testing Log, including final acceptable tests, shall be turned over to the Owner, with four copies delivered to the Landscape Architect.
- D. The Contractor and the Owner will note the test record on the Testing Log to acknowledge test procedures and results. If follow-up or corrective action is needed, the Contractor shall submit to the Owner two written copies of proposed follow-up or corrective plans and obtain the Owner's written approval before proceeding. Costs for additional inspections, sampling and testing required when initial tests indicate Work does not comply with Contract Documents will be deducted from Contractor's monthly payments.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 00 91 16

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General Conditions, and all Sections of Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Contractor shall provide, maintain, remove and pay for temporary facilities as specified and as required for the progress and completion of the Work under Contract. All required temporary facilities and controls are to be provided by the Contractor, at his cost.
- B. Contractor shall be responsible for coordinating and scheduling among all trades and subcontractors the furnishing and use of all temporary facilities for the Work.
- C. Contractor shall comply with all governing rules, regulations and the like.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which affect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:
 - 1. Section 00 00 03 - Summary of Work
- C. Nothing in this Section is intended to limit types and amounts of temporary Work required, and no omission from this Section will be recognized as an indication by the Landscape Architect that such temporary activity is not required for successful completion of the Work or compliance with requirements of the Contract Documents.

1.04 REQUIREMENTS OF REGULATORY AGENCIES

- A. Provide and maintain all temporary facilities in compliance with governing rules, regulations, codes, ordinances and laws of agencies and utility companies having jurisdiction over Work involved in the project.
- B. Be responsible for all temporary Work provided, and obtain any necessary permits and inspections for such Work.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- C. Do not interfere with normal use of streets in vicinity of project site except as indicated on drawings and/or as absolutely necessary to execute required Work, and then only after proper arrangement has been made with applicable authorities, including traffic control.

1.05 JOB CONDITIONS

- A. Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the Work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.
- B. Install, operate, maintain, and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.
- C. Notify the Owner, Landscape Architect, and other affected parties no less than 10 days in advance of shutting down, starting up, interrupting utilities or service of facilities which may affect the neighboring homes or businesses. Allow sufficient time for protective measures to be taken.
- D. The Contractor shall provide such storage sheds, temporary buildings, or trailers as required for the performance of the Contract. Protect all construction materials from damage due to moisture, wind, cold, vandalism, or any other source. Any damage to construction materials will be at the expense of the Contractor.
- E. All temporary structures shall be removed at Substantial Completion.
- F. Materials shall be handled, stored, and protected in accordance with the best practice in the industry, and except where otherwise specified in the Contract Documents, in accordance with manufacturer's specifications and directions.

1.06 WEATHER PROTECTION

- A. "Weather Protection" shall mean the temporary protection of the Work adversely affected by moisture, wind, and cold by covering, enclosing, and/or heating
- B.. The entire responsibility for weather protection during construction, until Substantial Completion, shall be assumed by the Contractor, who shall be liable for any damage to any Work caused by failure to supply weather protection and proper ventilation.
- D. It is to be specifically understood that the Contractor shall do no Work under any conditions deemed unsuitable by the Contractor to the perfect execution of the Work. This provision shall not constitute any waiver, release, or lessening of the Contractor's obligation to bring the Work to Substantial Completion within the period of time set forth in the Contract Documents.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1.07 TEMPORARY SERVICES

- A. Provide temporary water service, including required piping and hoses of sizes and pressure adequate for construction. Municipal water service exists near the site, and all connections for temporary water service shall be in accordance with Town of Stow Water Department requirements. The Contractor shall meter and pay for all charges and fees related to provision of temporary water service.
- B. Provide temporary sanitary facilities, including temporary toilets, and drinking water facilities. Comply with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities. The toilets and wash facilities shall be installed in a location approved by the Owner. Include toilet tissue, paper towels, and similar disposable materials for each facility. Provide covered waste containers for used material.
 - 1. Provide self contained chemical type toilet units, including periodic maintenance. Shield toilets as required to ensure privacy, and do not lift while occupied.
 - 2. Provide facilities supplied with potable water for personnel involved in handling materials that require wash-up. Dispose of drainage properly.
- C. Removal:
 - 1. Completely remove temporary materials and equipment when their use is no longer required.
 - 2. Clean and repair damage caused by temporary installations or used for temporary facilities.

1.08 VEHICLE AND CONTRACTOR ACCESS AND TRAFFIC CONTROL

- A. The Contractor shall be responsible for all traffic control, including municipal police services, at streets adjacent to the Project site, as required to provide safe access and egress for Owner and construction related vehicles. Provide and maintain a suitable means of access to the Contract Work areas as necessary for vehicles and equipment of all trades requiring such access.
- B. The Contractor shall be responsible for all measures necessary to maintain public access at all times to existing Building.

1.09 TEMPORARY PARKING

- A. Parking for vehicles belonging to the Contractor or other personnel providing services included under the Work of this Contract shall be limited to within the Limit of Work line of this Project or on public land with the approval of the City.

1.10 TEMPORARY BARRICADES AND ENCLOSURES

- A. Provide temporary enclosure where indicated and where reasonably required to ensure adequate Workmanship and protection from weather and unsatisfactory ambient conditions for the Work.

TEMPORARY FACILITIES AND CONTROLS

00 91 16- 3

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1. Provide protection at all times, against rain, snow, wind, storms, and at the end of each day's Work cover all new Work subject to damage. Work damaged by failure to provide such protection shall be removed and replaced at no additional cost to the Owner.
2. Provide barricades as required for traffic control at streets adjacent to the Project site, as required to provide safe access and egress for Owner and construction related vehicles.
3. Provide protection as required to prevent existing site flooding.

1.11 SECURITY/PROTECTION PROVISIONS

- A. The types of temporary security and protection provisions required include, but are not limited to, guard rails, fire protection, barricades, warning signs/lights, enclosed fence, sidewalk bridges, building enclosure/lockup, personnel security program (theft protection), environmental protection, and similar provisions intended to minimize property losses, personal injuries and claims for damages at project site. Provide security/protection services and systems in coordination with activities and in such a manner to achieve 24 hour, 7-day-per week effectiveness.

1.12 HAZARDOUS MATERIALS

- A. The Contractor is solely responsible for all matters relating to hazardous or toxic materials and lawful removal of same from the site. If hazardous or toxic materials are indicated or discovered, properly inform governing authorities and abide by their requirements.

1.13 DUST AND NOISE CONTROL

- A. Provide and maintain throughout the conduct of the Work of this Project, the following measures necessary to control and reduce emission of airborne dust, and prevent contamination of exterior surfaces at the site and adjacent public and private properties, or otherwise creating a nuisance to the Owner or adjacent properties:
 1. Periodic dosing with water or other approved dust control materials of site access roads during periods of extended heat or dry weather, as determined by the Landscape Architect
 - a. Sufficiently wet construction materials with a fine spray or sprinkling of water during removal, cutting or other handling to reduce the emission of airborne dust. On Workdays this is to be done a minimum of four (4) times per day. On Sundays and Saturdays, it is to be one (1) time per day, 24 hours maximum after last Workday watering and 24 hours between each weekend watering.
 2. Covering with heavy duty tarps, or other approved protection, of all on-site stockpiles of loam and fill
 3. Installation of crushed rock dust traps at all transition points from dirt to asphalt
 4. Street sweeping of adjacent streets to the project as required to maintain all areas clean and free of dirt, mud, and debris at all times.
 5. The Contractor shall include the cost to comply with the above requirements in a separate line item included in the Schedule of Values provided in accordance with the Contract Documents.

TEMPORARY FACILITIES AND CONTROLS

00 91 16- 4

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. The Contractor shall use every effort and every means possible to minimize noise caused by his operations, which the Landscape Architect, the Owner's Representative, Owner, or governing authorities may consider objectionable. The noise levels on the construction site will be controlled so that at no time will the noise level measured at the Limit of Work line shall exceed 70dB. The Contractor shall provide Working machinery and equipment equipped with suitable mufflers and sound-deadening panels in accordance with the latest edition of the OSHA regulations. Compressors shall be equipped with silencers or mufflers on intake and exhaust lines. Wherever practical electricity shall be used for power to reduce noise. Dumping bins, hoppers and trucks used for disposal shall be lined with wood or other sound deadening material if required. Where required agencies have jurisdiction, certain noise-producing Work may have to be performed during specified periods only, further; the Contractor and Subcontractors are required to comply with all applicable regulations.
 - 1. Prior to the start of construction, the Contractor shall submit to the Owner, the Owner's Representative and the Landscape Architect, a Noise Control Program for review where Work with high level of noise is anticipated to Work out plans to mitigate the noise impact, especially for Work anticipated to be done during normal school hours.

1.14 RUBBISH REMOVAL

- A. All waste and debris caused by the Work of this Contract shall be removed and legally disposed of off site, daily, or as otherwise required to avoid large accumulations
- B. Burning or on site disposal of waste and debris caused by the Work of this Contract shall not be allowed.

1.15 PROJECT SIGNAGE

- A. Provide project identification sign located adjacent to main Project site entry gate. Sign shall be fabricated from 1 inch thick medium density overlay exterior plywood laminated with waterproof glue. All edges of the sign shall be banded with 1 inch by 1/2 inch pine banding. Sign shall be 20 square feet in area, and supported by two 4 inch by 4 inch post supports set in 12 inch diameter concrete footings to a depth of four feet, so that the bottom edge of the sign is raised a minimum of four feet above grade. All nails, nuts, bolts and other connecting hardware shall be galvanized. Project sign shall include name of Project, Owner, Landscape Architect and Contractor

1.16 SAFETY AND COOPERATION

- A. This project is subject to compliance with Public Law 91-596, "Occupied Safety and Health Act of 1970" (OSHA) and all amendments thereto, with respect to all rules and regulations pertinent to construction.
 - 1. The Work of this Contract shall be performed between the hours of 7:00 AM and 5:00 PM, Monday through Friday, and 9:00 AM and 4:00 PM on Saturday. Performance of the Work of this Contract shall not be allowed on Sunday or Holidays. Exceptions to the specified

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

hours of Work will be allowed in the event of an emergency, in coordination with the Owner.

- B. The following rules and regulations will be required of Contractor, Subcontractor, or other personnel providing services included under the Work of this Contract. No deviation or exception will be permitted without the express written approval of the Owner. The Contractor shall take responsibility for ensuring all construction personnel adhere to and cooperate with the Owner in enforcing these responsibilities.
1. All Workers must be properly, permanently and visually identified. The identification systems will be set up by the Owner and administered by the Contractor. Maintain an updated list of authorized Workers with Owner and notify the Owner of any change.
 2. All Workers shall maintain their actions in a professional and workmanlike manner while at the Project site. Failure to comply with the following restrictions shall be grounds for permanent removal from the list of authorized workers, as described above. Worker restrictions include, but are not limited to, the following:
 - a. No abusive language
 - b. No littering
 - c. No lewd behavior in public
 - d. No conduct otherwise deemed unacceptable by the Owner or Landscape Architect
 - e. Consumption of alcoholic beverages on the job, or coming to Work in an intoxicated condition
 - f. Possessing or consuming illegal drugs or any other illegal substance while working on the Project
 - g. Using or removing Owner's or Subcontractors' possessions from the property without prior written authorization
 - h. Violating any state, federal or town statutes, rules, regulations, and the like while working on the Project
 - i. Possessing firearms or explosives while Working on the Project
 - j. Using Project facilities for jobs other than specific assignments directly related to the Work of this Project
 - k. Physically abusing or harming an individual who Works at or visits the Project
 - l. Duplication of any keys used in the existing or new building without prior written authorization
 - m. Providing building access at any time to anyone not directly working for the Contractor
 - n. Abusing, defacing, or destroying existing or new property of the Owner
 - o. Preventing access to any and all areas of the Project by the Owner, Landscape Architect and the Owner's Consultants.

1.04 CITY OF WALTHAM NOISE ORDINANCE

- A. The Contractor is advised that the City of Waltham has a Noise Ordinance, Section 10-6, which has the authority to regulate the noise generating activities of this Contract. In general the Ordinance prohibits excessive noise created by construction, building,, remodeling, excavating, land

clearing, or by any of the equipment associated with such work. The Police Department considers the startup or idle running of truck engines and/or equipment prior to 7:00 AM a violation. Permits to waive the noise ordinance must be approved and issued by the Chief of Police.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION NOT USED

END OF SECTION

DIVISION 3

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART I - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work specified in this Section.

1.02 DESCRIPTION OF WORK

- A. Provide all labor, equipment, implements and materials to furnish, install, construct and perform all concrete work complete, as ordered by the Landscape Architect, as shown on the Drawings or specified herein.

1.03 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades

- B. The following related items are included under the Sections listed below:

Section 31 20 00 - Earthwork

Section 32 12 16 - Paving and Surfacing

Section 32 12 10 - Site Improvements

- C. The following initials referred to herein shall mean:

- 1. A.S.T.M. - American Society of Testing and Materials.
- 2. A.S.A. - American Standards Association.
- 3. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.

CAST-IN-PLACE CONCRETE

03 30 00 -1

100% BID DOCUMENTS

September 2017

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1.04 SHOP DRAWINGS

- A. No work shall commence until shop drawings have been stamped with approval of the Landscape Architect.
- B. Shop drawings shall indicate all material, type, layout, sizes, anchors, clips, etc. and methods of attachments and relation to other work.
- C. Shop drawings shall be submitted on all items manufactured, fabricated or otherwise installed.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Cement shall be domestic Portland cement conforming to A.S.T.M. Designation C 150, Type 1 or 11.
- B. Fine aggregate shall be clean, sharp, natural sand conforming to A.S.T.M. Designation C 33.
- C. Coarse aggregate in poured in place concrete shall be well graded crushed stone conforming to A.S.T.M. Designation C 33, Size No. 67 unless otherwise directed.
- D. Water shall be potable, clean, and free from deleterious amounts of acids, alkalis, oils, or organic matter.
- E. No admixtures shall be used unless approved by the Landscape Architect in writing.
- F. Reinforcing steel shall be deformed, intermediate grade, steel bars conforming to A.S.T.M. Designation A 615 Grade 40 free of rust, loose scale or coatings which would reduce bonding. Rail-Steel bars will not be permitted in the work. Mesh shall be 6 x 6 No. 10 welded wire mesh.
- G. Concrete aggregate which have been shown by test or actual service to product concrete of the required strength, durability, water tightness and wearing qualities may be used where authorized by the Landscape Architect.
- H. Miscellaneous steel shall conform to ASTM A/36 for all miscellaneous steel not otherwise noted on the drawings or specified. Steel shall be mild stock.

CAST-IN-PLACE CONCRETE

03 30 00 -2

2.02 CONCRETE QUALITY

- A. Unless otherwise specified or directed, concrete shall be designed for a minimum allowable compressive 3,000 psi at 28 days for below grade footings and foundations and 4,000 psi at 28 days for surface concrete. Slump shall preferably be between 2 and 4 inches, and shall not exceed 5 inches. Water shall be kept to a minimum to obtain concrete which is as dense and watertight as possible the maximum water content shall be 6 gallons per 94 pound sack and the minimum cement factor shall be 5.7 (94 pound) sacks per cubic yard. The above ratios shall be revised for sacks of cement weighing different from 94 pounds per sack. All concrete to be air entrained.

2.03 MIXING CONCRETE

- A. Ready-mix concrete shall conform to A.S.T.M. Specification C94 and the requirements herein, or as otherwise approved by the Landscape Architect. If ready-mix concrete is to be used, the manufacturer shall furnish a statement to the Landscape Architect for his approval giving the dry proportions to be used, with evidence that these will produce concrete of the quality specified.
- B. Concrete shall be mixed until there is a uniform distribution of the materials, and shall be discharged completely before the mixer is recharged. The mixer shall be rotated at a speed recommended by the mixer manufacturer, and mixing shall be continued for least one and one-half minutes after all the materials are in the mixer. Concrete shall be placed within one and one-half hours of the time at which water first added, otherwise it shall be rejected. Concrete which has been remixed or retempered, or to which an excess amount of water has been added, shall also be rejected.

2.04 FORMS

- A. Forms shall be free from roughness and imperfections, substantially watertight and adequately braced and tied to prevent motion when concrete is placed. No wooden spreaders will be allowed in the concrete.
- B. No form shall be removed without the knowledge and consent of the Landscape Architect and an average temperature of 50 degrees F or higher, inside forms shall be retained for at least 24 hours. With lower average temperature, forms shall be retained one day longer.

CAST-IN-PLACE CONCRETE
03 30 00 -3

2.05 EXPANSION JOINTS

A. Joint Filler

1. Joint filler used in conjunction with caulking or sealants shall be non-extruding preformed strips conforming to A.S.T.M. D1752, Type III and A.S.S.H.T.O. N153, Type II as manufactured by, W.R. Grace and Company, W.R. Meadows, or approved equal.
2. Joint sealers for sealing the top portion of expansion joints shall be one-component, elastomeric compound conforming to Federal Specification TT-S-00230C, Class A, Type I. Color of sealant shall match adjacent paver, brick, granite, concrete surface or masonry mortar.
3. Joint filler requiring no sealant or caulking shall be 'Flexcell' non-extruding bituminous preformed strips conforming to A.S.T.M. D1751, as manufactured by Knight – Celotex Corporation, or approved equal.

- B. Sleeved dowels shall be stainless steel with one (1) side capped with wax, as shown on the Drawings.**

PART 3 - EXECUTION

3.01 PLACING CONCRETE

- A.** Reinforcement, where required, shall be accurately placed in exact positions shown, shall be secured against displacement with annealed iron wire ties or suitable clips at intersections, and shall have a clear space of two (2) inches between the steel and face of forms unless otherwise indicated. Wire ties passing through the forms for the purpose of holding the steel in proper position will not be allowed. Concrete blocks with wire ties cast therein may be used where approved by the Landscape Architect for the purpose maintaining the clearance between reinforcement and forms. Reinforcing bars shall be free from rust, scale, dirt, grease and injurious contaminants.
- B.** No concrete shall be placed until forms and method of placement have been approved by the Landscape Architect. Before depositing concrete, all debris, foreign matter, dirt and water shall be removed from the forms. The surface of concrete previously placed, such as horizontal construction joint, shall be cleaned and brushed with cement paste. Concrete shall not be placed in water or submerged within 24 hours after placing, no shall running water be permitted to flow over the surface of fresh concrete within four days after its placing.

CAST-IN-PLACE CONCRETE
03 30 00 -4

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- C. No concrete shall be mixed or placed during freezing weather without explicit permission. When placing concrete when air temperature is below 40 degrees F, the water, sand and gravel shall be heated so that the temperature of the concrete will be at least 50 degrees F. This temperature shall be maintained for 72 hours after placing. No concrete shall be placed on frozen ground.

3.01 SCORING AND JOINTS

- A. Scored lines shall be a maximum of five (5) feet on center. Expansion joints shall be installed thirty (30) feet on center and expansion joints shall be constructed between the concrete sidewalk and adjacent curb and wall.

END OF SECTION

CAST-IN-PLACE CONCRETE

03 30 00 -5

DIVISION 31 Sitework

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General and Supplementary Conditions and Division 1 - General Requirements, apply to the Work of this Section.

1.02 SPECIAL INSTRUCTIONS

- A. The Contractor shall become familiar with other Sections of the Specifications to determine the type and extent of work there under which affects the work of this section whether or not such work is specifically mentioned.

1.03 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, furnishing and installation of the following:
 - 1. All materials, equipment, labor and services required for all Site Preparation Work, including all items incidental thereto, as specified herein and as shown on the Drawings.
 - 2. Protect existing trees to remain as specified and as shown on the drawings.
 - 3. Clearing within the limits of work by cutting, grubbing and removing, together with proper disposal of, all trees, shrubs, stumps, roots and other objectionable materials except as otherwise provided herein.
 - 4. Demolition and removal from site or removal and stockpiling for reuse of items shown on the Drawings to be removed and reused including but not limited to, paving, fencing, basketball standards and hoops, signage etc., as required.
 - 5. Removal and disposal of pavement, above grade concrete/stone foundations, below grade footings, foundation walls, and other structures. Break up and completely remove from the site all other existing pavements, site improvements and structures so designated and remove other such existing items above and below not designated on the Drawings, but required for removal in order to perform all Work.
 - 7. Remove from the site other unsuitable materials as required which shall include the following:
 - a. Peat, organic silt and other organic materials subject to decomposition, consolidation or decay.
 - b. Miscellaneous fill including sand, gravel, cinders, ash, glass, wood, metal and municipal fill.
 - c. Ledge or boulders.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1.04 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all the Contract Documents for requirements that affect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this section include, but are not limited to, the following:
 - 1. Section 31 20 00 - Earth Moving
 - 2. Section 31 25 00 - Sedimentation and Erosion Control
 - 3. Section 32 12 16 - Paving and Surfacing
 - 4. Section 32 12 10 - Site Improvements

1.05 REFERENCE SPECIFICATIONS

- A. A.S.T.M. - American Society for Testing and Materials.
- B. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.

1.06 SUBMITTALS

- A. Provide submittals in accordance with requirements of Section 01 33 00 – Submittal Procedures in accordance with requirements of the Contract Documents.
- B. Prior to commencement of any demolition or site preparation operations submit to the Landscape Architect, for review, a schedule for the phased demolition and the proposed methods to insure against possible damage to existing areas adjacent to where demolition operations will occur.
- C. Include a full description and plan for securing the site, safety devices maintenance of traffic and measures to be taken and time table for implementation.

1.07 SURFACE/SUBSURFACE INFORMATION

- A. Test pits have been taken with the report attached to this Section. The Owner assumes no responsibility for the Contractor's failure to make his own site investigation. Failure by the Contractor to be aware of existing site conditions shall not be cause for additional cost to the Owner. The test pit report follows this Section.

1.08 PROTECTION

- A. All rules and regulations governing the respective utilities shall be observed in executing all work under this Section. All work shall be executed in such a manner as to prevent any damage to existing buildings, streets, curbs, paving, service utility lines, structures and adjoining property. Monuments and benchmarks shall be carefully maintained and, if disturbed or destroyed, replaced as directed.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. The Contractor shall assume full responsibility for damages caused by his or his Subcontractor's equipment and personnel to existing buildings and grounds as well as adjoining private property.
- C. The work of this Section shall be performed in such a manner as to cause no interference with access by the Subcontractors or other Contractors to all portions of the site as is necessary for the normal conduct of their work.

1.09 CLEAN UP

- A. Any soil, demolition debris or similar material which has been brought onto paved areas by hauling operations or otherwise shall be removed promptly, keeping these areas clean at all times.

PART 2 – MATERIALS**1.01 TREE PROTECTION**

- A. Post shall be two (2) inch Y or U shaped, steel posts.
- B. Tree protection fencing shall be heavy duty orange plastic mesh fencing fabric forty eight (49) inches wide. Openings in mesh to be 3" x 1.5 inches.
- C. Tree protection sign shall be ¼ inch thick plywood, 18"x24" with background with red 3" high letters and shall read "Tree Protection Area – Keep Out".
- D. Mulch shall be native fibrous, pliable shredded mulch, not exceeding ½-inch in width. It shall be one hundred (100) percent organic, with a pH range between 3.5 and 4.5 and have a moisture content not to exceed forty (40) percent. It shall be free from any diseases, insects, or ingredients harmful to plant growth. Mulch shall be aged no longer than 2 years. Samples and certification shall be submitted to the Landscape Architect for approval prior to installation.
- E. Matting for vehicles working in the protection area shall be heavy duty matting for vehicle loading over tree roots, Alturnamats as manufactured by Alturnamats, Inc. Franklin, PA 16232 or approved equivalent.
- F. Geogrid shall be woven polyester fabric with PVC coating, uni-axial or biaxial geogrid, Mirafi 2XT as manufactured by Ten Cate Nicolon, Norcross, GA or approved equivalent.

PART 3 – EXECUTION**3.01 PREPARATION**

- A. Notify all corporations, companies, individuals or local authorities owning, or having jurisdiction over, utilities running to, through or across areas disturbed by demolition operations.

3.02 TREE PROTECTION

- A. Protect all existing trees within the limit of work to remain including construction of a temporary fence with metal posts, fencing, signs, mulch with geo-grid and matting as specified and as shown on the drawings.
- B. Furnish and spread 5 inches depth of shredded bark mulch around the tree within the protective fence as specified and as shown on the drawings.

SITE CLEARING

31 10 00-3

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- C. Areas where vehicular traffic is unavoidable provide a layer of geo-grid under 8" of mulch.
- D. On completion of construction remove fencing, signs, mulch, geo-grid and matting from the tree protection area and seed lawns in the area.
- E. **Any trees or plants designated to remain and which are damaged by the Contractor shall be replaced in kind by the Contractor at their own expense. Trees shall be replaced with a tree of similar species and of equal size or 6 inch caliper whichever is less.**

3.03 DEMOLITION**A. General**

- 1. All existing features above and below grade within the contract limit lines shall be demolished as noted to prepare the site for all other work as specified in these Specifications, as shown on the Drawings and as ordered by the Landscape Architect.
- 2. All site features shown or ordered to be removed shall be completely removed or removed to the limits as shown or specified
- 3. All excavations resulting from the specified work shall be promptly backfilled and compacted. Any excavation within street lines shall be backfilled, compacted and paved all in accordance with the rules and regulations of the governing agency.
- 4. The burning of material or debris on the premises will not be permitted.
- 5. Remove and dispose of all unsuitable material off site as approved by the Landscape Architect. The City shall have right of first refusal for all materials. Any stockpiled material deemed surplus by the Landscape Architect shall also be removed.

3.04 CLEARING AND GRUBBING

- A. Clearing shall consist of the cutting and removal of all trees, logs, stumps, brush, roots and other objectionable material as shown on the plans or as directed by the Landscape Architect.
- B. Protect all areas to remain undeveloped outside the Limit of Work Line. Should these areas be damaged, the Contractor shall restore them to the satisfaction of the Landscape Architect at no additional cost. This includes the repairing and replacement of all damaged conditions such as plant materials and similar items.
- C. Grubbing shall include the removal and disposal off site of all stumps and roots.
- D. Fill all holes from removal of stumps and roots with specified fill compacted to subgrade.

3.05 DISPOSAL AND CLEAN UP**A. Demolished material**

- 1. All demolished material declared unsuitable by the Landscape Architect shall become the property of the contractor and be legally disposed of, off the premises, until otherwise indicated or specified.

SITE CLEARING

31 10 00-4

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

2. Keep all public ways clear of all spillage from trucks hauling material to and from the project site.

B. Premises

1. The premises shall be left in a safe, clean and relatively orderly condition upon completion of work under this Section.

C. Dust Control

1. Thoroughly wet down all work being demolished and all trucking ways as necessary to prevent spreading dust. Provide all water, hoses and connections required for dust control.

D. Waste Removal

1. All waste and debris caused by the Work of this Section shall be removed and legally disposed of daily

END OF SECTION

MEMO

To: John Pinzone, Project Director

From: Ben Gary

CC: File

Date: June 28, 2017

Project: MacArthur School Playground-Soil Tests

Soil tests were taken at the site of the proposed playground:

Date: June 22, 2017

Present: John Pinzone, Project Director
Jack O'Brien, Backhoe Operator (Case 590)
Ben Gary

Weather: clear, sunny, 73 degrees

Soil: Dry

At six locations (shown on the attached aerial photograph) the soil was excavated to a depth six feet with the following observed characteristics. See attached photographs.

Test Pit #1

Standing water on surface

3" broken pavement

12" gravel

12" – 72" sandy gravel with 2" – 4" stones

No groundwater

Test Pit #2

6" loam

6" – 96" dark sandy soil, some silt, stones 2" – 4" (Fill) - easy digging

Groundwater at 8'

Test Pit #3

6" loam

6" – 72" sandy soil, moist with stones 6" – 12" up to 16" (Fill) – difficult digging

No groundwater

MacArthur School Playground

Soil tests

6-28-17

Page 2

Test Pit #4

6" loam

6" – 72" Tan, sandy soil with stones 4" – 6" up to 24" (Fill) – difficult digging

No groundwater

Test Pit #5

6" – 8" dark loam

8" – 72" medium to fine, dark sandy soil, some silt with stones 6" -8" up to 16" (Fill)
difficult digging

No groundwater

Test Pit #6

6" loam

6" – 72" gravel with sand and some stones 2" – 6" up to 12" (Fill) – easy digging

No groundwater

Note on construction.

The soils as observed will support the proposed pavements and footings for play structures, basketball goals and fencing. After stripping of the loam the subgrade should be compacted and a gravel base furnished and compacted for all pavements and the play field. Auguring for foundations will be problematic.

No underdrains are recommended.



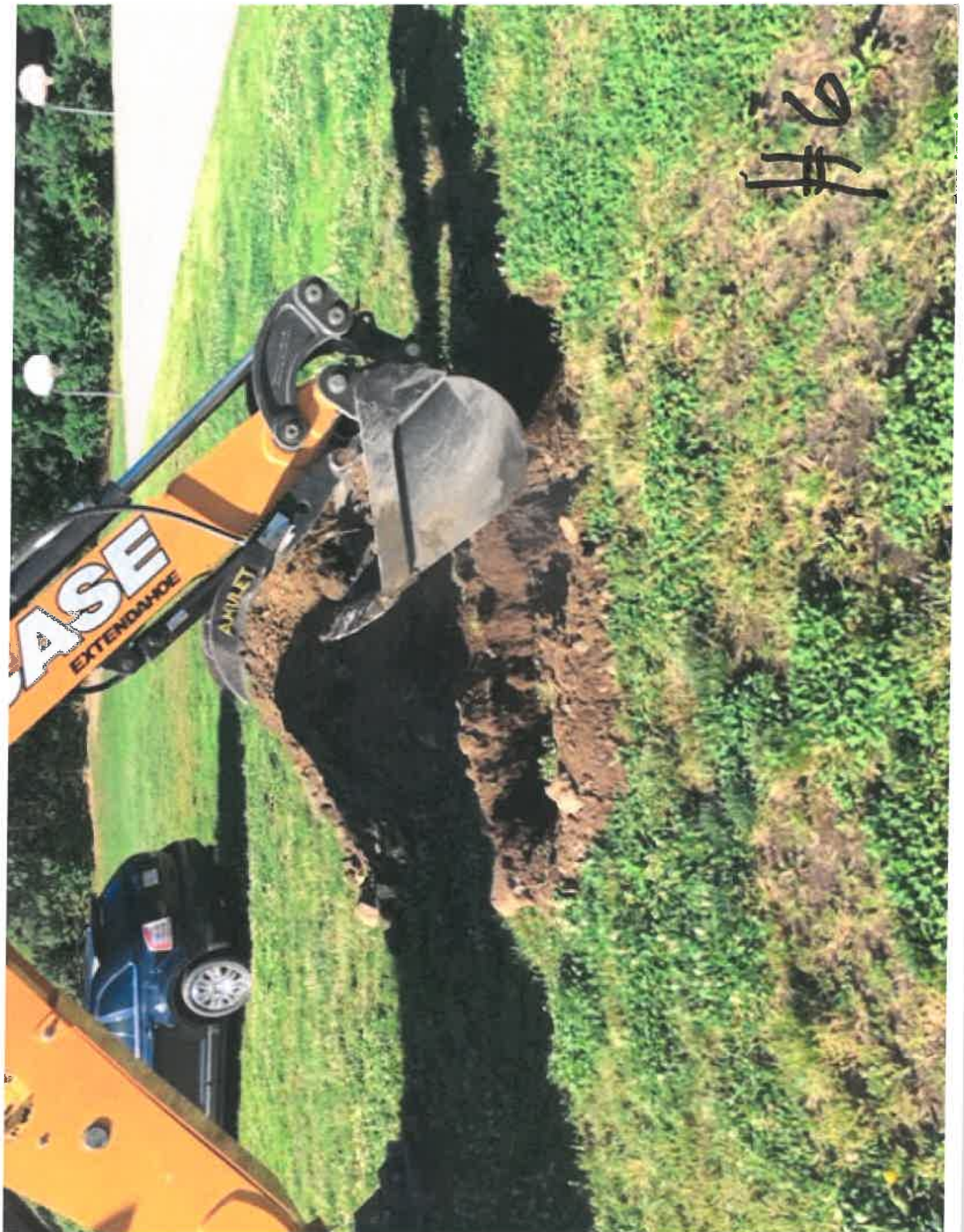
1#











MacArthur School Playground

WALTHAM, MASSACHUSETTS
Marshall/Gary Project No. 1702

SECTION 31 20 00

EARTH MOVING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General and Supplementary Conditions and Division 01 - General Requirements, apply to the Work of this Section.

1.02 SPECIAL INSTRUCTIONS

- A. The Contractor shall become familiar with other Sections of the Specifications to determine the type and extent of work there under which affects the Work of this Section whether or not such work is specifically mentioned.

1.03 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, furnishing and installation of the following:
 - 1. All materials, equipment, labor and services required for all Earth Moving work, including all items incidental thereto, as specified herein and as shown on the Drawings
 - 2. Spoiled material not suitable for fill shall be removed from the site and disposed of. No burning on the site shall be permitted.
 - 3. All topsoil shall be stripped to its entire depth wherever possible, screened and stockpiled for reuse as directed by the Landscape Architect.
 - 4. Excavating, filling, trenching, backfilling, compaction and concrete encasement of utility conduits, of all description, required for the construction of foundations, utility structures, utilities, pavements, lawn areas and site improvements.
 - 5. Pumping and/or bailing necessary to maintain excavated spaces free from water from any source whatsoever.
 - 6. Provide graded materials, as specified, for fills, base courses and backfills as required.
 - 7. Protect all existing buildings, utilities, roads, pavements, lawns, planting and other improvements from damage due to construction.
 - 8. Install fencing and safety devices or controls as specified and as necessary.
 - 9. Dust control and clean up.

1.04 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all the Contract Documents for requirements that affect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this section include, but are not limited to, the following Sections:

MacArthur School Playground

WALTHAM, MASSACHUSETTS
Marshall/Gary Project No. 1702

Section 31 10 00 - Site Clearing
Section 31 25 00 - Sedimentation and Erosion Control
Section 32 12 10 - Site Improvements
Section 32 12 16 - Paving and Surfacing
Section 32 12 10 - Site Improvements

1.05 REFERENCE SPECIFICATIONS

- A. A.S.T.M. - American Society for Testing and Materials.
- B. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.
- C. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.

1.06 BENCH MARKS AND ENGINEERING

- A. Lines and grade work in accordance with Drawings and Specifications shall be laid out by a registered Civil Engineer or Surveyor employed by the Contractor. The Contractor shall establish permanent bench marks, to which access can easily be had during the progress of the work. The Contractor shall maintain all established bounds and bench marks and replace, as directed, any which may be disturbed or destroyed. The selection of the registered Civil Engineer or Surveyor shall be subject to the Landscape Architect's approval. The General Contractor shall pay all costs of the services of the Civil Engineer or Surveyor.
- B. The Contractor shall verify dimensions and elevations on the ground and report any discrepancies immediately to the Landscape Architect. Any discrepancies not reported prior to construction shall not be the basis for claims for extra compensation.

1.07 FINISHED GRADES

- A. The words "finished grades" as used herein mean the required final grade elevations indicated on the Drawings. Where not otherwise indicated, areas outside of buildings shall be given uniform slopes between points, for which finished grades are shown, or between such points and existing grade except that vertical curves or roundings shall be provided at abrupt changes in slope.
- B. The word "subgrade" as used herein, means the required surface of natural soil, borrow fill or compacted fill. This surface is immediately beneath the site improvements, fill materials as mentioned in the Drawings, or other proposed surface material.
- C. Trench shall be defined as an excavation of any length where the width is less than twice the depth and where the shortest distance between payment lines does not exceed ten (10') feet. All other excavations shall be defined as open excavations.
- D. The words "invert" or "invert elevation" as used herein shall be defined as the elevation at the inside bottom surface of the pipe or channel.
- E. The words "bottom of the pipe" as used herein shall be defined as the base of the pipe at its outer surface

MacArthur School Playground

WALTHAM, MASSACHUSETTS
Marshall/Gary Project No. 1702

1.08 GRADES AND ELEVATIONS

- A. The Drawings indicate, in general, the alignment and finished grade elevations and drain invert grades. The Landscape Architect, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interference between utilities and to adapt the piping to other special conditions encountered.

1.06 PROTECTION

- A. All rules and regulations governing the respective utilities shall be observed in executing all work under this Section. All work shall be executed in such a manner as to prevent any damage to existing buildings, streets, curbs, paving, service utility lines, structures and adjoining property. Monuments and bench marks shall be carefully maintained and, if disturbed or destroyed, replaced as directed.
- B. The Contractor shall furnish all facilities and materials necessary to prevent the earth at the bottom of excavation from becoming frozen or unsuitable to receive footing or other load bearing units.
- C. The Contractor, under this Section, shall provide at his own expense adequate pumping and drainage facilities to keep the excavation sufficiently dry as not to affect adversely the quality or time of placement of concrete or other materials to be installed in the excavated areas.
- D. The Contractor shall assume full responsibility for damages caused by him or his Subcontractor's equipment and personnel to the existing buildings and grounds as well as adjoining private property.
- E. The work of this Section shall be performed in such a manner as to cause no interference with access by the abutters, Subcontractors or other Contractors to all portions of the site as is necessary for the normal conduct of their work.

1.07 SUBMITTALS

- A. Provide submittals in accordance with requirements of Section 01 33 00 – Submittal Procedures, and in accordance with requirements of the Contract Documents.

PART 2 - PRODUCTS**2.01 FILL MATERIAL**

- A. Crushed stone - Crushed stone to be placed under rubber safety surface and around underground storm water leaching basin as shown on the Drawings and as specified shall be washed, graded free of organic materials one and one-half (1-1/2) inch to three quarters (3/4) inch size. Gradation shall conform to S.S.H.B., Section M2.01.3 as follows:

MacArthur School Playground

WALTHAM, MASSACHUSETTS
Marshall/Gary Project No. 1702

U.S. Bureau of Standards	Percent Passing	
Sieve Size and Number	Minimum	Maximum
2-inches	100 %	----
1-1/2 inches	95 %	100 %
1 inch	35 %	70 %
3/4 inch	40%	80%

1. Material falling within the above Specifications, encountered during the excavation, shall be stored in segregated stockpiles for reuse as Compacted Structural Fill. All material shall be subject to approval by the Landscape Landscape Architect.
- B. Ordinary Fill - Well-graded, natural inorganic soil approved by the Landscape Architect and meeting the following requirements to be used for general filling to subgrades in lawn areas and to the bottom of the subbase beneath pavements, sidewalks and other than specified above, and conforming to the following gradation requirements. Soil finer than the No. 200 sieve shall be nonplastic.

U.S. Bureau of Standards	Percent Passing	
Sieve Size and Number	Minimum	Maximum
6-inches	100 %	----
1 inch	50%	100%
No.4	20%	100%
No. 20	10%	70%
No.60	5%	45%
No.200	0 %	20 %

1. It shall be free of organic or other weak or compressible materials, of frozen materials, trash or other deleterious materials and of stones larger than six (6) inches maximum dimension.
 2. It shall be of such nature and character that it can be compacted to the specified densities in a reasonable length of time.
 3. It shall be free of highly plastic clays, of all materials subject to decay, decomposition or dissolution and of cinders or other materials which will corrode piping or other metal.
 4. It shall have a maximum dry density of not less than one hundred (100) pounds per cubic foot.
 5. Material from excavation on the site may be used as ordinary fill if it meets the above requirements.
- C. Dense Graded Crushed Stone
1. Dense graded crushed stone shall consist of durable crushed rock or durable crushed gravel stone, free from ice and snow, sand, clay, loam, or other deleterious material, conforming to SSHB, Section M2.01.0 through M2.01.6 size as indicated on Drawings. The dense graded crushed stone shall be uniformly blended and conform to the following gradation requirements. Dense graded stone shall be used as a base under pavements.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

	Percent Passing By Weight		
Sieve Size	1/2-Inch Stone	3/4-Inch Stone	1.5-Inch Stone
2 inches	100	100	100
1 ½ inch	100	100	95-100
1 inch	100	100	35-70
3/4 inch	100	90-100	0-25
5/8 inch	100	---	---
1/2 inch	85-100	10-50	---
3/8 inch	15-45	0-20	---
No. 4	0-15	0-5	---
No. 8	0-5	---	---

- D. Sand shall consist of clean inert, hard, durable grains of quartz or other hard durable rock, free from clay, organics, surface coatings or other deleterious material, confirming to SSHB Section M1.04.1. Sand shall conform to the following gradation:

Sieve Size	Percent Passing by Weight
1/2-inch	100
3/8-inch	85-100
No. 4	60-100
No. 16	35-80
No. 50	10-55
No. 100	2-10

- E. Filter Fabric/Geotextile - Contractor shall use geotextile filter fabric in drainage recharge systems, underdrain systems between crushed stone and granular soils, leaching areas, or where indicated on the plans. The geotextile shall be placed on approved soil subgrades.
1. Geotextile Fabric for Subsurface Drainage Systems: Non-woven polypropylene fabric having a Puncture Resistance (ASTM D4833) of at least 65 pounds, a permittivity (ASTM D4491) of at least 130 gal/min/sf, and an Apparent Opening Size (ASTM D4751) of 0.15 to 0.22 millimeters, such as Mirafi 140N, Contech C- 40NW, or approved equivalent.
 2. Geotextile Fabric for and Pavements: Non-woven polypropylene fabric having a Puncture Resistance (ASTM D4833) of at least 110 pounds and an Apparent Opening Size (ASTM D4751) of 0.15 to 0.22 millimeters or less, such as Mirafi 180N, Contech C-80NW, or approved equivalent.

PART 3 - EXECUTION**3.01 STRIPPING LOAM**

- A. Stripping shall consist of the removal of all loam to the full depth encountered below the original ground surface, as herein specified or directed by the Landscape Architect. Every effort shall be made to strip and stockpile all available loam on the site.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. All loam so removed shall be stockpiled on the site where directed by the Landscape Architect. Loam shall be free of subsoil, stiff clay or hardpan and foreign material such as cinders, ashes, asphalt and wood. The suitability of stripped materials for use as loam shall be determined by the Landscape Architect, and his decision shall be final.
- C. Stockpiled loam shall be kept separate from other excavated materials and shall be screened, free of roots, stones larger than three-quarter (3/4) inch and other undesirable material that would interfere with planting.
- D. Excess loam shall become the property of the contractor and shall be removed from the site at no additional cost to the owner.

3.02 EXCAVATION

A. General

1. Excavate all materials to the elevations, dimensions and form as shown on the Drawings and as specified for the construction of structures, utilities, site improvements and other structures necessary for the completion of utilities and site work. All unsuitable materials within the indicated and specified limits shall be excavated and removed. Any quantities involving an extra or other adjustment of the Contract Price shall be subject to measurement verification and approval by the Landscape Architect prior to the excavation and removal of such materials. Measurement of quantities for payment purposes shall be by means of survey of the subgrade as described in item 3.04.B.14. Unsuitable materials shall include the following:
 - a. Pavements, utility structures, building foundations and other man-made structures.
 - b. Peat, organic silt and other organic materials subject to decomposition, consolidation or decay.
 - c. Miscellaneous fill including silty sand, , cinders, ash, glass, wood and metal
 - d. Ledge or boulders except as specified for fills herein.
 - e. Material with a maximum unit dry weight per cubic foot less than 100 lbs., as determined by ASTM D1557.
 - f. Material containing greater than 3% organic matter by weight, topsoil, organic silt, peat, construction debris, roots and stumps.
 - g. Material which has a Liquid Limit greater than 55 when tested in accordance with ASTM D 4318.
 - h. Materials that do not meet one of the gradation specifications in this section.
 - i. Material classified as unsuitable by the Geotechnical Engineer.
2. The Contractor shall obtain from the proper authorities locations of all utilities within the scope of this work so that there will be no damage done to such utilities. Neither the Owner nor the Landscape Architect will be responsible for any such damage, and the Contractor shall restore any structure or utility so damaged without additional compensation. Written notifications to the appropriate utility agencies shall be made at least ten (10) days prior to the commencement of any work.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

3. Excess Material - Suitable excavated material which is required for fill and backfill shall be separately stockpiled as directed by the Landscape Architect. All surplus fill other than that required to complete the intent of the Contract shall become the property of the Contractor and shall be disposed of off the property by the General Contractor. All excavated materials which, in the opinion of the Landscape Architect, are not suitable for fill or backfill shall be removed and disposed of off the property.
4. Cobbles and boulders shall be removed from at least one foot below the finished subgrade.
5. Any unsanitary conditions encountered, such as broken sewer mains or uncovered garbage shall be corrected or removed entirely as directed by the Landscape Architect.
6. If suitable bearing for foundations is not encountered at the depth indicated on the Drawings, the Contractor shall immediately notify the Landscape Architect and shall not proceed further until instruction are given and necessary measurements made for the purpose of establishing additional volume of excavation.
7. The Contractor shall control the grading around the building so that the ground shall be pitched in order to prevent water from running into the excavated areas of the building or prevent damage to other structures. The Contractor shall furnish all pumping required to keep excavated areas clear of water during construction. Water shall not be conducted onto adjacent property.
8. Excavate to subgrade for concrete slabs and foundation footings and piers, including utility trenches, and footings down to approved subgrade. Coordinate with Structural Drawings for exact locations. Compact subgrade to ninety-five (95) percent of maximum dry density as determined by the Modified Proctor Compaction Test.
9. Make final excavations by hand or using smooth-bladed equipment to avoid disturbance and the formation of ridges which would be left by a bucket with teeth.
10. Prevent water accumulation on bearing surfaces, to reduce the possibility of softening of the subgrade soils.
11. Note - When, during the process of excavation unsuitable material is encountered, such materials shall be uncovered and freed of loose material, and the Landscape Architect shall be notified by the Contractor before proceeding further.
12. Excavation for Site Improvements
 1. Excavate to the lines and grades shown on the Drawings and as specified to obtain the subgrades for the following items of work:
 - a. Concrete slabs on grade
 - b. Bituminous concrete pavement
 - c. Concrete paving
 - d. Seeded areas
 - e. Unspecified improvements - to bottom elevation of item plus ample working space on all sides
- B. Excavation for Utility Structure
 1. The Work of this Section shall include all excavation, trenching, backfilling, and compaction as required for installation of leaching basin. Construct surface subgrades including filling prior

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

to excavation for utilities and utility structures. Excavate to the lines and grades shown on the Drawings and as specified herein to obtain the subgrade for the following items of work:

- a. Utility structure - to grades shown on the Drawings. Remove by excavating all unsuitable materials; including peat and organic silt, from under drainage structures and backfill with specified fills compacted in place to subgrades.
 - b. Excavation for structures and other accessories shall have twelve (12) inch minimum and twenty-four (24) inch maximum clearance on all sides.
 2. Existing services and utilities encountered shall be immediately repaired, protected and maintained in use until relocation of same has been completed or be cut and capped where directed or be prepared for connections when so required. All existing water mains are to be protected to remain in place for future use.
- C. Excavation and removal of unsuitable materials
- Landscape Architect shall be notified by the Contractor, before proceeding with removal of unsuitable materials. The areas in question shall then be cross-sectioned as hereinafter specified.
- c. Failure on the part of the Contractor to uncover these materials and to notify the Landscape Architect and proceeding by the Contractor with the excavation before cross-sections are taken, will forfeit the Contractor's right of claim towards the price.
 - d. The Contractor shall employ and pay for a licensed Registered Civil Engineer or Land Surveyor to take cross-sections of forest mat, subsoils and FILL before removal and to make computations of volume encountered within the Payment Lines. Cross-sections shall be taken in the presence of the Landscape Architect and the computations approved by the Landscape Architect. The Owner has the option to perform independent cross-sections and computations of quantities.
 - e. The quantity of unsuitable materials excavated and removed from the site is subject to payment at the quoted unit price.
- D. Proof-rolling and Compaction of Exposed Subgrade
1. All footing, slab-on-grade, and paved area subgrades shall be proof-rolled.
 2. Subgrade of footings in the natural sand should proof-rolled with a minimum of four passes of a 2-ton vibratory roller compactor.
 3. Pavement subgrade should be proof-rolled with a minimum of four passes of a vibratory roller compactor imparting a minimum dynamic effort of 20 kips.
 4. If soft materials are indicated by rutting, pumping or weaving, they should be excavated and replaced as directed by the Geotechnical Engineer.

3.03 PROTECTION, SHORING AND DEWATERING

- A. Protect open excavations with steel plates, fencing, warning lights and other suitable safeguards.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. Shore and brace excavations as required so as to maintain them secure and provide sheet piling as necessary to prevent cave-ins. Remove shoring and piling before backfilling is completed and as specified herein.
- C. Frost Protection - Make no excavations to the full depth indicated when freezing temperature may be expected unless the footing or slabs can be poured immediately after the excavation has been completed. Protect the bottoms as excavated from frost, if placing of concrete is delayed, with straw, tarpaulins or temporary heat until footings or slabs are poured and sufficient backfill is placed.
- D. Provide all pumps and pumping facilities, including a well point system as necessary with attendants, to keep all excavations free from water from whatever source at all times, when work is in progress or when necessary for protection and integrity of the work in place. Trenches shall be kept water-free during jointing and for sufficient time thereafter to allow the jointing material to become fully set and completely resistant to water penetration.
- E. Maintain ground water in the bearing soil strata at a safe level at all times by methods which prevent loss of fines or other disturbances to these strata. If the methods employed have not been adequate and the bearing value of the soil has been reduced, remove disturbed soil as directed and replace with compacted graded gravel or concrete at no expense to the Owner.
- F. Any ditching required to keep the site free from water during construction is the responsibility of the Contractor and will be repaired, top soiled and seeded before completion of work.
- G. Groundwater. The Contractor shall design and submit a plan to collect and remove groundwater to the Landscape Architect prior to the start of excavations. Pump water removed from the excavation into settling tanks before being discharges. Obtain any required discharge permits from the City of Waltham to discharge the water into the public drain system. Test ground water samples for possible contamination.

3.04 FILLS, BACKFILLS AND COMPACTION

- A. Samples and Testing
 - 1. All fill material and its placement shall be subject to quality control testing. A qualified laboratory will be selected by the Owner to perform tests on materials. All costs of testing will be paid for by the Owner. Test results and laboratory recommendations shall be available to the Landscape Architect.
 - 2. Provide samples of each fill material from the proposed source of supply including on-site sources. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate source if required.
 - 3. Landscape Architect will be sole and final judge of suitability of all material.
 - 4. The laboratory will determine maximum dry density and optimum water content in accordance with A.S.T.M. D-1557, Method D and the in-place density in accordance with A.S.T.M. D-1556.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

5. Tests of material as delivered may be made from time to time. Materials in question may not be used, pending test results. Tests of compacted materials will be made regularly. Remove rejected materials and replace with new, whether in stockpiles or in place.
6. Cooperate with laboratory in obtaining field samples of in-place materials after compaction. Furnish incidental field labor in connection with these tests.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

B. Placing Fills and Compacting

1. Fill material shall be placed in horizontal layers not exceeding the maximum loose lift thickness with the minimum number of passes of compaction equipment as summarized on the table below. Each layer shall be compacted to the percentage of maximum dry density specified for the particular type of fill and at a water content equal to optimum water content plus or minus two (2) percent. The maximum dry density and optimum water content shall be as specified herein.

Compaction Method	Max. Loose Lift Thickness Below Structures & Pavement	Less Critical Areas	Min. Number of Passes Below Structures & Pavement	Less Critical Areas
Hand-operated vibratory plate or light roller in confined areas	8"	8"	6	4
Hand-operated vibratory drum drum rollers weighing at least least 1,000# in confined areas	8"	10"	6	4
Light vibratory drum Roller minimum weight at drum 5,000 min., Dynamic force 10,000#	10"	12"	6	4
Medium to heavy Vibratory drum roller, min. weight at drum 10,000# min. dynamic force 20,000#		12"	15"	6 4

1. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water. Do not place fill when fill materials or layers below it are frozen.
2. Notify the Landscape Architect when excavation is ready for inspection. Filling and backfilling shall not be started until conditions have been approved by the Landscape Architect.
3. Before backfilling against walls, the permanent structures must be completed and sufficiently aged to attain strength required to resist backfill pressures without damage. Temporary bracing will not be permitted except by written permission from the Landscape Architect. When filling on both sides of a wall or pier, place fill simultaneously on each side. Correct any damage to the structure caused by backfilling operations at no cost to the Owner. Place no stones closer than eighteen (18) inches to wall surfaces.
4. In confined areas adjacent to footings and foundation walls and in utility trenches beneath floor slab, the fill shall be compacted with hand operated vibration tampers. The maximum lift thickness shall be four (4) inches. The degree of compaction attained shall be equivalent to that attained in the adjacent open areas where heavy rolling equipment is used.
5. After the subgrade under concrete slabs and paved areas has been shaped to line, grade and cross-sections, it shall be rolled with an approved power roller weighing not less than six (6) tons until thoroughly compacted. This operation shall include any reshaping, refilling or

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

wetting required to obtain proper compaction. Any areas that subsequently settle shall be refilled to true subgrade and properly compacted.

6. In freezing weather, a layer of fill shall not be left in an uncompacted state at the close of a day's operations. Prior to terminating operations for the day, the final layer of fill, after compaction, shall be rolled with a smooth-wheeled roller to eliminate ridges of soil left by tractors, trucks and compaction equipment.

C. Placing Structural Fills

1. In the buildings structural fill shall be placed under the concrete footings and slabs and pavements in layers as described in the above table and compacted to at least ninety-five (95) percent of maximum dry density as determined by A.S.T.M. Test D1557 with moisture contents within ± 2 percentage points of optimal moisture content. Incidental compaction due to traffic by construction equipment will not be credited toward the required minimum coverages.
2. Placement of structural fill should not be conducted when air temperatures are low enough to cause freezing of the moisture in the fill during or before placement, approximately 32 degrees F., or below. Fill materials should not be placed on snow, ice or uncompacted frozen soil. Structural fill should not be placed on frozen soil. No fill should be allowed to freeze prior to compaction. At the end of each day's operations, the last lift of fill, after compaction, should be rolled by a smooth-wheeled roller to eliminate ridges of uncompacted soil.
1. plans.

D. Deficiency of Fill Materials

1. Provide required additional fill materials as specified if a sufficient quantity of suitable materials is not available from the required excavation on the project site at no additional cost to the Owner.
2. Where water content of the fill must be adjusted to meet this Specification, the fill shall be thoroughly disked to insure uniform distribution of any water added.

E. Fill and Backfill for Utility Structure

3. Utility structure shall be backfilled with greatest care; only the suitable materials taken from the excavation shall be used. Any additional fill materials required for backfilling to subgrades shall be graded fill or Ordinary Fill as specified. Backfill shall be compacted to ninety-five (95) percent as specified. No mud, frozen earth or stone more than six (6) inches in greatest diameter or other objectionable material shall be used for refilling. Any selected material required for filling, in addition to earth from trench excavation, shall be furnished and placed by the Contractor.

3.05 SUBGRADE PREPARATION

- A. Bring all areas to required subgrade levels as specified and as determined from the Drawings.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. Maintain all subgrades for site improvements in satisfactory condition, protected against traffic and properly drained, until the surface improvement is placed. In areas to receive pavement or other surface materials, at top and bottom of embankments, along swales and elsewhere, place sufficient grade stakes to facilitate checking the subgrade levels. Correct all irregularities, compacting thoroughly any fill materials.
- C. Check all manhole covers, grates, valve boxes and similar structures for correct elevation and position and make, or have made any necessary adjustments in such structures.
- D. All subgrades must be inspected and approved by the Landscape Architect before paving, loaming or other site improvements are made.

3.06 DUST CONTROL

- A. The Contractor shall employ all possible methods and/or materials to prevent the spread of dust. Chemical materials may not be used on subgrades of areas to be seeded or planted.

3.07 CLEAN UP

- A. All waste and debris caused by the Work of this Section shall be removed and legally disposed of daily, in accordance with requirements of Section 01 74 19 - Construction Waste Management and Disposal.

END OF SECTION

MacArthur School Playground

WALTHAM, MASSACHUSETTS
Marshall/Gary Project No. 1702

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 31 23 21

SEDIMENTATION AND EROSION CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General and Supplementary Conditions and Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, furnishing, installation, maintenance and the removal of the following:
 - 1. All labor, materials, equipment and other incidentals required to complete all sedimentation and erosion control work as shown or specified
 - 2. Preparation, submission of, and compliance with an approved, phased erosion control plan to include materials and measures required to control soil erosion resulting from construction operations for the duration of the project
 - 3. Installation and maintenance of erosion control devices including haybales, siltation fences, sedimentation basins, temporary diversion swales and slope drains
 - 4. Stabilization of temporary construction access routes, on site vehicular transportation routes and construction parking areas including crushed stone entry pads
 - 5. Seeding, mulching and or installation of erosion control fabrics in critical areas to provide temporary protection for the duration of the construction process
 - 6. Dust control
 - 7. Compliance with a Stormwater Pollution Prevention Plan (SWPPP)
 - 8. Designation of an Erosion Control Supervisor and submission of weekly erosion control reports
 - 9. Sediment removal and disposal
 - 10. Maintenance of erosion control device
 - 11. Removal of erosion control devices
 - 12. Final clean up
- C. The Contractor shall adhere to plans and specifications showing methods to be used for erosion control during construction period along with schedule of construction operations.
- D. It is not the intent herein to describe all the items and work to be required under this Section. The Contractor shall assure himself that all work to be completed, not otherwise specified herein but shown on the drawings or implied, shall be accomplished under this Section at no additional cost to the Owner.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all the Contract Documents for requirements that effect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this section include, but are not limited to, the following:
 - 1. Section 31 20 00 - Earth Moving
 - 2. Section 32 12 16 - Paving and Surfacing
 - 3. Section 32 12 10 - Site Improvements

1.04 REFERENCE SPECIFICATIONS

- A. A.S.T.M. - American Society for Testing and Materials.
- B. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.
- C. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
- D. Massachusetts Erosion and Sedimentation Control Guidelines for Urban and Suburban areas, latest edition.

1.05 PERFORMANCE REQUIREMENTS

- A. The Contractor shall be responsible for the timely installation and maintenance of all sedimentation control and dewatering devices necessary to prevent the movement of sediment from the construction site to off site areas or into wetlands, or other drainage systems throughout the construction project and until such time as vegetative cover has been established. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site including siltation fencing, haybales, temporary seeding, siltation basins, diversion swales check dams and trenches shall be installed, maintained, removed and cleaned up for the duration of the construction at the expense of the Contractor. No additional charges to the owner shall be considered.

1.06 PROJECT CONDITIONS

- A. Install soil erosion and sediment control materials prior to any major soil disturbance, or in proper sequence, and maintain until permanent vegetation is established.
- B. Immediately seed and or cover with approved erosion control blankets or mulch, any disturbed areas that will be exposed for more than 30 days, and not subject to construction traffic. If season prohibits temporary seeding, mulch disturbed areas with salt hay or equivalent and bind in accordance with Massachusetts Department of Public Works Standards. If construction sequence spans seasons that prohibit immediate temporary seeding, perform temporary seeding as soon as climatic conditions permit. Install and maintain siltfence and haybales or straw waddles around all

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702
stockpiled soils.

- C. Comply with applicable local and state regulations relating to the prevention and abatement of pollution.

1.07 RECORD DRAWINGS

- A. Conforming to Contract requirements, furnish and keep at job site a plan that illustrates proposed erosion control procedures.
- B. Clearly, neatly and accurately note on plan all changes, revisions, and additions to the work.
- C. Update plan promptly as work progresses.

1.08 CRITICAL AREAS

- A. Those areas subject to excessive erosion due to highly erodible soil, slope length and steepness, or water concentrations. Concentrations of runoff water or other reasons may cause areas to be critical. All areas that may become critical when vegetation or other soil surface protection is removed as shown or noted on the drawings or otherwise identified.

1.09 SUBMITTALS

- A. Provide submittals in accordance with requirements of Section 01 33 00 – Submittals or as otherwise required for completion and transmittal of all documents in accordance with requirements of the Contract Documents.

PART 2 - MATERIALS**2.01 SILT FENCE**

- A. Sediment Control Fence: Preassembled silt-fence consisting of 36" wide woven propylene geotextile fabric and 4' long by 1-1/2" square hardwood posts spaced 7.7' apart. "Envirofence" by Mirafi Inc. or approved equivalent.

2.02 TEMPORARY SEEDING

- A. Limestone: Free-flow Agricultural Grade dolomitic limestone meeting requirements of state specifications.
- B. Fertilizer: Commercial fertilizer, 10-20-10 or equivalent, conforming to state specifications.
- C. Seed: Conforming to state and federal seed laws; previous year's crop, furnished and delivered premixed in following proportions:

Lbs./ Acre	Name	Min. Germination	Min. Purity
20	Perennial Rye Grass	85%	95%
15	Creeping Red Fescue	85%	98%
15	Chewing Red Fescue	85%	98%

- D. Mulch: Unrotted salt hay or small grain straw.

2.03 LATEX TACKIFIER

- A. Latex acrylic copolymer, such as Soil Sealant with coalescing agent as manufactured by Soil Stabilization Co., Merced, California or approved equivalent shall be used as straw mulch tackifier.

2.04 SOIL STABILIZER / DUST CONTROL

- A. Soil stabilization agent shall be a copolymer emulsion, environmentally safe, biodegradable, durable, and resistant to water, sun alkaline and daily use
- B. Agent shall be Soiltac as manufactured by Soilworks LLC, Gilbert, Arizona (800) 545-5420 or approved equivalent.

2.05 EROSION CONTROL BLANKETS

- A. Erosion control blankets shall be composed of 100 percent biodegradable mesh with 100 percent biodegradable straw or straw/coconut fill. and shall be installed parallel to the direction of water flow. Weight shall be 0.50 pounds per square yard. Erosion control blankets be as manufactured by North American Green, Evansville, IN or approved equal. For slope 2:1 or greater, erosion control blanket shall be composed of 70 percent straw and 30 percent coconut fiber, Model SC150. For slopes less than 2:1, erosion control blanket shall be high velocity straw matting, Model S150. Six-inch wire staples shall be placed in accordance with the manufacturer's recommendations to the anchor the mesh material.

2.06 STRAW WADDLES

- A. Wattles shall be made from 100% synthetic fibers 12" wide X 25' long with pre made stakes as manufactured by The BPM Store or approved equivalent

2.07 CRUSHED STONE ENTRANCE PADS

- A. Crushed stone for entrance pads shall be one and one-half (1'1/2") inch crushed as specified in Section 31 20 00 – Earth Moving.
- B. Soil separator shall be Mirafi 600X or approved equivalent.

PART 3 - EXECUTION

3.01 SILT FENCE AND HAY BALE INSTALLATION

- A. Silt fences and straw waddles shall be positioned as indicated on the drawings and as necessary for the duration of construction period to prevent erosion and off site movement of sediment produced by construction activities and as directed by the Landscape Architect.
- B. Dig trench approximately two feet (2') wide and six inches (6") deep along proposed haybale / fence
- C. Install silt fence and straw waddles as shown on the Drawings.
- C. Backfill trench with excavated material and install a single row of waddles tightly against the siltation fence and stake with two (2) hardwood stakes per bale.
- D. Installation of hay bales and silt fence shall be in accordance with the following dimensional criteria:

Maximum Slope Length Upslope from waddles / Silt Fence

% Slope	Maximum Slope Length in Feet
1	180'
4	100'
9	60'
14	40'
18	30
30	20

- E. Furnish, place and maintain silt fence and waddles as specified and as shown on the Drawings. Remove and dispose of upon establishment of vegetative cover.

3.02 CRUSHED STONE ENTRANCE PAD

- A. Crushed stone entrance pad shall be installed at access points
- B. Strip loam and subsoil twelve inches deep for area below pad and compact subgrade.
- C. Place soil separator on prepared subgrade and backfill with crushed stone twelve inches deep.
- D. Remove and replace stone once it has become contaminated with silt.

3.03 WATTLE INSTALLATION

- A. Wattles shall be installed perpendicular to the direction of water. Wood stakes shall be placed in accordance with the manufacturer's recommendations.

3.04 EROSION CONTROL BLANKET:

- A. Erosion control blankets shall be installed parallel to the direction of water. Six-inch wire staples shall be placed in accordance with the manufacturer's recommendations to anchor the mesh material.

3.05 TEMPORARY SEEDING / STABILIZATION:

- A. Apply ground limestone at rate of 90-lbs./1000 sq. ft.
- B. Apply fertilizer at rate of 14-lbs./1000-sq. ft., worked into soil a minimum of 4 in.
- C. Apply seed mixture. Seed only between May 1 and May 15, or August 15 and September 15.
- D. Apply mulch at rate of 79 to 90 lbs./1000 sq. ft. in accordance with referenced standards. Secure mulch with peg and twine, mulch netting, liquid mulch binder, or other approved method.

3.06 SOIL STABILIZER

- A. Soil stabilizer shall be applied to prevent dust and loss of soil due to erosion. Apply agent as per manufacturer's instructions and as directed by the Landscape Architect.
- B. Application rates: Per manufacturer's recommendations.
- C. Traffic areas shall be compacted to 95% prior to application of agent.

3.07 MAINTENANCE AND INSPECTIONS

- A. Contractor shall make a visual inspection of all sedimentation control devices once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to off site areas Contractor shall promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.
- B. Weekly Inspection report.
 - 1. Prepare weekly inspection report to the Landscape Architect by a designated erosion control inspector.
 - 2. Inspector's emergency phone number shall be on file with the Landscape Architect for contact should an emergency require immediate attention.
- C. Maintenance
 - 1. Silt Fence and Wattles
 - a. Remove accumulated sediment once it builds up to half of the height of the siltfence or waddle.
 - b. Replace damaged fabric, or patch with a two foot (2') minimum overlap.
 - c. Make other repairs as necessary to ensure that the device is filtering all runoff directed to it.
 - d. Replace devices when saturated with silt or otherwise damaged.
- D. Contractor shall immediately correct any erosion control problem.

3.08 REMOVAL AND FINAL CLEANUP

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- A. Once the site has been fully stabilized against erosion, (approximately one full growing season) remove sediment control devices and all accumulated silt. Re-grade all areas disturbed during this process and stabilize against erosion with surfacing materials and erosion control devices as directed by the Landscape Architect until vegetation has sufficiently developed. All waste and debris caused by the Work of this Section shall be removed and legally disposed of daily, in accordance with requirements of Section 01 50 00 - Temporary Facilities and Controls.

END OF SECTION

SECTION 32 12 10

SITE IMPROVEMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General and Supplementary Conditions and Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section includes furnishing and installation of the following:
 - 1. All materials, equipment, labor and services required for all Site Improvement work, including all items incidental thereto, as specified herein and as shown on the Drawings.
 - 2. Gravel bases and site concrete as required to complete Work provided under this Section
 - 3. Temporary construction fence and gates
 - 4. Permanent fencing
 - 5. Play Structures
 - 6. Soccer Goals (Alternate 3)
 - 7. Basketball goals (Alternate 1)
 - 8. Park Benches
 - 9. Soccer Field Markers (Alternate 3)

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this section include, but are not limited to, the following:
 - 1. Section 03 30 00 - Cast-In-Place Concrete
 - 2. Section 32 10 00 - Site Clearing
 - 3. Section 31 20 00 - Earth Moving
 - 4. Section 31 23 21 - Sedimentation and Erosion Control
 - 5. Section 32 12 16 - Paving and Surfacing

1.04 SUBMITTALS

- A. Submit concrete mix, as required under Section 03 30 00 - Cast-in-Place Concrete.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. Submit manufacturer's installation instructions for each piece of play equipment.
- C. The Contractor shall engage the services of each of the Equipment manufacturers to review the installation and to provide a written statement asserting that the supplied equipment and installation meet manufacturer's standards.

1.05 REFERENCE SPECIFICATIONS

- A. Materials, layout and installation of play equipment shall comply with the following guidelines and standards:
 - 1. ASTM: Specifications of the American Society for Testing and Materials.
 - 2. ACI: American Concrete Institute.
 - 3. Building Code: Commonwealth of Massachusetts State Building Code.
 - 4. SSHB: Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Mass. Highway Department, latest edition
 - 5. ASTM F 1487 - American Society for Testing Materials Standard Consumer Safety Performance Specification for Playground Equipment for Public Use, latest edition.
 - 6. ASTM F2373-08 - Standard Consumer Safety Performance Specification for Public Use Play Equipment for Children 6 months through 23 months
 - 7. National Bureau of Standards, U.S. Consumer Product Safety Commission (CPSC), Public Playground Safety Handbook, 2008
 - 8. IPEMA - International Play Equipment Manufacturers Association

1.06 COORDINATION

- A. Coordinate construction of equipment use zones and fall heights during installation of playground equipment with installation of protective surfacing specified in Section 32 12 16 Paving and Surfacing. Sequence work so that protective surfacing can be installed as soon as possible after concrete footings have set.
- B. The Contractor shall arrange and pay any fees necessary for playground equipment Manufacturer's technical personnel to inspect playground layout and playground equipment during installation and at final completion to certify compliance with ASTM F 1487 and CPSC guidelines

1.07 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

SITE IMPROVEMENTS

32 12 10 - 2

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. A manufacturer's representative from each different manufacturer shall be engaged to provide on-site checking of the progress and process of installation of their respective equipment. The representative shall supervise the installation and adjustment of the playground equipment to ensure that equipment meets the requirements of CPSC and ASTM F1487.

1.08 OTHER REQUIREMENTS

- A. Upon completion of work under this Section, all excess materials and debris resulting from work under this Section which have not previously been cleaned up shall be cleaned up and removed from the project site

PART 2 – PRODUCTS**2.01 GRAVEL BASES**

- A. Gravel base material shall be graded gravel fill for all site improvements as called for on the Drawings under and/or around pavements, slabs and foundations and backfill around pipes as specified and shall consist of a well-graded sand and gravel, free from deleterious matter, loam and clay.

2.02 SITE CONCRETE

- A. Concrete for above grade site improvements shall be air-entrained having a minimum strength of four thousand (4,000) p.s.i. in twenty-eight (28) days.
- B. Concrete for all bases shall be air-entrained having a minimum strength of three thousand (3,000) p.s.i. in twenty-eight (28) days.
- C. Reinforcing steel bars shall be newly rolled stock conforming to ASTM A615 Grade Forty (40) sixty thousand (60,000) p.s.i. ultimate strength with deformations in accordance with ASTM 1305, free of loose rust, scale or other coatings.

2.03 TEMPORARY CONSTRUCTION FENCE & GATE

- A. Manufacturer of all chain link fence material for the fence and gate shall be subject to the Landscape Architect's approval.
- B. Fabric shall be steel wire, hot-dipped galvanized, two (2) inch mesh. The zinc coating shall weight two (2) ounces per square foot of surface. Fabric gauge: No. nine (9); height: seventy-two (72") inches.
- C. Posts and gate frames shall be A.S.A. Schedule Forty (40) galvanized steel conforming to A.S.T.M. 120. The pipe shall be galvanized to withstand twelve (12) one (1) minute immersions in the Preece Test and shall be the following size and weight:

SITE IMPROVEMENTS

32 12 10 - 3

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

	Outside Diameter (In inches)	Weight in Pounds (Per Linear Foot)
Corner Braces	1.660	2.27
Line posts	1.9	2.72
Corner & Terminal Posts	2.375	3.65
Gate posts	3.0	5.79
Internal gate bracing	1.660	2.27

- D. Truss rods shall be three-eighths (3/8) inch diameter galvanized steel.
- E. Fittings and other appurtenances shall be pressed steel, malleable or cast steel, galvanized to withstand six (6) one (1) minute immersions in the Preece Test.
- F. Tension bars shall be three-sixteenths (3/16) inch by five-eighths (5/8) inch steel, galvanized to withstand six (6) one (1) minute immersions in the Preece Test.
- G. Tie wires shall be No. Nine (9) gauge wires, galvanized to withstand six (6) one (1) minute immersions in the Preece Test.
- H. Post caps shall be heavy malleable iron or pressed steel and galvanized to withstand six (6) one (1) minute immersions in the Preece Test.
- I. Gates shall have all latches, stops, keepers and hinges necessary for proper functioning.
- J. Submit complete shop drawings of gate, hinges, drop bar locking devices, etc., for the Landscape Architect's review prior to fabrication.

2.04 PERMANENT CHAIN LINK FENCE

- A. Manufacturer of all chain link fence material for the fence shall be subject to the Landscape Architect's approval.
- B. Chain link fabric shall be vinyl coated, No. Nine (9) core thickness with a uniform square mesh measuring approximately two (2) inches between its parallel sides prior to PVC, woven out of a wire which shall consist of a good commercial quality steel, rails and posts shall be sized as shown in paragraph
- C. All chain link fence fabric shall have a seven (7) mil coating of polyvinyl chloride bonded by the fusion method. The vinyl in the coating shall have a maximum specific gravity of 1.33, be evenly applied and free of blisters - with the bond between the vinyl coating and the steel wire equal or greater than the coating strength of the vinyl. The color of the coating shall be black. Fabric shall be vinyl coated and shall be furnished with selvages knuckled on both ends, height shall be ninety-six (96") inches. All cut ends shall be coated with vinyl at the factory.

SITE IMPROVEMENTS

32 12 10 - 4

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- C. Rails and posts shall be vinyl coated ASA Schedule Forty (40) galvanized steel conforming to ASTM 120. The pipe shall be hot dipped galvanized to withstand twelve (12) one (1) minute immersions in the Preece Test and shall be the following size and weight.

Component Size Key

<u>Component</u>	<u>Outside Diameter In Inches</u>	<u>Weight in Pounds per Linear Foot</u>
B	2.875"	5.79#
C	2.375"	3.65#
D	1.900"	2.72#
E	1.660"	2.27#
Components	96"	
Terminal Posts	B	
Line Posts	D	
Top Rail	E	
Bottom Rail	E	
Corner Braces	E	
Gate Frames	E	
Bracing	E	

- E. Truss rods shall be three-eighths (3/8) inch diameter galvanized steel.
- F. Fittings and other appurtenances shall be pressed steel, malleable or cast steel, galvanized to withstand six (6) one (1) minute immersions in the Preece Test.
- G. Tension bars shall be three-sixteenths inch (3/16") by five-eighths (5/8) inch steel, galvanized to withstand six (6) one (1) minute immersions in the Preece Test.
- H. Tie wires shall be No. Nine (9) gauge wires, permafused. Color black.
- I. Post caps shall be heavy malleable iron or pressed steel and galvanized to withstand six (6) one (1) minute immersions in the Preece Test.
- J. Submit complete shop drawings of fencing for the Landscape Architect's approval prior to fabrication.
- K. All Components shall be vinyl coated fusion bond, color black.

SITE IMPROVEMENTS

32 12 10 - 5

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

2.06 PLAY STRUCTURES

- A. The play structures shall be Little Tikes (Local Representative: Jason Corbett Tel. 617-605-1980, email: Jason.Corbett@playpower.com or approved equivalent.
- B. List of Play Equipment is attached to this Section.

2.07 SOCCER GOALS

- A. Soccer goals to be Model No. SGP-100JR as manufactured by Jay Pro Mfg and distributed by O'Brien & Sons, Medfield, Massachusetts Tel. 1-800-835-0056, or approved equivalent. Post to be square. Goals to 7' H, 21' W, 3'B and 8'D and be powder coated (white) aluminum. Goals shall include wheel kits installed.

2.08 BASKETBALL GOALS

- A. Outdoor basketball goals to be with backboard adjustable from 7.5' to 10'. Post to be 6" square surface mounted with 40" double arm extensions. Backboard to be acrylic 42"x72". Pads and post and backboard to be included. Unit to be Model # TSP-200 manufactured by Jay Pro distributed by ME O'Brien & Sons, Medfield, Massachusetts, Tel 1-800-835-0056 or approved equivalent.

2.09 BENCHES

- A. Benches shall be steel fabricated, ribbed style with back and cast iron supports with armrest on each end. Finish to be powder coated (black) over zinc primer. Bench support to have flange for bolting to paved surface as manufactured by Dumor Inc. in Mifflintown, PA, Belson Outdoors in North Aurora, IL, Keystone Ridge in Butler, PA or Landscape Architect approved equivalent.

2.10 SOCCER FIELD MARKERS

- A. Soccer field markers to be a package of markers (SLKP-25) as manufactured by Markers, Inc Tel 866-617-6275 or approved equivalent.

PART 3 - EXECUTION**3.01 SUBGRADE FOR SITE IMPROVEMENTS**

- A. Grading - Do any necessary grading to bring subgrades, after final compaction, to the required grades and sections for site improvements.
- B. Preparation of Subgrade - Loosen exceptionally hard spots and recompact. Remove spongy and otherwise unsuitable materials and replace with stable material. Fill and tamp traces of utility trenches.

SITE IMPROVEMENTS

32 12 10 - 6

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- C. Compaction of Subgrade - Maintain all subgrades in satisfactory condition, protected against traffic and properly drained, until the surface improvement is placed. Place grade stakes spaced sufficiently to afford facility for checking the subgrade levels. Correct irregularities, compact thoroughly any fill materials.
- D. Utility Structures - Check for correct elevation and position all manhole covers, grates, valve boxes and similar structures located within areas to be paved or surfaced and make, or have made, any necessary adjustments in such structures.

3.02 GRAVEL BASES

- A. Base courses shall consist of the specified graded gravel material, compacted in equal thickness layers of six (6) inches maximum compacted thickness, upon the prepared and approved subgrade to the finished compacted thickness shown on the Drawings and as specified herein.
- B. The gravel shall be placed and spread in uniform layers from self-spreading vehicles or with power graders of approved types or by hand. Care shall be taken while spreading to rake forward and distribute the largest stones so that they will be at the bottom of the gravel course and be evenly distributed.
- C. The gravel so placed shall be thoroughly watered and rolled true to the lines and grades which a roller weighing eight (8) to ten (10) tons. Any depressions that appear during or after the rolling shall be filled with gravel and rerolled until the surface is true and even. Any portion which is not accessible to a roller shall be compacted by mechanical or hand tamper.
- D. The surface of any layer shall be maintained in its finished condition until succeeding layer is placed. The base shall be properly drained at all times.
- E. The finished grade of the base course shall be true to the lines and grades as shown on the Drawings, less thickness of pavement including cross-sections. Grade evenly and smoothly between points called for, especially transition zones, and rounding vertical curves. The construction methods shall conform to the requirements of Section 405 of S.S.H.B., latest edition.

3.03 SITE CONCRETE

- A. Construct poured-in-place concrete bases for play structures, fences, etc., and pad for irrigation equipment and portable toilets as indicated on the Drawings and as specified herein.

3.04 TEMPORARY CONSTRUCTION CHAIN LINK FENCE AND GATES

- A. Set all posts to depth of three (3) feet, 10 feet on center. Set and plumb posts, fill holes for gate posts, corner and terminal posts with three thousand (3,000) psi concrete as specified. Crown top surface of concrete to shed water. Brace all terminal posts horizontally with sections used for top rail.

SITE IMPROVEMENTS

32 12 10 - 7

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. Brace all terminal posts horizontally with sections used for top and bottom rail. The top and bottom rails shall extend through all line posts to form a continuous brace from end to end of each stretch of fence fabric, be securely fastened at the end of each run, and have joints made with expansion sleeve couplings not less than six (6) inches long.

3.05 PERMANENT CHAIN LINK FENCE**A. General**

1. Furnish and install chain link fence as shown on the Drawings and as specified. Provide fabric, posts, rails, tie wires, fittings and other appurtenances as required.
2. Eight foot high fences to have top, middle and bottom rails
3. Foundation Bases - Line, corner and terminal shall be set in concrete bases, three thousand (3,000) p.s.i. in twenty-eight (28) days. Pipe posts shall be set flush with or protruding through bottom of concrete base.
4. Posts shall be set true to line and grade of fence. Fabric shall be stretched uniformly and as tightly as practicable.
5. Install nine (9) gauge fabric on all fencing 96" wide as shown on the drawings.
6. All work shall be performed by competent workmen regularly engaged in chain link fence installation.
7. Submit complete shop drawings for Landscape Architect's review prior to fabrication and installation.

B. General Fence

1. Furnish all materials and install fencing and gates as specified and as shown on the Drawings.
2. Concrete bases for posts shall be the following minimum sizes:

	Base Diameter	Base Depth
Corner and terminal posts	18 inches	4 feet
Line posts	12 inches	4 feet

3. Line posts shall be spaced in the line of fence not further apart than ten (10) feet.
4. All corners and terminal posts shall be braced with one and five-eighths (1-5/8) inch O.D. brace rail, ten (10) feet long with a diagonal three-eighths (3/8) inch truss rod and attached to the first ensuing line post.

- C. Brace all terminal posts horizontally with sections used for top and bottom rail. The top and bottom rails shall extend through all line posts to form a continuous brace from end to end of each stretch of fence, be securely fastened at the end of each run, and have joints made with expansion sleeve couplings not less than six (6) inches long.

SITE IMPROVEMENTS

32 12 10 - 8

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

3.06 PLAY EQUIPMENT

- A. The Contractor shall assemble and install the play equipment as specified and as shown on the drawings. All post shall be installed with 3500 PSI concrete footings, 12" diameter and 48 inches deep. Submit shop drawing of installation to the Landscape Architect for review.

3.07 PLAYGROUND AUDIT

At the completion of the work of this section, the Contractor shall arrange and pay for an Audit of the completed playground by a Certified Playground Safety Inspector. Audit shall be a comprehensive evaluation of the playground including compliance and accessibility. Audit shall be based on the current ASTM and CPSG standards

3.08 SOCCER GOALS

- A. Furnish and assemble two soccer goals at the site.

3.09 BASKETBALL GOALS

- A. Assemble and install in concrete footings the two furnished basketball goals with post, backstop and nets according to the specifications and drawings and the manufacturers requirements. Submit shop drawing of installation to the Landscape Architect for review.

3.10 PARK BENCHES

- A. The Contractor shall assemble and surface mount the park benches on concrete slabs with galvanized steel bolts and nuts. Submit shop drawing of installation to the Landscape Architect for review.

3.11 SOCCER FIELD MARKERS

- A. Furnish and install soccer field markers.

3.12 CLEANING

- A. All waste and debris caused by the Work of this Section shall be removed and legally disposed of daily, in accordance with requirements of Section 01 50 00 - Temporary Facilities and Controls.

END OF SECTION

SITE IMPROVEMENTS

32 12 10 - 9

SECTION 32 12 16

PAVING AND SURFACING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General and Supplementary Conditions and Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, furnishing and installation of the following:

- 1. All materials, equipment, labor and services required for all Paving and surfacing work, including all items incidental thereto, as specified herein and as shown on the Drawings.

- B. Work of this Section includes, but is not limited to, the following:

- 1. Gravel bases
 - 2. Bituminous terraces and walks.
 - 3. Bituminous concrete overlay. (Alternate 1.)
 - 4. Mowing strips.
 - 8. Rubberized safety play surface
 - 6. Concrete paving.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which affect the work of this section.

- B. Other Specification Sections which directly relate to the work of this section include, but are not limited to, the following:

- 1. Section 03 30 00 - Cast-In-Place Concrete
 - 2. Section 31 20 00 - Earth Moving
 - 3. Section 32 12 10 - Site Improvements

1.04 REFERENCE SPECIFICATIONS

- A. ASTM - American Society for Testing and Materials.
- B. AASHTO - American Association of State Highway and Transportation Officials.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- C. SSHB - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Massachusetts Highway Department, latest edition.
- D. ASTM F 1292 - Standard Specification for Impact Attenuation of Surface Systems under and Around Playground Equipment.
- E. ASTM F 1951 - Standard Specification for Determination of Accessibility of Surface Systems under and around Playground Equipment.
- F. U.S. Consumer Product Safety Commission (CPSC), Public Playground Handbook for Safety.
- G. ASTM D2434- Standard Test Method for Permeability of Granular Soils (Constant Head)
- H. Americans with Disabilities Act Guidelines (ADAAG) for Building and Facilities, 36 CFR Part 1191
- I. MAAB CMR 521 Regulations
- J. FALL HEIGHTS
- K. Refer to drawing, Playground Enlargement Plan and Exercise Area Enlargement Plan, for fall heights of exercise and play equipment.

1.05 SUBMITTALS

- A. Provide submittals in accordance with requirements of Section 01 33 00 – Submittals.
- B. The Work of this Section shall comply with applicable requirements of the following:
 - 1. Section 01 00 00 - General Requirements

PART 2 - PRODUCTS**2.01 GRAVEL BASES**

- A. Provide gravel base material for all paving and surfacing in accordance with gradation requirements specified in Section 31 20 00 - Earth Moving.

2.02 BITUMINOUS CONCRETE

- A. Bituminous concrete shall be Class I, Type I-1 conforming to description of Massachusetts Standard Specifications for Highways and Bridges (S.S.H.B.), Section 460 for Binder Course and Top Course in accordance with Division III, Section M, Materials

2.03 CONCRETE MOWING STRIP AND PAVEMENT

- A. Concrete shall be air-entrained having a minimum strength of four thousand (4,000) p.s.i. in twenty-eight (28) days.
- B. Concrete to conform to all requirements as specified in Section 03 30 00 - CAST-IN-PLACE CONCRETE.

2.04 LINE PAINT

- A. Lines for four square, basketball and hopscotch shall be "Plexicolor Line Paint" as manufactured by California Products Corporation, Andover, Massachusetts (800-225-1141) or approved equivalent. Lines and numbers to be two inches wide and white.

2.05 RUBERIZED SAFETY SURFACE

1. DEFINITIONS

- A. Critical Height: Standard measure of shock attenuation. According to CPSC No. 325, this means "the fall height below which a life-threatening head injury would not be expected to occur".
- B. EPDM - Ethylene propylene diene monomer
- C. Fall Height: According to ASTM 1487, this means "the vertical distance between a designated play surface and the protective surfacing beneath it." The fall height of the playground equipment should not exceed the Critical Height of the protective surfacing beneath it.
- D. SBR - Styrene butadiene rubber
- E. TPV - Thermoplastic vulcanizate
- F. Use Zone: According to ASTM F1487, this means "the area beneath and immediately adjacent to a play structure that is designated for unrestricted circulation around the equipment and on whose surface it is predicted that a user would land when falling from or exiting the equipment.

2. POURED-IN-PLACE

Rubberized safety surface shall be 2" for 2-5 years structures, 2 1/2" for 5-12 years structures, 3 1/2" for all swings and slides, in thickness, within safety limits indicated on the drawings. Surfaces shall be of the two-layer, system. The bottom layer, base mat, shall be SBR rubber and urethane binder; the top layer shall be EPDM rubber and urethane binder with a minimum of 2.5 lbs. of rubber and urethane per square foot.

- a. Product shall have a ten -year warranty.
- b. Top colored surface shall be 1/2" in thickness; standard colors to be selected by the Landscape Architect.
- c. Rubber Safety surface shall be "PLAYBOUND-POURED-IN-PLACE" as manufactured by Surface America, poured in place by Gametime, poured in place by No Fault or approved equivalent.

2.06 BITUMINOUS CONCRETE OVERLAY

- A. Bituminous concrete overlay shall consist of a top course over a tack coat. Bituminous material for the tack coat on existing pavement shall be emulsified asphalt, grade RS-1 confirming to M3.03.0 for the SSHB latest edition.
- B. Crack filler to be hot asphalt-fiber poured joint and crack sealer M3.05.1.
- C. Tack coat shall comply with SSHB specifications.

PART 3 - EXECUTION

3.01 SUBGRADE FOR PAVEMENTS

- A. Grading - Do any necessary grading in addition to that performed in accordance with Section 31 20 00, EARTH MOVING, to bring subgrades, after final compaction, to the required grades and sections for pavements.
- B. Preparation of Subgrade - Loosen exceptionally hard spots and recompact. Remove spongy and otherwise unsuitable materials and replace with stable material. Fill and tamp traces of utility trenches.
- C. Compaction of Subgrade - Compact the subgrade of all surface areas with appropriate equipment or other means to such a degree as will insure against settlement of the superimposed work.
- D. Checking Subgrade - Maintain all subgrades in satisfactory condition, protected against traffic and properly drained, until the surface improvement is placed. Place grade stakes spaced sufficiently to afford facility for checking the subgrade levels. Correct irregularities, compacting thoroughly any fill materials.

3.02 DENSE GRADED CRUSHED STONE

- A. Utility Structures - Check for correct elevations and position all utility structure covers, grates, valve boxes and similar structures located within areas to be paved or surfaced and make, or have made, any necessary adjustments in such structures.
- B. Crushed stone shall be as specified in Section 31 20 00. consist of approved gravel placed on the prepared sub base or subgrade

- C. The crushed stone shall be placed and spread in uniform layers from self-spreading vehicles or with power graders of approved types or by hand.
- D. The finished grade of the base course shall be true to the lines and grades as shown on the Drawing, less thickness of pavement, including cross-sections. Grade evenly and smoothly between points called for, especially transition zones, and rounding vertical curves. The construction methods shall conform to the requirements of Section 405 of S.S.H.B., latest edition.

3.03 BITUMINOUS CONCRETE PAVING FOR TERRACES AND WALKS

- A. General - This work shall consist of constructing two (2) courses with 1-1/2" binder course and 1- 1/2" top course and to the required lines and grades as shown on the Drawings and as specified.
- B. The equipment for spreading and finishing shall be mechanical, self powered pavers, capable of spreading and finishing the mixture true to line and grade, width and crown by means of fully automated controls for both longitudinal and transverse slopes.
- C. The finished grade of the pavement shall be true to the lines and grades as shown on the Drawing, Grade evenly and smoothly between points called for, especially transition zones, and rounding vertical curves.
- D. Place base course two inches (1-1/2") compacted thickness on the approved base course. Thoroughly clean surface by power sweeping or compressed air to remove all dirt and debris. Prior to placing top course, apply a tack coat at a rate of one gallon per 1000 square feet. Place top course two (1-1/2") compacted thickness.
- E. The construction methods shall conform to the requirements of Section 460 of S.S.H.B., latest edition.

3.04 CONCRETE MOW STRIP AND PAVING

- A General
Furnish all materials and labor to construct concrete site improvements including fence mow strips and pavement on compacted dense graded crushed stone base.
- B. Surface Preparation
 - 1 Remove loose material from compacted subbase surface immediately before placing concrete.
 - 2. Proof roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.
 - 3. Notify Contractor of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.
- C. Form Construction

1. Set forms to required grades and lines, braced and secured. Install forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
2. Check completed form work for grade and alignment to following tolerances:
 - a. Top of forms not more than 1/8" in 10'-0".
 - b. Vertical face on longitudinal axis, not more than 1/4" in 10'-0".
3. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

D. Concrete Placement. Contractor shall prepare and submit to the Landscape Architect for approval the expansion joints for mowing strips prior to construction of concrete work.

1. General: Comply with requirements of Section 03 30 00 for mixing and placing concrete, and as herein specified.
2. Do not place concrete until subbase and forms have been checked for line and grade. Moisten subbase if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
3. Place concrete by methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocation of reinforcement, dowels, and joint devices.
4. Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
5. Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than 1/2 hour, place a construction joint.
6. Construction joints in pavement shall be a maximum of 30 feet apart and scoring joints 5 feet apart.

3.05 LINE MARKING PAINT

- A. Apply line marking paint to bituminous concrete surfaces for hopscotch, four-square, basketball and kick-ball as specified and as shown on the drawings.

3.06 RUBBER SAFETY SURFACE

- A. Furnish and install rubber safety surface in accordance with the manufacturer's instructions, as shown on the Drawings and as specified herein.
- B. Deliver all materials in original unopened containers with labels intact. Store all materials, protected from weather, and at temperatures not less than forty (40) degrees Fahrenheit.

- C. Prior to application of rubber surface system the substrate shall be examined for compliance with the contract documents. Advise the Landscape Architect of any discrepancies. Work shall not proceed until unsatisfactory conditions have been corrected.
- D. Do not attempt or commence installation of rubber safety surface unless the ambient temperature is forty-five (45) degrees Fahrenheit minimum and rising for a minimum of twenty-four (24) hours.
- E. Apply primer with a short nap roller to substrate, curbs/ edging and play equipment posts to finish grade elevations, at the rate of one (1) gallon per three hundred (300) square feet.
- F. Mix SBR to polyurethane binder for base mat in a ratio of 82/18. Spread evenly to specified thickness, compact and allow drying for twenty-four (24) hours.
- G. Apply primer to base mat at the rate of one (1) gallon per three hundred (300) square feet.
- H. Mix EPDM rubber to polyurethane binder for wearing course in a ratio of 82/18, apply with a steel trowel. For compacting, lubricate trowel with soapy water. For finishing, spray a light mist of water on surface and trowel smooth.
- I. Protect rubber safety surface from traffic during the curing process.
- J. Depth of surface shall be coordinated with the play equipment with the depth of the rubberized surface being one half inch for the overall play area surface and the following depths for the height of the occupied standing location on the equipment.

<u>Depth of Rubber Surface</u>	<u>Height of Equipment</u>
1 and ¾"	4'
2 and ¼"	5'
2 and ½"	6'
3 "	7'
3 and ½"	8'
4 and ½"	9'

The depth of rubber surface on the walk adjacent to the softball outfield shall be 2" and on the area of the exercise equipment, 2".

3.07 BITUMINOUS CONCRETE OVERLAY (Alternate 1)

- A. At the MacArthur School Playground mill the existing paved play area pavement to be overlaid. The surface of the existing pavement to receive the overlay shall be broom-cleaned of all debris and soil.
- B. The tack coat shall be applied by mechanical means to the surface at the rate of 1/20 gals/s.y. immediately prior to installing the pavement.
- C. Install a minimum of 1" thick bituminous concrete as specified and as shown on the drawings.

Elsie Turner Field

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1508

3.08 CLEANING

- A. All waste and debris caused by the Work of this Section shall be removed and legally disposed of daily, in accordance with requirements of Section 01 50 00 - Temporary Facilities and Controls

END OF SECTION

SECTION 32 92 00

LAWNS AND PLANTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including Drawings, General and Supplementary Conditions and Division 1 - General Requirements, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, furnishing and installation of the following:
 - 1. All materials, equipment, labor and services required for all lawn and planting work, including all items incidental thereto, as specified herein and as shown on the Drawings.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all the Contract Documents for requirements that effect the Work of this Section.
- B. Other Specification Sections which directly relate to the Work of this section include, but are not limited to the following:
 - 1. Section 31 20 00 - Earth Moving
 - 2. Section 31 23 21 - Sedimentation and Erosion Control
 - 3. Section 32 12 10 - Site Improvements
 - 4. Section 32 12 16 - Paving and Surfacing

1.04 REFERENCE SPECIFICATIONS

- A. A.S.T.M. - American Society for Testing and Materials.
- B. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials.
- C. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
- D. Department of Food and Agriculture, Children's and Families' Protection Act

1.05 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the

LAWNS & PLANTING
32 92 00

MacArthur School Playground
WALTHAM, MASSACHUSETTS
Marshall/Gary Project No. 1702

necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.06 SUBMITTALS

A. Provide in accordance with requirements of the Contract Documents.

B. Submit the following test reports:

1. Loam analysis
2. Seed analyses
3. Fertilizer, lime and superphosphate analysis

C. Submit the following samples:

1. Loam
2. Shredded bark mulch
3. Organic Compost
4. Sphagnum Peat Moss
5. Humus
6. Manure
7. Shredded bark mulch

1.07 PREPARATION AND INSPECTION OF AREAS TO BE SEEDED AND PLANTED

A. All areas to be seeded and planted shall be inspected by the Lawns and Planting Contractor before starting work. Any defects, such as incorrect grading, etc., shall be reported to the Landscape Architect prior to beginning this work. The commencement of Work of this Section shall indicate acceptance of the areas to be seeded and planted by the Contractor, who shall assume full responsibility for the Work of this Section.

1.08 SAMPLES, TESTS AND INSPECTIONS

A. Samples of all loam to be used shall be submitted to the Landscape Architect for approval and to determine whether or not it meets the requirements specified. At the time of submission, the Contractor will take representative soil samples of the loam, and tests shall be made by a State or commercial soil testing laboratory using methods approved by the Association of Official Agricultural Chemists (AOAC) or the State Agricultural Experiment Station. The Contractor shall select the testing laboratory with the approval of the Owner and bear all costs for soil testing. Loam shall be tested for soluble salts (1:2 soil water ratio), Nitrogen (including nitrate and ammonium Nitrogen), Phosphorous, Potassium, Sulfate, Calcium, Magnesium, Aluminum and Ferric Iron concentrations. Loam shall also be tested for heavy metals concentrations, including Boron, Cadmium, Zinc, Chromium, Copper, Lead, Manganese, and Nickel. Test results shall be forwarded to the Landscape Architect at least one (1) month prior to expected loam installation and shall state whether the material is acceptable as a planting medium, whether it needs to be amended, or if it fails to meet accepted requirements. Test results shall also include soil amendment and fertilizing requirements. No loam may be installed until specific approval of samples has been given by the Landscape Architect.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- B. Seed Analyses - Prior to the time of sowing the seed mixtures, certifications shall be submitted to the Landscape Architect for approval from the supplier certifying that the seed was obtained for this Contract and stating the formula of the mixtures.

1.09 GUARANTEE AND CERTIFICATION OF ACCEPTABILITY

- A. Guarantee - Planting shall be guaranteed for one (1) full year after Certification of Acceptability by the Landscape Architect and shall be alive and in satisfactory growth at the end of the guarantee period except for damage resulting from causes beyond the responsibility of the Contractor.
- B. Certification of Acceptability
 - 1. Inspection of the work of Lawns and Planting to determine completion of the work under this Section will be made at the conclusion of the maintenance period upon written notice requesting such inspection submitted by the Contractor at least five (5) days prior to the anticipated date. The condition of landscaping will be noted and determination made by the Landscape Architect whether maintenance shall continue in any part.
 - 2. After inspection by the Landscape Architect, the Contractor will be notified in writing by the Landscape Architect of acceptability of all work of this Section, or if there are any deficiencies of the requirements for completion of the work. Lawn maintenance or other work remaining to be done shall be subject to re-inspection before being certified acceptable.

1.10 CLEAN UP

- A. Any soil or similar material which has been brought onto paved areas by hauling operations or otherwise shall be removed promptly, keeping these areas clean at all times.
- B. Upon completion of work under this Section, all excess stones, debris and soil resulting from work under this Section which have not previously been cleaned up shall be cleaned up and removed from the project site.

PART 2 - PRODUCTS**2.01 LOAM AND ADMIXTURES**

- A. Loam.
 - 1. The Contractor shall screen and place loam in accordance with the Drawings and Specifications and as directed by the Landscape Architect.
 - 2. Material shall consist of fertile, friable natural topsoil; typical of productive soils in the site vicinity, obtained from naturally well drained areas. Loam shall be of uniform quality, free from subsoil hard clods, stiff clay, hardpan, sods, partially disintegrated stone, lime, cement, ashes, slag, concrete, chips, sticks, noxious weeds, or any other undesirable material.
 - 3. Loam shall be amended to contain between 5.5 and 7.5 per cent organic matter determined by

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

loss on ignition of moisture-free sample dried in accordance with the current method of the Association of Official Agricultural Chemists (AOAC). The acidity range shall be amended to pH 5.0 to pH 7.0 inclusive, adjusted for plants which require low soil pH. Loam shall not contain any phytotoxic materials or unacceptable concentration levels of any substance harmful to plant growth, as determined by the soils testing laboratory. Maximum soluble salt index shall be 100. The Electrical conductivity (EC2) of a 1:2 soil-water suspension shall be less than or equal to 1.0 millimhos/cm. Aluminum concentration levels shall be less than 200ppm. The mechanical analysis of the soil shall be as follows after screening:

Passing	Retained On	Percentage
1" screen	--	100%
3/4" screen	sieve (sand)	49% - 60%
#100 U.S.S. mesh sieve	(very fine sand, silt and clay)	40% - 60%

3. The Contractor shall furnish to the Landscape Architect for approval representative samples of all the loam he proposes to use.
 4. The Contract Price shall include inspection and laboratory charges. No loam shall be spread until approval of samples by the Landscape Architect, but such approval shall not constitute the final acceptance. The Landscape Architect reserves the right to reject any material that does not, in his opinion, meet these Specifications.
 5. The Landscape Architect reserves the right to reject loam in which more than sixty (60) per cent of the material passing No. One Hundred (100) U.S.S. mesh sieve consists of clay as determined by the Bouyoucus Hydrometer or by the Decantation Method. All percentages are to be based on dry weight of sample. If the Landscape Architect directs, loam that varies only slightly from the Specifications may be made acceptable by such corrections, as the Landscape Architect deems necessary.
- B. Existing loam
1. The Contractor shall provide the Landscape Architect with representative samples from the stockpiles on the site to be tested.
 2. The Contractor shall be required to add to these stockpiles such admixtures as may be necessary to bring it into conformance with paragraph 2.01. Admixtures must be in conformance with these Specifications.
 3. Lime shall be ground limestone, uniform in composition, dry and free flowing, containing not less than eighty-five (85) per cent of total carbonates. Lime shall be ground to such fineness that fifty (50) per cent will pass through a one hundred (100) mesh sieve and ninety (90) per cent will pass through a twenty (20) mesh sieve. Coarser material shall be acceptable provided specific rates of application are increased proportionately on the basis of quantities passing the one hundred- (100) mesh sieve.
 4. Superphosphate shall be composed of finely ground phosphate rock, as commonly used for agricultural purposes, and shall contain not less than twenty (20) percent available phosphoric

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- acid.
5. Commercial fertilizer shall be a complete, standard commercial fertilizer, homogenous and uniform in composition, dry and free-flowing, and shall be delivered to the site in the manufacturer's original sealed containers, each bearing the manufacturer's guaranteed analysis and marketed in compliance with State and Federal laws. Any fertilizer that becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted. Fertilizer analysis for lawn areas shall have a ratio of Nitrogen (N) – Phosphorous (P) – Potassium (K) of approximately 4 – 1 – 2 and shall be applied to deliver one (1) pound of Nitrogen per One thousand (1000) square feet, or as directed by the Landscape Architect. At least fifty (50) per cent by weight of the nitrogenous elements of the fertilizer shall be Urea-form or derived from organic materials and contain not less than three (3) percent water soluble Nitrogen. Fertilizer for tree, shrub and groundcover plantings (exclusive of lawn areas) shall contain all major plant nutrients and minor trace elements essential to sustain plant growth and shall have the analysis 10 – 10 – 10. (As approved by the Landscape Architect, a slow release root contact fertilizer, installed at the time of planting, may be used in place of the above.)
 6. Water used in this work shall be furnished by the Contractor and will be suitable for irrigation and free from ingredients harmful to plant life. Hose and other watering equipment required for the work shall be furnished by the Contractor.
 7. Organic Compost shall be a standard commercial product comprised of fully decomposed, one hundred (100) percent plant derived, natural organic matter and shall have an acidity range of 4.5 to 7.0 pH. Its composition shall furnish ample water holding capacity and cation exchange capacity for the retention of plant nutrients. Compost shall be free of sticks, stones, weed seeds, roots, minerals, or other foreign matter and shall be delivered air dry. It shall be free from excessive soluble salts, heavy metals, phytotoxic compounds, or substances harmful to plant growth.
 8. Sphagnum Peat Moss shall be a standard commercial product and shall have an acidity range of 3.5 to 5.5 pH. Its composition shall furnish ample water holding capacity and cation exchange capacity for the retention of plant nutrients. Sphagnum Peat Moss shall be free of sticks, stones, weed seeds, roots, minerals, or other foreign matter and shall be delivered air dry in standard bales. It shall be free from excessive soluble salts, heavy metals, phytotoxic compounds, or substances harmful to plant growth. Samples and certification shall be submitted to the Landscape Architect for approval prior to installation.
 9. Humus shall be one hundred (100) percent organic, natural reed or sedge peat, ground or shredded and shall have been stockpiled for at least one (1) year prior to its use. The acidity range for humus shall be 5.5 to 7.5 pH and delivered air dry. Its composition shall furnish ample water holding capacity and cation exchange capacity for the retention of plant nutrients. Humus shall be low in wood content, free of hard lumps, sticks, stones, weed seeds, roots, minerals, or other foreign matter. It shall be free from excessive amounts of zinc, soluble salts, heavy metals, phytotoxic compounds, or substances harmful to plant growth. Samples and certification shall be submitted to the Landscape Architect for approval prior to installation.
 10. Manure shall be well-rotted, unleached cow manure not less than eight (8) months old and not more than two (2) years old. It shall be free from sawdust, shavings or refuse of any kind and shall not contain more than twenty-five (25) percent straw. It shall contain no substance harmful to plant growth. Furnish information to the Landscape Architect as to the kind of

MacArthur School Playground
WALTHAM, MASSACHUSETTS
Marshall/Gary Project No. 1702

disinfectant or chemicals, if any, that may have been used in storage of (or otherwise in connection with) the manure. A composition of peat humus or peat moss to which has been incorporated dehydrated manure, such as Bovung or Spurzoon in the proportion of one hundred (100) pounds of dehydrated manure per cubic yard or peat, may be substituted for manure as specified above. Samples and certification shall be submitted to the Landscape Architect for approval prior to installation. No manure may be used until found satisfactory after sampling and testing.

2.02 SOIL ADDITIVES

- A. Acidulant for adjustment of loam borrow pH shall be commercial grade flours of sulfite, ferrous sulfate, or aluminum sulfate that are unadulterated. Acidulants shall be delivered in unopened containers with the name of the manufacturer, material, analysis and net weight appearing on each container.
- B. Ground limestone for adjustment of loam borrow pH shall contain not less than eighty five percent (85%) of total carbonates and shall be ground to such fineness that forty percent (40%) will pass through 100 mesh sieve and ninety five percent (95%) will pass through a 20 mesh sieve. Contractor shall be aware of loam borrow pH and the amount of lime needed to adjust pH to specification in accordance with testing lab recommendations.
- C. Peat moss shall be composed of the partly decomposed stems and leaves of any of several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue and other foreign matter. It shall have an acidity range of 3.3 pH to 5.5 pH as determined in accordance with the methods of testing of A.O.A.C., latest edition. Its water absorbing ability shall be a minimum of 1,100% by weight on an oven-dry basis.
- D. Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) shall be agricultural grade, granular form.

2.03 MULCH

- A. Mulch shall be native fibrous, pliable shredded mulch, not exceeding ½-inch in width. It shall be one hundred (100) percent organic, with a pH range between 3.5 and 4.5 and have a moisture content not to exceed forty (40) percent. It shall be free from any diseases, insects, or ingredients harmful to plant growth. Mulch shall be aged no longer than 2 years. Samples and certification shall be submitted to the Landscape Architect for approval prior to installation.

2.04 SEED

- A. Seed mixture shall be an approved variety mixture, high in germinating value, composed of fresh, clean, new crop seed. Weed Seed content shall be less than 0.5 percent and include no noxious weeds. Seed shall be obtained from a reliable seed company and shall be accompanied by

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

certificates of compliance relative to mixture purity and germinating value. Seed shall be furnished and delivered in new, clean, sealed and properly labeled containers, and shall comply with all State and Federal laws. It may be mixed by an approved method on the site or may be mixed by the dealer. Seed that has become wet, moldy or otherwise damaged shall not be accepted.

- B. Grass seed shall be composed of the following varieties that shall be mixed in the proportions and shall test to minimum percentages and germination specified:

Lawn Seed Mix

Botanical Name	Common Name	By Weight	Proportion	
			%P	%G
Festuca rubra commutata	Chewings Fescue	30%	98	70
Festuca arundinacea ‘	Kentucky 31 Tall Fescue	30%	98	90
Poa pratensis	Kentucky Bluegrass	20%	85	80
Lolium perenne	Perennial Ryegrass	20%	98	90

Application rate for grass seed for lawns shall be six pounds (6#) per 1,000 square foot. Seed shall be planted between April 1st and May 31st or August 16 and October 15th.

2.05 EXISTING TREES TO BE TRANSPLANTED

- A. The existing and transplanted locations are shown on the drawings.

2.06 HYDROSEED MULCH, TACKIFIERS AND WATER RETENTION AGENTS

- A. Wood fiber mulch for Hydroseed application shall be a manufactured product of natural wood cellulose fibers with a non-toxic green marking dye incorporated to ensure uniform distribution. Mulch shall be packed in sealed original containers, clearly labeled with brand name and manufacturer. It shall have delivered moisture content less than twelve (12) percent.
- B. Hydroseed tackifier shall be a powdered starch-based product approved by the Landscape Architect. Tackifier shall be applied in conjunction with the hydroseed slurry in accordance with the manufacturer's recommendations.
- C. Moisture retention agent shall be a powdered starch-based product, approved by the Landscape Architect and shall be capable of retaining up to 400 times its weight in water. Moisture retention agents shall be added to the hydroseed slurry in accordance with the manufacturer's recommendations. Moisture retention agent shall be 'Hydro-Gel', as manufactured by Finn Corporation, Fairfield, OH, or approved equal.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

2.07 STAKING, GUYING AND WRAPPING

- A. Wood stakes for supporting trees shall be of sound untreated wood of uniform size not less than two and one-half (2-1/2) inches by two and one-half (2-1/2) inches actual dimension. No paint or stain shall be used in conjunction with tree stakes. Tying material shall be flexible nylon webbing, 3/4-inch wide and have a tensile strength of 900 pounds. Webbing shall be 'ArborTie', or approved equal.
- B. Guying drive anchors and guy wire assemblies shall be suitable for protecting tree and shall be sized in accordance with the manufacturer's recommendations. Turnbuckles shall be zinc-coated and shall have four and one-half (4-1/2) inch lengthwise openings and in each end five-sixteenths (5/16) inch diameter threaded openings fitted with screw eyes. Wire guys for turnbuckles shall be No. Twelve- (12) gauge (0.1055 inches) pliable, galvanized steel wire. Flags for tree guying wires shall be one-half (1/2) by three (3) by twelve (12) inches hard wood painted white. No materials shall be used for guying that will girdle, chafe, or otherwise injure trees.
- C. Wrapping material for tree trunks shall be duplex Kraft paper crinkles to 33-1/3 percent stretch, 4 to 6-inch wide strips. Tying materials shall be jute twine, 2-ply for shrubs (as required) and trees less than 3-inch caliper; 3-ply for larger plants.

2.08 ANTI-TRANSPIRANT/ANTI-DESSICANT

- A. Anti-transpirant (anti-desiccant) shall be 'Wilt-Pruf' as manufactured by Nursery Specialty Products, Inc., Groton Falls, NY, or approved equal. It shall be delivered in original manufacturer's containers and used in accordance with the manufacturer's instructions.

PART 3 - EXECUTION**3.01 WORKMANSHIP**

- A. Personnel - Seeding and planting shall be performed by personnel familiar with these operations and under the supervision of a qualified experienced foreman.

3.02 LOAM INSTALLATION

- A. The Landscape Contractor shall be notified in writing by the General Contractor when other sections of the work have progressed sufficiently to commence work including placing of loam to the finished grade.
- B. Preparation of Subgrade - The subsoil shall be graded and uniformly compacted so that it will be a true, smooth slope parallel and six (6) inches below the finished grade in lawn areas and free of all large stones and debris.
 - 1. Prior to spreading of loam, the subgrade shall be loosened and mixed to a depth of four (4) inches. All stones over two (2) inches in size, all sticks and rubbish shall be removed. No heavy objects except lawn rollers shall be moved over the lawn areas after the subgrade soil

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

has been prepared unless the subgrade soil is again graded as specified above, before topsoil is spread.

2. There must be sufficient grade stakes, as determined by the Landscape Architect, to insure correct line and grade.

- C. Finish Grading - After the subgrade soil has been prepared, loam shall be spread evenly and spread to the required depths and lightly compacted. After the loam has been spread, scarifying or harrowing and hand raking shall carefully prepare it. All large stiff clods, lumps, brush, roots, stumps, litter, other foreign material and stones over one (1) inch in diameter shall be removed from the aforesaid loam and disposed of by the Contractor. The areas shall also be free of smaller stones in excessive quantities as determined by the Landscape Architect. The whole surface shall then be rolled with a hand roller weighing not more than one hundred (100) pounds per foot of width. During the rolling all depressions caused by settlement of rolling shall be filled with additional loam, and the surface shall be regraded and rolled until presenting a smooth and even finish and is up to the required grade, giving a total depth of six (6) inches of compacted loam.

1. The Contractor shall supply at his own expense as much loam as may be needed to give the specified depths over and above the quantities available from existing stockpiles.
2. Allowance for settlement shall be made.

- D. Lime – Furnish and spread lime uniformly in accordance with the soils testing laboratory recommendations, or as directed by the Landscape Architect, at a maximum rate of 100 pounds per 1000 square feet per application, in necessary quantities to achieve the pH range requirements of 5.5 – 7.5%.

- E. Superphosphate – Apply Superphosphate at the rate of forty (40) pounds per one thousand (1,000) square feet to the finished surface of the topsoil, in accordance with the recommendations of the soils testing laboratory or as directed by the Landscape Architect. It shall be thoroughly worked into the surface.

- F. Fertilizer – Apply fertilizer in two (2) uniform applications in accordance with the soils testing laboratory recommendations or as directed by the Landscape Architect. The first application shall be applied within one (1) week prior to seeding and then harrowed into the top two- (2) inches of the loam. The second application shall be applied after the first cutting of the grass, at the rate of fifteen (15) pounds per one thousand (1,000) square feet, and shall be thoroughly watered in immediately. Fertilizer shall not be applied between June 15 and August 31.

3.03 SEEDING

- A. Seeding of Lawns. Time of Seeding –After placing of loam to the finished grade, seeding operations shall be conducted when soil and weather conditions permit during the seasons that are normal for such work as determined by accepted practice in the locality of the project. At the option, and on the full responsibility, of this Contractor, seeding operations may be conducted under unseasonable conditions without additional compensation.
- B. Seeding shall consist of soil preparation, seeding, raking, rolling, weeding, watering, soil stabilization and otherwise providing all labor and materials necessary to secure the establishment of acceptable

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

turf. Immediately before any seed is to be sown, the topsoil shall be scarified as necessary and shall be raked until the surface is smooth, friable and of uniformly fine texture. Seedbed preparation, including lime but excluding the Superphosphate and fertilizer, shall conform to the requirements of the lawn areas.

- C. Moistening the Soil - During periods of higher than optimal temperature for species being specified and after all unevenness in the soil surface has been corrected, the soil shall be lightly moistened immediately prior to seeding.
- D. Broadcast Seeding for Lawn and Athletic Fields – Broadcast seeding, shall not begin less than 4 days after the application of lime and fertilizer. Lawn areas shall be seeded evenly with a mechanical spreader at the rate of six (6) pounds per one thousand (1,000) square feet of area, lighting raked, rolled with a two hundred (200) pound roller and watered with a fine spray. Take necessary precautions to keep the area undisturbed until the grass germinates.
- E. Hydroseeding for Slopes – (2:1. Horizontal/Vertical or Steeper) The application of lime, fertilizer, grass seed and mulch may be accomplished in a single operation with the use of approved hydroseeding equipment. Hydroseeding materials shall be mixed with water and kept in an agitated state so that materials remain uniformly suspended in the water. The resulting slurry shall be of such consistency that it can be sprayed from a hydroseed gun or through at least 200 feet of 1-1/2 inch diameter hose. The spraying equipment shall be so designed that when the solution is sprayed over the area, the resulting deposit of lime, fertilizer, grass seed and mulch shall be equal to the specified quantities.
 - 1. Prior to commencing hydroseed operations, the Contractor shall furnish the Landscape Architect in writing the weights of limestone, fertilizer, grass seed, mulch, tackifier (as required) and moisture retention agent (as required) per 100 gallons of water to be used. This statement shall also specify the area that the seeding solution will cover in square yards.
 - 2. Seed shall be incorporated with the mulching material to obtain minimum hydroseeded sown coverage of 261 pounds of the specified seed mix per acre, as recommended by the seed suppliers, or as directed by the Landscape Architect.
 - 3. Wood fiber mulch shall be uniformly spread over selected seeded areas at the minimum rate of 1400 pounds per acre unless otherwise directed.
 - 4. The Contractor shall immediately clean up all hydroseed oversprays from plant materials, pavements, furnishings, etc., to the satisfaction of the Landscape Architect.

3.04 TRANSPLANTING OF TREES

- A. One (1) or more loam stockpiles of approved quality loam for tree pits shall be maintained at all times during the planting operations.
- B. The locations for all trees be staked on the ground by the Contractor and shall be approved by the Landscape Architect before any excavation is made. Adjustments in locations and outlines shall be made as directed by the Landscape Architect. In the event that pits or areas to plant are prepared and backfilled with loam to grade prior to commencement of lawn operations, they shall be so marked that when the work of planting proceeds, they can readily be located. In case underground obstructions, such as ledge, are encountered locations shall be changed under the direction of the Landscape Architect without extra charge. Where locations cannot be changed, the obstruction shall be removed, subject to the Landscape Architect's approval, to a depth not less than 3 feet below finished grade and not less than 6-inches below the bottom of the rootball when the plant is

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

set at proper grade.

C. Planting Season

1. Deciduous trees may be planted only when dormant, either prior to bud breaks and/or before leaves appear in the spring, or subsequent to their leaf drop in the fall.

D. Planting

1. All plant roots and earth balls must be kept damp and thoroughly protected from sun or drying winds at all times from the beginning of the digging operations, during transportation and on the ground until the final operation of planting.
 2. All planting holes shall be excavated with sloped walls, wider at the top than at the bottom, and scarified to eliminate glazing. Holes for trees shall be at least two (2) feet greater in diameter than the spread of the root system. Planting holes shall not be dug deeper than the height of the rootball.
 3. When excavation occurs in areas of heavily compacted earth, stones, concrete chunks or other foreign matter, planting holes shall be dug at least three (3) times the diameter of the rootball. Excavated material from planting holes shall be disposed of as directed by the Landscape Architect.
 4. Trees shall be placed in the center of planting holes, set plumb and straight and at such a level that after settlement the crown of the roots will be 1" above the surrounding finished grade. Rootball masses shall not be loosened broken or damaged
 5. Backfill planting holes with planting mixture in layers of not more than 9 inches and firmly tamp each layer and water to sufficiently settle the backfill soil before the next layer is put in place. When the planting hole is 2/3 backfilled, the hole shall be flooded and watered thoroughly so that the water level reaches the top of the planting hole. Allow water to soak in, then complete the backfilling operation. Immediately after the planting hole is backfilled, a shallow basin 6 inches deep and slightly larger than the hole shall be formed with a ridge of soil for water retention. Form a common basin for plant materials throughout mass planting beds. After planting, lightly till the soil in the planting beds between the plant holes and rake smooth to eliminate compaction of soils.
 6. All planting hole basins shall be flooded with water twice within the first twenty-four (24) hours planting and watered not less than twice per week thereafter until the final acceptance of the work.
- E. Wrapping – The trunks of all thin barked deciduous trees shall be wrapped after they are planted and before they are staked. Wrap all trees spirally with tree wrap from bottom to top to the height of the second branch (or to the height directed) and secure at the top and bottom at 2-foot intervals with jute twine. Remove and dispose of all tree trunks wrapping at the end of one (1) growing season.
- F. Staking and Guying –All trees shall be staked immediately after planting in accordance with the Drawings. All staking apparatus shall be adequate to hold the tree in a vertical condition under severe weather conditions. Remove and dispose of all staking apparatus at the end of one (1)-growing season.

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

- G. Mulching – Provide a three (3) inch minimum layer of shredded bark mulch over the entire area of each shrub and/or tree bed. Do not cover the root flare/crown of trees and/or shrubs.
- H. Pruning – The pruning of trees and shrubs shall be only be permitted to remove dead or dying branch limbs, sucker growth, water sprouts, crossing or rubbing branches, broken or damaged branches, diseased or insect infested limbs, and/or to preserve the natural character of the plant. Plant materials shall be pruned in accordance with American Nursery and Landscape Association Standards and as directed by the Landscape Architect. Questionable weak limbs and branch removals that may disfigure the plant shall be left to the Landscape Architect's discretion. Pruning shall be done with clean sharp tools. All pruning cuts that are ½-inch diameter or larger shall be made along the branch bark ridge. Pruning cuts shall not breach or otherwise interfere with the branch collar. All pruning cuts less than ½-inch diameter shall be made with hand pruners as close to the main stem as possible without damaging the cambium or bud. Tree paint shall not be used.

3.05 MAINTENANCE AND REPLACEMENT

- A. Maintenance shall begin immediately after each portion of lawn area and each plant is planted and shall continue in accordance with the following requirements:
- B. Lawns – The Contractor shall be held responsible for maintenance of lawns, including watering, weeding, and cutting for at least sixty (60) days after seeding and as much longer as is necessary to establish a uniform stand of the specified grasses and until Certification of Acceptability. No bare spots will be allowed. After the grass has been seeded, all areas and parts of areas which fail to show a uniform stand of grass, for any reason whatsoever, shall be re-seeded repeatedly until all areas are covered with a satisfactory growth of grass. At the time of cutting, keep mower blades not less than two and one-half (2-1/2) inches high. Mowing intervals shall be spaced so that not more than one (1) inch of leaf blade is removed at any one time. The maintenance period shall continue after seeding and until the lawns are certified acceptable by the Landscape Architect, which certification shall not be earlier than the date of substantial completion of the entire work of this Contract or as otherwise indicated on the Drawings and as specified herein.
- C. Trees shall be protected and maintained until the end of the lawn maintenance period, or if installed after the lawn maintenance period, until installation of plantings are certified acceptable by the Landscape Architect. Maintenance shall include watering, mulching, replacement of diseased, dead or dying plants, resetting plants to proper grades or upright position, and restoration of the planting saucer and all other care needed for proper growth of the plants. If planting is done after lawn preparation, proper protection to lawn areas shall be provided and any damage resulting from planting operations repaired promptly.
- D. Pesticides – No fungicides, insecticides, or herbicides shall be used on-site without the Contractor notifying the Landscape Architect in writing and obtaining his prior approval. If approved by the Landscape Architect, pesticide use shall be governed by EPA regulations. All pesticides shall be EPA registered and approved for use in public open spaces and shall be handled by State licensed applicators only, delivered in their original sealed manufacturer's containers and used in accordance with the manufacturer's instructions. The law requires that parents and staff be notified in writing of all outdoor pesticide applications.
- E. Protection - Planting areas and plants shall be protected against trespassing and damage of any kind. If any plants become damaged or injuries occur, they shall be treated or replaced as directed. No work shall be done within or over the planting areas or adjacent to plants without proper safeguards

LAWNS AND PLANTING

32 92 00 - 12

MacArthur School Playground

WALTHAM, MASSACHUSETTS

Marshall/Gary Project No. 1702

and protection.

- F. Damage resulting from erosion, gullies, washouts or other causes shall be repaired by filling with topsoil, tamping, re-fertilizing and seeding by this Subcontractor at his expense if such damage occurs prior to Certification of Acceptability of lawns and planting by the Landscape Architect.
- G. The Contractor's responsibility for maintenance shall cease at the time of Certification of Acceptability by the Landscape Architect. During the guarantee period the Contractor shall be held responsible for making replacements, but no maintenance will be required other than spraying and dusting.
- H. At the end of the guarantee period, inspection will be made by the Landscape Architect after receiving written notice by the Contractor requesting such inspection at least ten (10) days before the anticipated date. Any plant required under this Contract that is dead or not in satisfactory growth, as determined by the Landscape Architect, shall be removed from the site. These and any plants missing due to the Contractor's negligence shall be replaced as soon as conditions permit during the normal planting season. In case of any question regarding the condition and satisfactory establishment of a rejected plant, the Landscape Architect may elect to allow such a plant to remain through another complete growing season at which time the rejected plant, if found to be dead, in an unhealthy or badly impaired condition, shall be replaced. All replacements shall be plants of the same kind and size as specified in the Plant List. They shall be furnished and planted as specified under LAWNS AND PLANTING. The cost shall be borne by the Contractor.

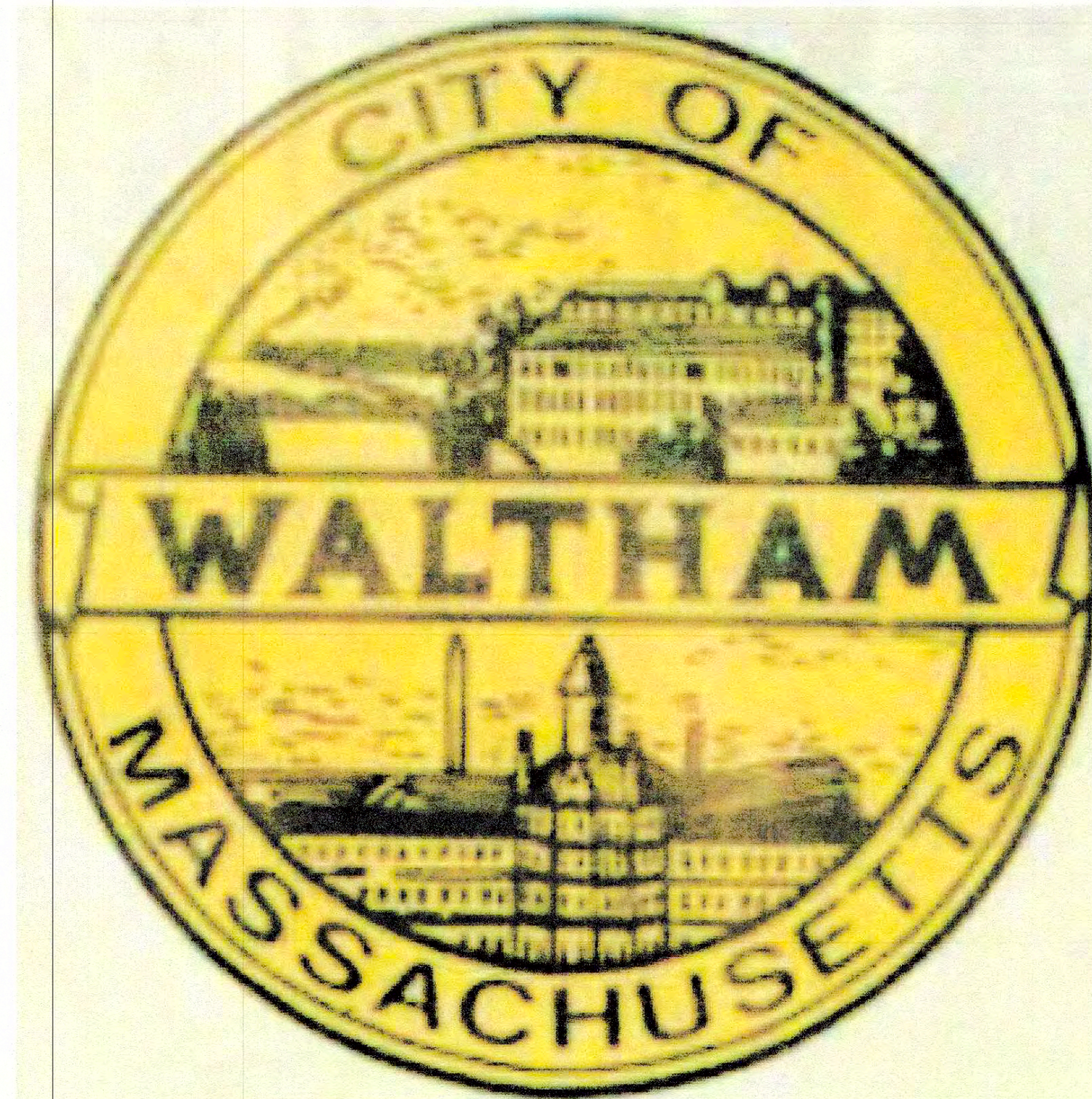
3.06 DISPOSAL AND CLEAN UP

- A. All waste and debris caused by the Work of this Section shall be removed and legally disposed of daily

END OF SECTION

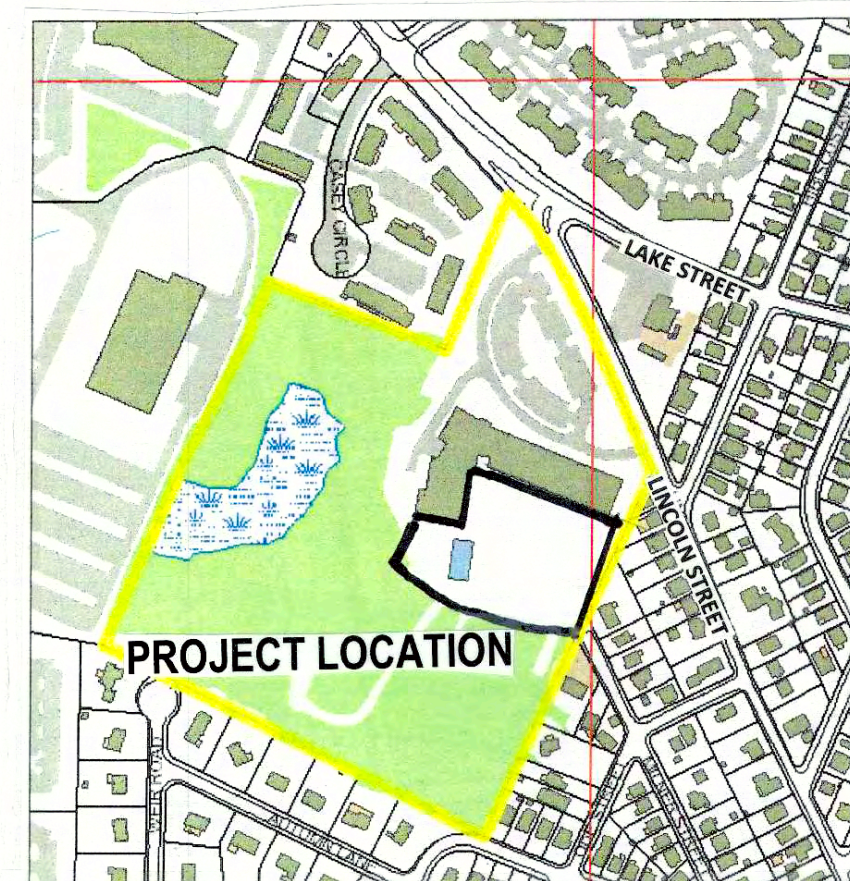
DRAWINGS

MacARTHUR ELEMENTARY SCHOOL PLAYGROUND
494 LINCOLN STREET, WALTHAM, MASSACHUSETTS



Mayor Jeanette A. McCarthy

PROJECT LOCUS MAP



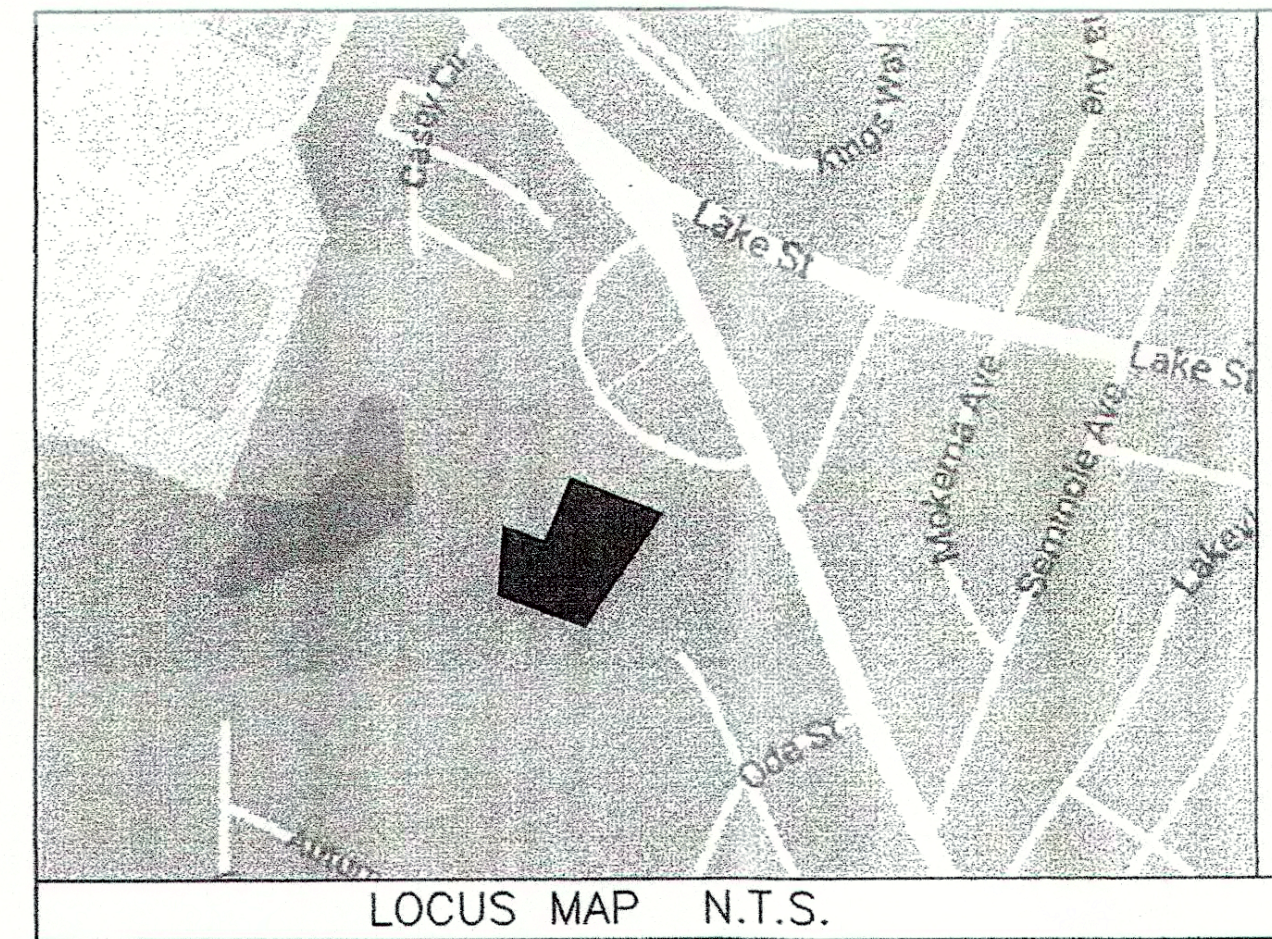
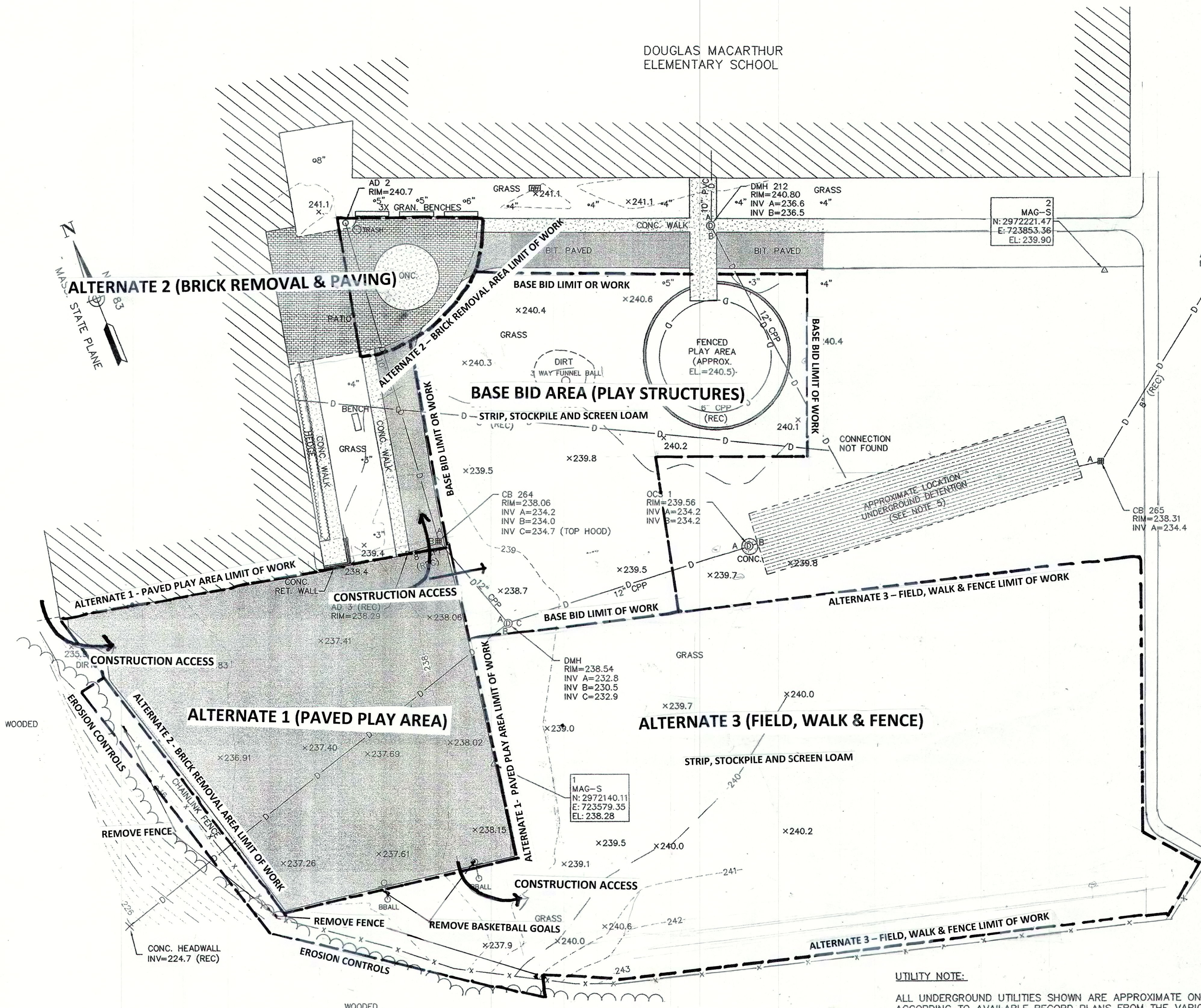
For Construction June 6, 2017

LANDSCAPE ARCHITECTS

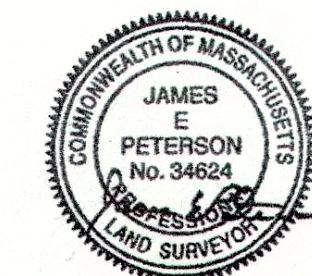
Marshall Gary, LLC
17 Naumkeag Row
Danvers, MA 01923
Tel: 617-699-6644
Email: BGARY@MGARY.COM

LIST OF DRAWINGS

Cover
L-1 Existing Conditions Plan
L-2 Site Preparation Plan
L-3 Layout & Materials Plan
L-4 Grading & Drainage Plan
L-5 Playground Enlargement & Installation
Details
L-6 Site Construction Details



- NOTES:**
- 1) THE INFORMATION SHOWN HEREON IS BASED ON AN ON-THE-GROUND SURVEY PERFORMED ON APRIL 19, 2017 UTILIZING A COMBINATION OF GPS OBSERVATIONS AND CONVENTIONAL SURVEY METHODS.
 - 2) THE HORIZONTAL DATUM FOR THIS PROJECT IS REFERENCED TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), CORRS ADJUSTMENT (NA2011/GEOD 12a) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS MADE ON APRIL 19, 2017 UTILIZING KEYSTONE PRECISION INSTRUMENTS' KEYNET GPS VIRTUAL REFERENCE SYSTEM (VRS) NETWORK.
 - 3) THE VERTICAL DATUM FOR THIS PROJECT IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), CORRS ADJUSTMENT (NA2011/GEOD 12a) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS MADE ON APRIL 19, 2017 UTILIZING KEYSTONE PRECISION INSTRUMENTS' KEYNET GPS VIRTUAL REFERENCE SYSTEM (VRS) NETWORK, AND A CLOSED LOOP LEVEL RUN WAS PERFORMED BETWEEN THE CONTROL POINTS.
 - 4) NO WETLAND DELINEATION WAS PERFORMED AS PART OF THIS PROJECT.
 - 5) DRAINAGE STRUCTURE DESIGNATIONS ARE TAKEN FROM A PLAN SET ENTITLED "MACARTHUR ELEMENTARY SCHOOL, CONSTRUCTION BID SET" DATED 02 DECEMBER, 2003 PREPARED BY FLANSBURGH ASSOCIATES. LOCATION OF UNDERGROUND DETENTION STRUCTURE DERIVED FROM DETAIL AS SHOWN ON SHEET C-2 OF ABOVE REFERENCED PLAN SET.



I CERTIFY THE LOCATIONS ON THIS PLAN RESULT FROM AN ACTUAL SURVEY MADE ON THE GROUND.

James E. Peterson
REGISTERED PROFESSIONAL LAND SURVEYOR
FOR ALPHA SURVEY GROUP, LLC

4/26/19
DATE

SYMBOL LEGEND

DRAIN MANHOLE	⊙
CATCH BASIN	⊞
HAND HOLE	⊞
TREE (TRUNK SIZE INCHES)	⊞
DRAIN LINE	—X—X—
CHAIN LINK FENCE	—X—X—
TREELINE	—X—X—
RETAINING	RET.
CONCRETE:	CONC.
BITUMINOUS:	BIT.
CORRUGATED PLASTIC PIPE	CPP
AREA DRAIN	AD
OUTLET CONTROL STRUCTURE	OCS
SPOT GRADE:	X 100.00
MAG NAIL	MAG
TRAVERSE (CONTROL) POINT	(REC)
RECORD	BBALL
BASKETBALL HOOP	BBALL

UTILITY NOTE:

ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND WERE COMPILED ACCORDING TO AVAILABLE RECORD PLANS FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD. BEFORE DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACK FILLING, GRADING, PAVEMENT RESTORATION OR REPAIRING, ALL UTILITY COMPANIES, PUBLIC & PRIVATE, MUST BE NOTIFIED INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN. SEE CHAPTER 370, ACTS OF 1963, MASSACHUSETTS. ALPHA SURVEY GROUP, LLC. ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. BEFORE FUTURE CONNECTIONS, THE APPROPRIATE UTILITY ENGINEERING DEPARTMENTS MUST BE CONSULTED. CALL "DIG SAFE" AT 811.

- NOTES:**
1. FURNISH, INSTALL, MAINTAIN AND REMOVE TEMPORARY CONSTRUCTION FENCE AND CONSTRUCTION ACCESS GATES FOR EACH CONSTRUCTION AREA.
 2. FURNISH, INSTALL, MAINTAIN AND REMOVE EROSION CONTROLS (ALTERNATE 1)

Project:
CITY OF WALTHAM

MacArthur School
Playground

MG
Marshall | Gary LLC
17 Naumkeag Row
Danvers, MA 01923
p. 781.245.7699 c. 617.699.6644
www.mgary.com

Consultants:
ALPHA
SURVEY GROUP, LLC
695 WAREHAM STREET
MIDDLEBORO, MA 02346

Revisions:

Rev	Date	Description

Seal:

FOR CONSTRUCTION

Date: 8-30-17
Scale: As Shown
Drawn By: JE
Reviewed By:
Checked By: BG
Approved By: BG

Drawing Title:
SITE PREPARATION PLAN

Sheet Number:
L-1

Revisions:

Rev	Date	Description

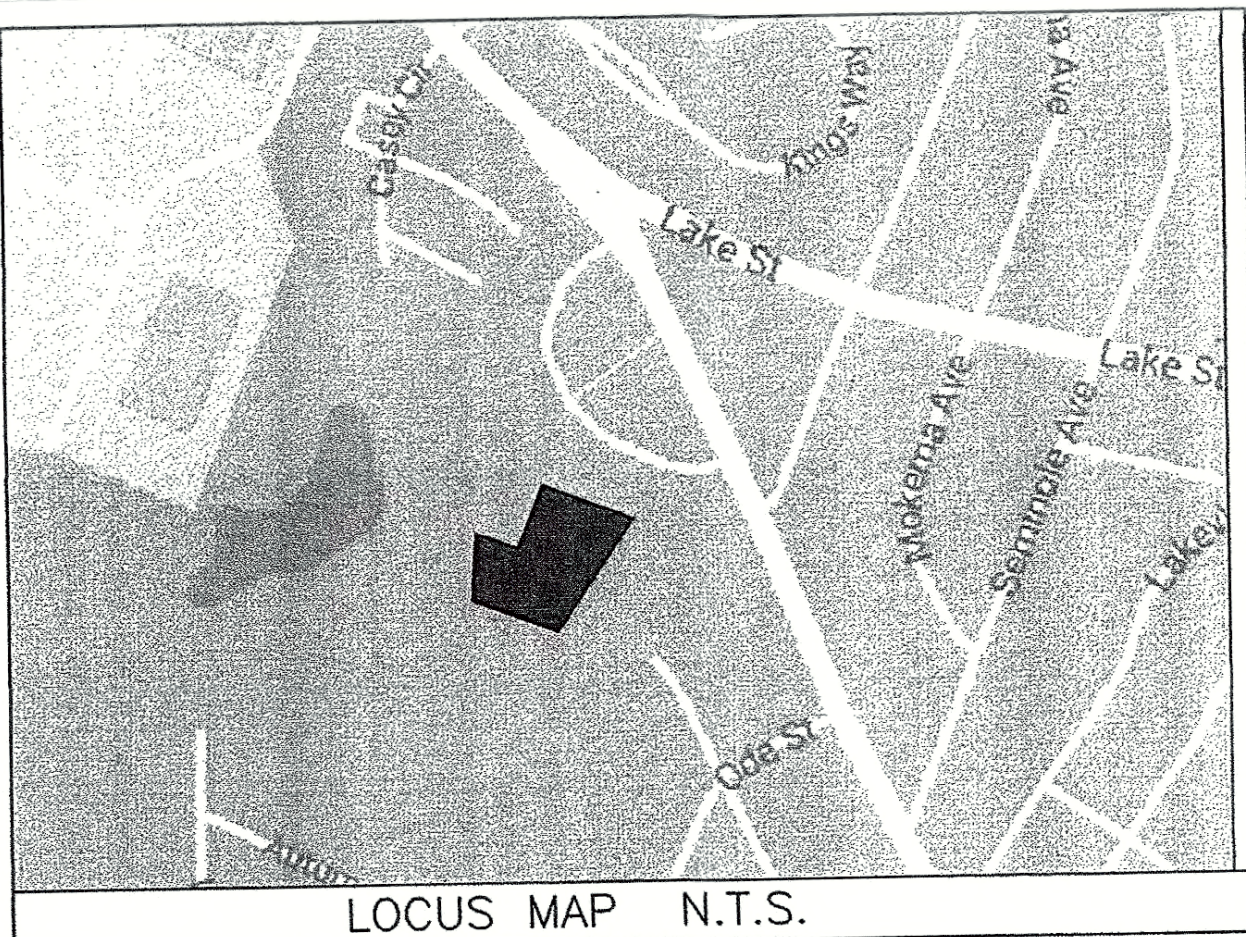
Seal:

FOR CONSTRUCTION

Date: 8-30-17
Scale: As Shown
Drawn By: JE
Reviewed By:
Checked By: BG
Approved By: BG


Drawing Title:
**EXISTING
CONDITIONS
PLAN**

Sheet Number:
L-2



- NOTES:**
- 1) THE INFORMATION SHOWN HEREON IS BASED ON AN ON-THE-GROUND SURVEY PERFORMED ON APRIL 19, 2017 UTILIZING A COMBINATION OF GPS OBSERVATIONS AND CONVENTIONAL SURVEY METHODS.
 - 2) THE HORIZONTAL DATUM FOR THIS PROJECT IS REFERENCED TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), CORRS ADJUSTMENT (NA2011/GEIOD 12a) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS MADE ON APRIL 19, 2017 UTILIZING KEYSTONE PRECISION INSTRUMENTS' KEYNET GPS VIRTUAL REFERENCE SYSTEM (VRS) NETWORK.
 - 3) THE VERTICAL DATUM FOR THIS PROJECT IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), CORRS ADJUSTMENT (NA2011/GEIOD 12a) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS MADE ON APRIL 19, 2017 UTILIZING KEYSTONE PRECISION INSTRUMENTS' KEYNET GPS VIRTUAL REFERENCE SYSTEM (VRS) NETWORK, AND A CLOSED LOOP LEVEL RUN WAS PERFORMED BETWEEN THE CONTROL POINTS.
 - 4) NO WETLAND DELINEATION WAS PERFORMED AS PART OF THIS PROJECT.
 - 5) DRAINAGE STRUCTURE DESIGNATIONS ARE TAKEN FROM A PLAN SET ENTITLED "MACARTHUR ELEMENTARY SCHOOL, CONSTRUCTION BID SET" DATED 02 DECEMBER, 2003 PREPARED BY FLANSBURGH ASSOCIATES. LOCATION OF UNDERGROUND DETENTION STRUCTURE DERIVED FROM DETAIL AS SHOWN ON SHEET C-2 OF ABOVE REFERENCED PLAN SET.

I CERTIFY THE LOCATIONS ON THIS PLAN RESULT FROM AN ACTUAL SURVEY MADE ON THE GROUND.

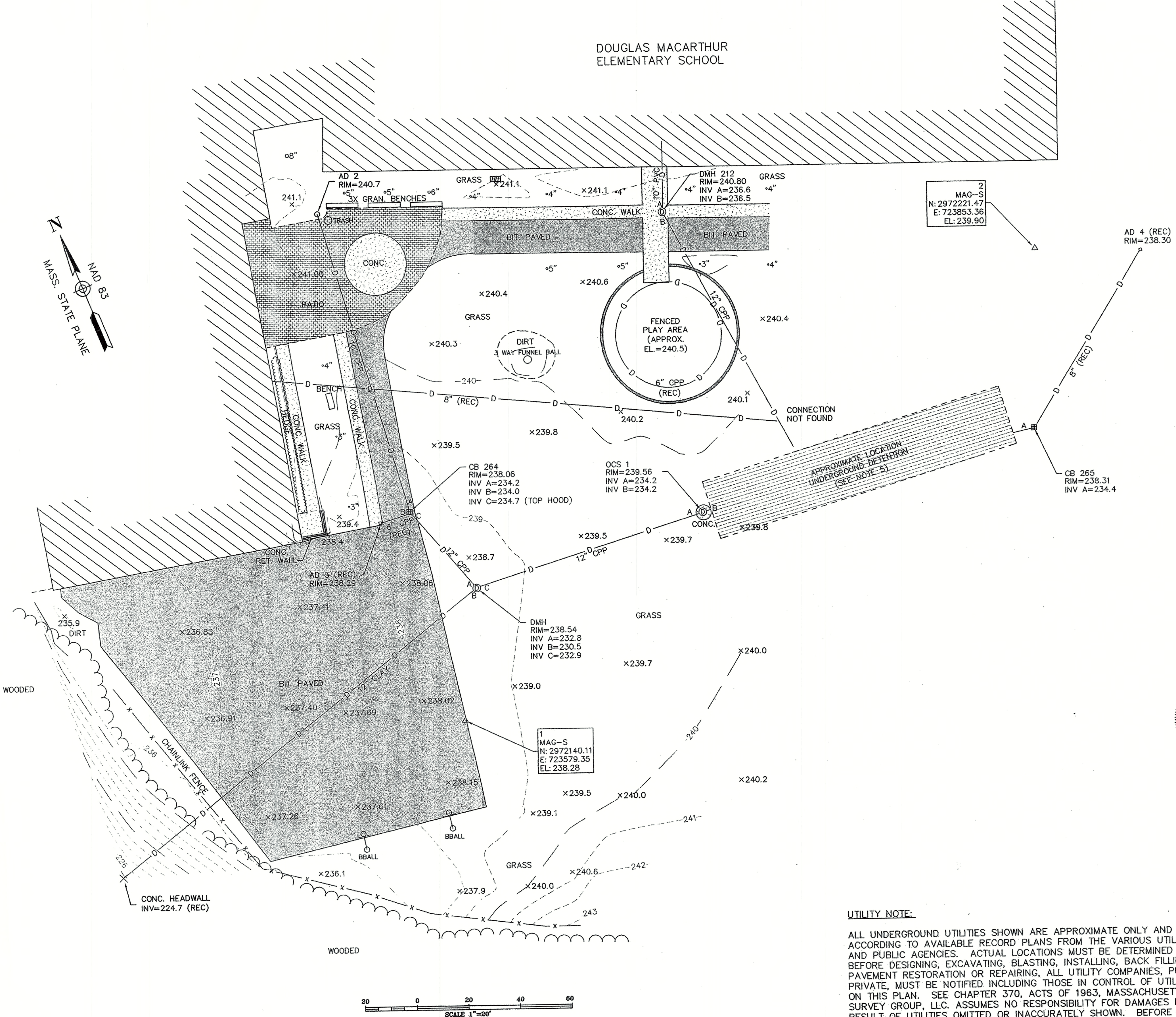

JAMES E. PETERSON
REGISTERED PROFESSIONAL LAND SURVEYOR
FOR ALPHA SURVEY GROUP, LLC
4/26/17
DATE

SYMBOL LEGEND

DRAIN MANHOLE	⊙
CATCH BASIN	⊞
HAND HOLE	⊞
TREE (TRUNK SIZE INCHES)	⊞
DRAIN LINE	—X—X—
CHAIN LINK FENCE	—X—X—
TREELINE	—X—X—
RETAINING	RET.
CONCRETE:	CONC.
BITUMINOUS:	BIT.
CORRUGATED PLASTIC PIPE	CPP
AREA DRAIN	AD
OUTLET CONTROL STRUCTURE	OCS
SPOT GRADE:	X 100.00
MAG NAIL	MAG
TRAVERSE (CONTROL) POINT	△
RECORD	(REC)
BASKETBALL HOOP	BBALL

UTILITY NOTE:

ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND WERE COMPILED ACCORDING TO AVAILABLE RECORD PLANS FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD. BEFORE DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACK FILLING, GRADING, PAVEMENT RESTORATION OR REPAIRING, ALL UTILITY COMPANIES, PUBLIC & PRIVATE, MUST BE NOTIFIED INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN. SEE CHAPTER 370, ACTS OF 1963, MASSACHUSETTS. ALPHA SURVEY GROUP, LLC. ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. BEFORE FUTURE CONNECTIONS, THE APPROPRIATE UTILITY ENGINEERING DEPARTMENTS MUST BE CONSULTED. CALL "DIG SAFE" AT 811.



SCALE 1"=20'



MacArthur School
Playground

MG

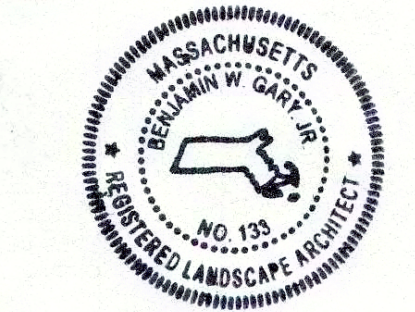
Marshall | Gary LLC
17 Naumkeag Row
Danvers, MA 01923
p. 781.245.7699 e. 617.699.6644
www.mgary.com

Consultants:

Revisions:

Rev	Date	Description
-----	------	-------------

Seat:



FOR CONSTRUCTION

Date: 8-30-17

Scale: As Shown

Drawn By: JE

Reviewed By:

Checked By: BG

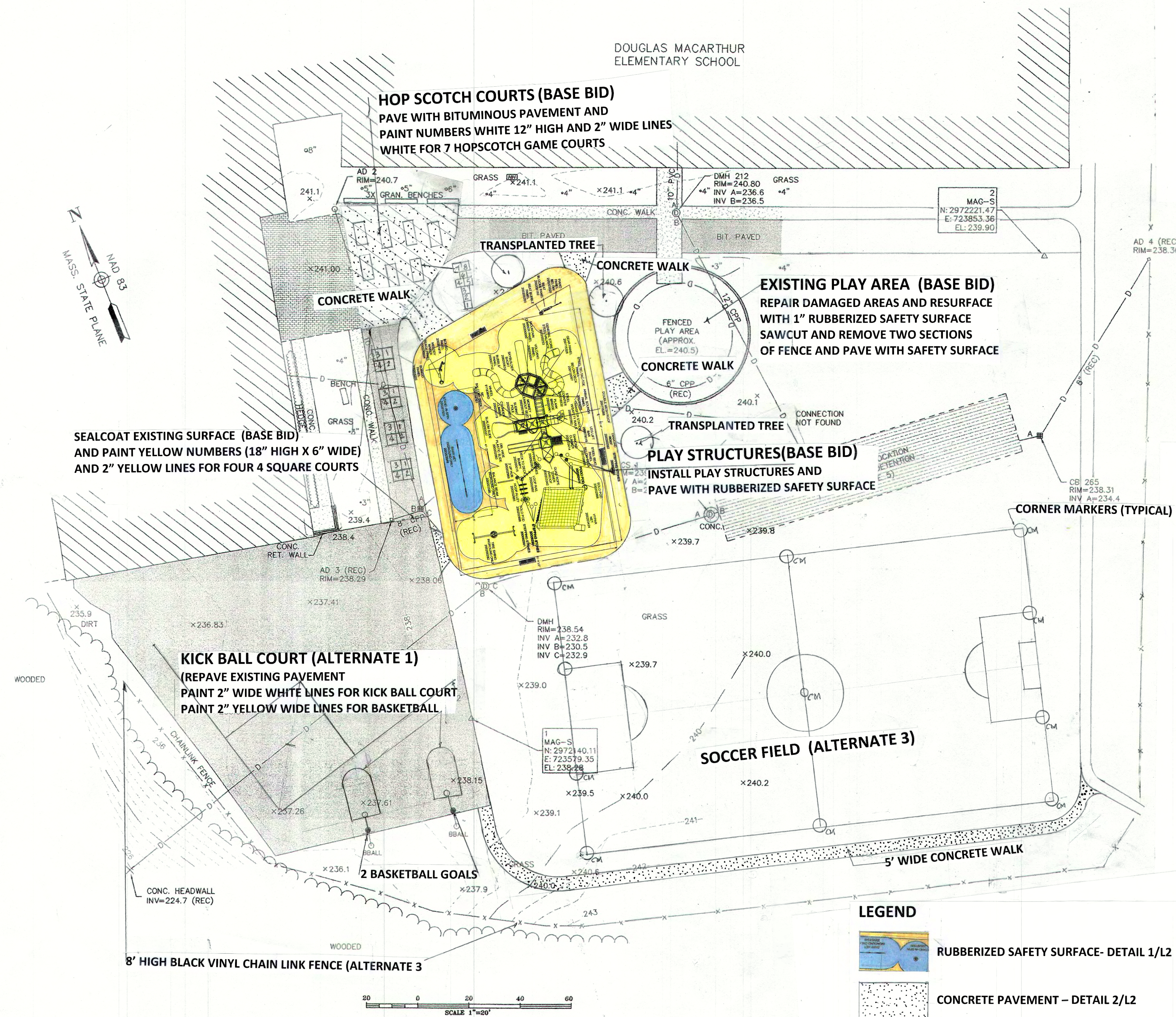
Approved By: BC

Drawing Title:

LAYOUT & MATERIALS PLAN

Sheet Number:

L-3





Project:
CITY OF WALTHAM

WALTHAM
MASSACHUSETTS

MacArthur School
Playground

MG

Marshall | Gary LLC
17 Naumkeag Row
Danvers, MA 01923
p 781.245.7699 c 617.699.6644
www.mgary.com

Revisions:

Rev	Date	Description

Seal:

FOR CONSTRUCTION

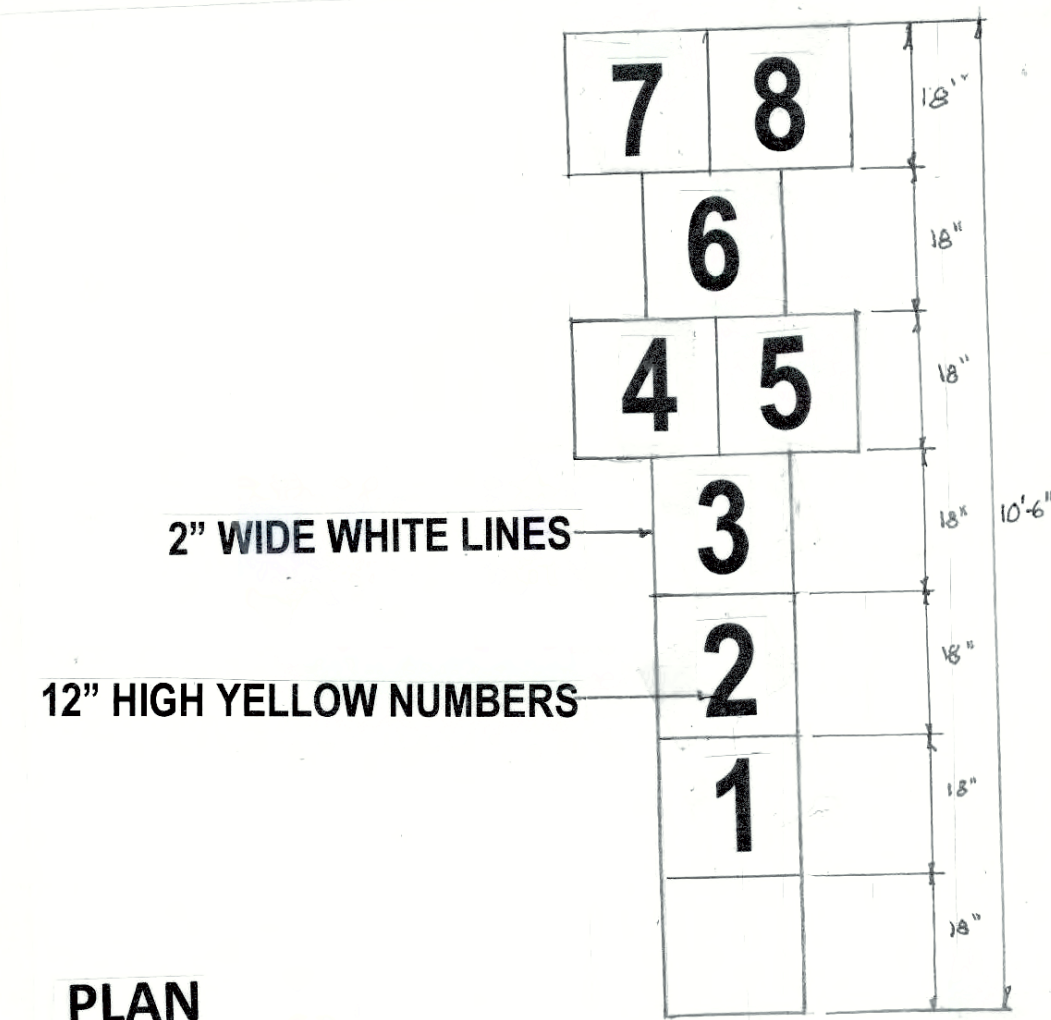
Date:	8-30-17
Scale:	As Shown
Drawn By:	JL
Reviewed By:	
Checked By:	BC
Approved By:	BC

Drawing Title:

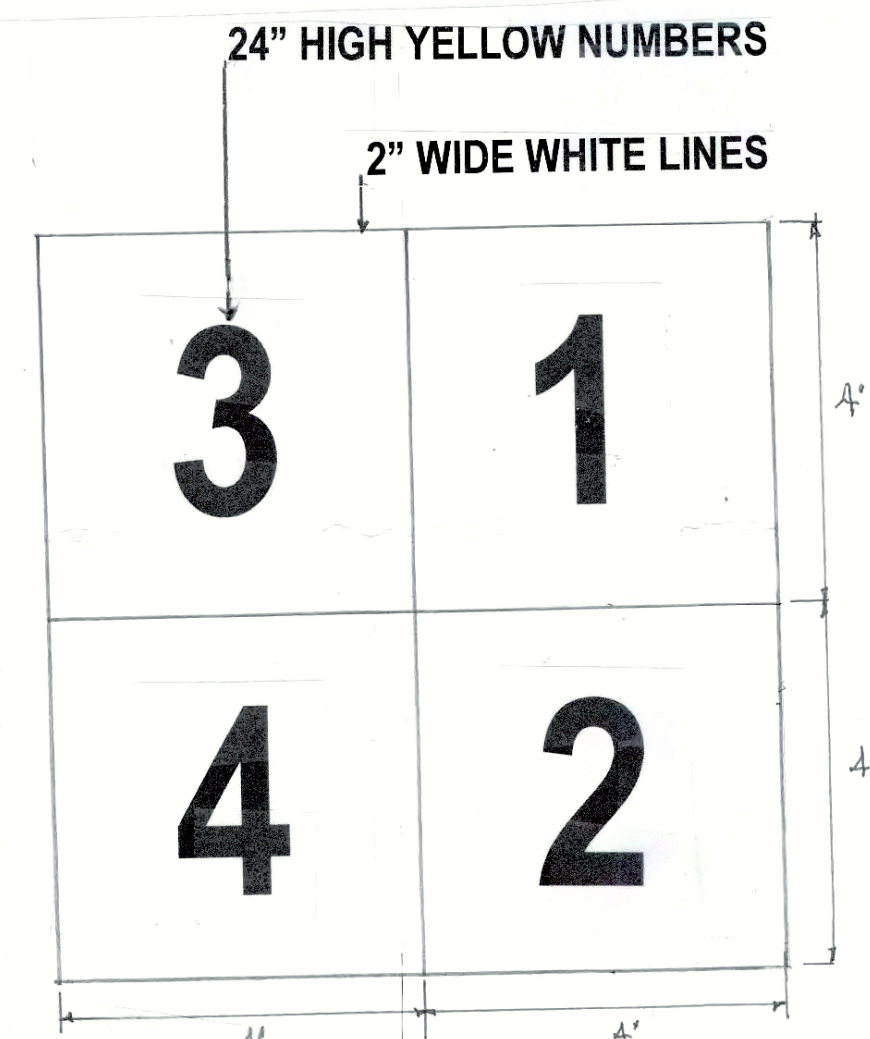
GRADING & DRAINAGE PLAN

Sheet Number:

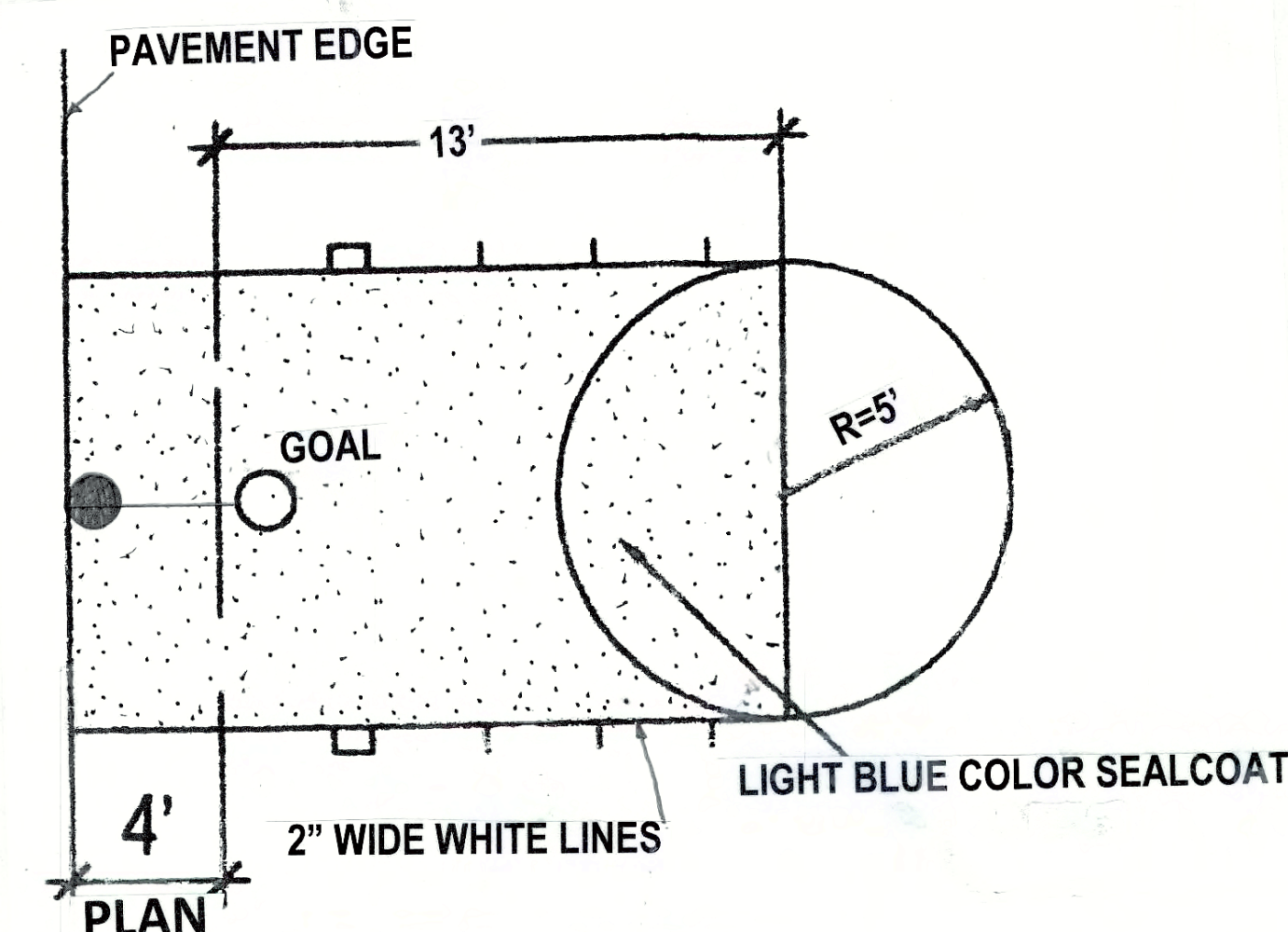
L-4



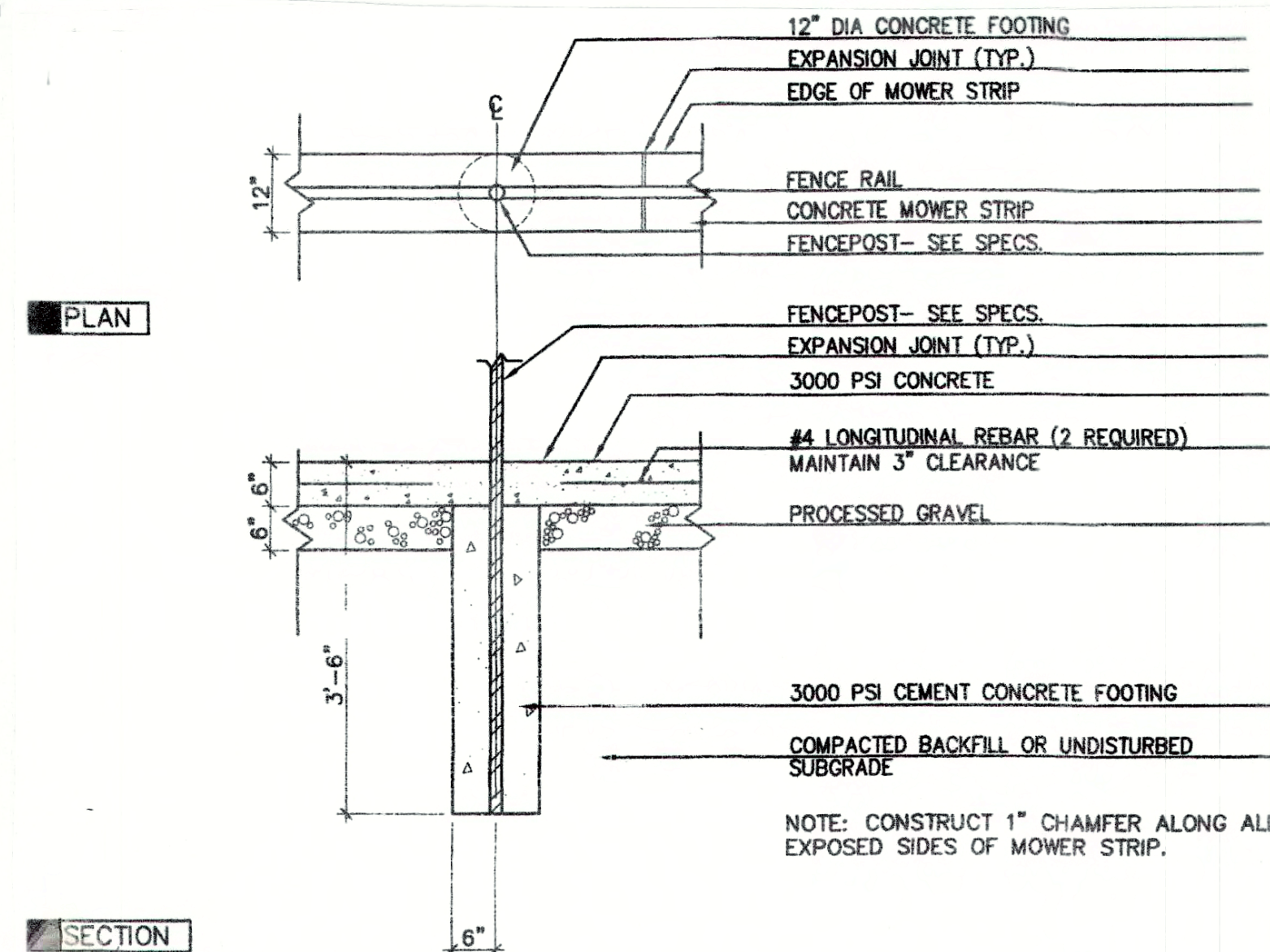
1 HOPSCOTCH GAME
L5 SCALE: 1/2" = 1'-0"



2 4 SQUARE GAME
L5 SCALE: 1/2" = 1'-0"



3 BASKETBALL COURT
L5 SCALE: 1/4" = 1'-0"



4 FENCEPOST FOOTING IN CONCRETE MOWER STRIP
L5 SCALE: NOT TO SCALE

Equipment	Type	ADA Type	Location	Quantity
Piano Panel	Activity Panel	Ground	Independent	1
Beat Blocks	Activity Panel	Ground	Independent	1
Beat Bubble	Activity Panel	Ground	Independent	1
General Store and Valance	Activity Panel	Ground	Under Sky Tower	1
Tic-Tac-Toe	Activity Panel	Transfer	In Sky Tower	1
Volcano Panel	Activity Panel	Transfer	In Sky Tower	1
Animal Sounds	Activity Panel	Transfer	In Sky Tower	1
Mountain Climber	Activity Panel	Transfer	In Sky Tower	1
Monkey Lean out Seat	Activity Panel	Transfer	Top of Slalom Slide	2
Bubble Panel	Activity Panel	Transfer	In Sky Tower	1
Bongo Panel	Activity Panel	Ground	Independent	1
Melody Maker	Activity Panel	Ground	Independent	1
Stand-N-Spin	Spinner	Ground	Independent	1
Sway Net	Climber	Ground	Independent	7
Stepping Stones	Balance	Ground	Linking	4
Pogo Pod	Swing	Ground	Independent	1
Tire Swing	Balance	Ground	Independent	2
Grand Canyon	Slide	Transfer	Sky Tower	1
Tunnel Slide	Slide	Transfer	Sky Tower	1
Hypersonic Slide	Bridge	Transfer	Sky Tower	1
Plank Bridge	Overhead Climber	Transfer	KB Deck	1
Sliding Pole	Climber	Transfer	KB Deck	1
Cylinder Climber	Slide	Transfer	KB Deck	2
Slalom Slide	Lookout	Transfer	KB Deck	1
Balcony Deck	Activity Panel	Ground	KB Deck	1
Steel Seat	Bridge	Transfer	KB Deck	1
Bumpy Climber	Net Climber	Transfer	KB Deck	1
Diamond Climber	Slide	Transfer	KB Deck	1
Double Slide	Climber	Transfer	KB Deck	2
Rock Wall	Over Head Climber	Ground	KB Deck	1
Leg Lift	Rope Climber	Transfer	KB Deck	1
Quad Rope Tower	Overhead Climber	Ground	Hy Par	1
Barister Rails	Overhead Climber	Transfer	Hy Par	1
Fun wheel	Spinner	Transfer	Hy Par	1
Cylinder Climber	Climber	Ground	Hy Par	1
Net climber	Rope Climber	Ground	Hy Par	1
Sire Climber	Climber, Spinner	Transfer	Hy Par	1
Hammock	Climber	Transfer	Independent	1
Loop Rail	Overhead Climber	Ground	Independent	1
Hoop Alley	Bridge	Ground	Independent	1

LIST - PLAYSTRUCTURES EQUIPMENT

Footing Drawing Legend: Numbers in center of symbols denote post length (inches).

For inground equipment:

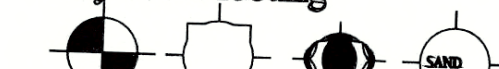
Post footing for posts for caps.



Post footing for posts without caps.



Play event footing



For surface mounted equipment:

Post footing for posts with caps.



Post footing for posts without caps.



Play event footing.

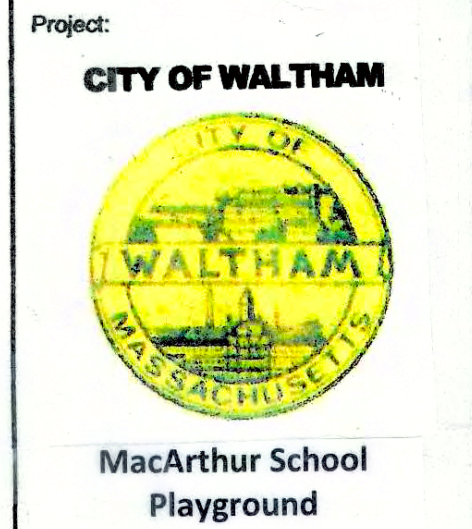
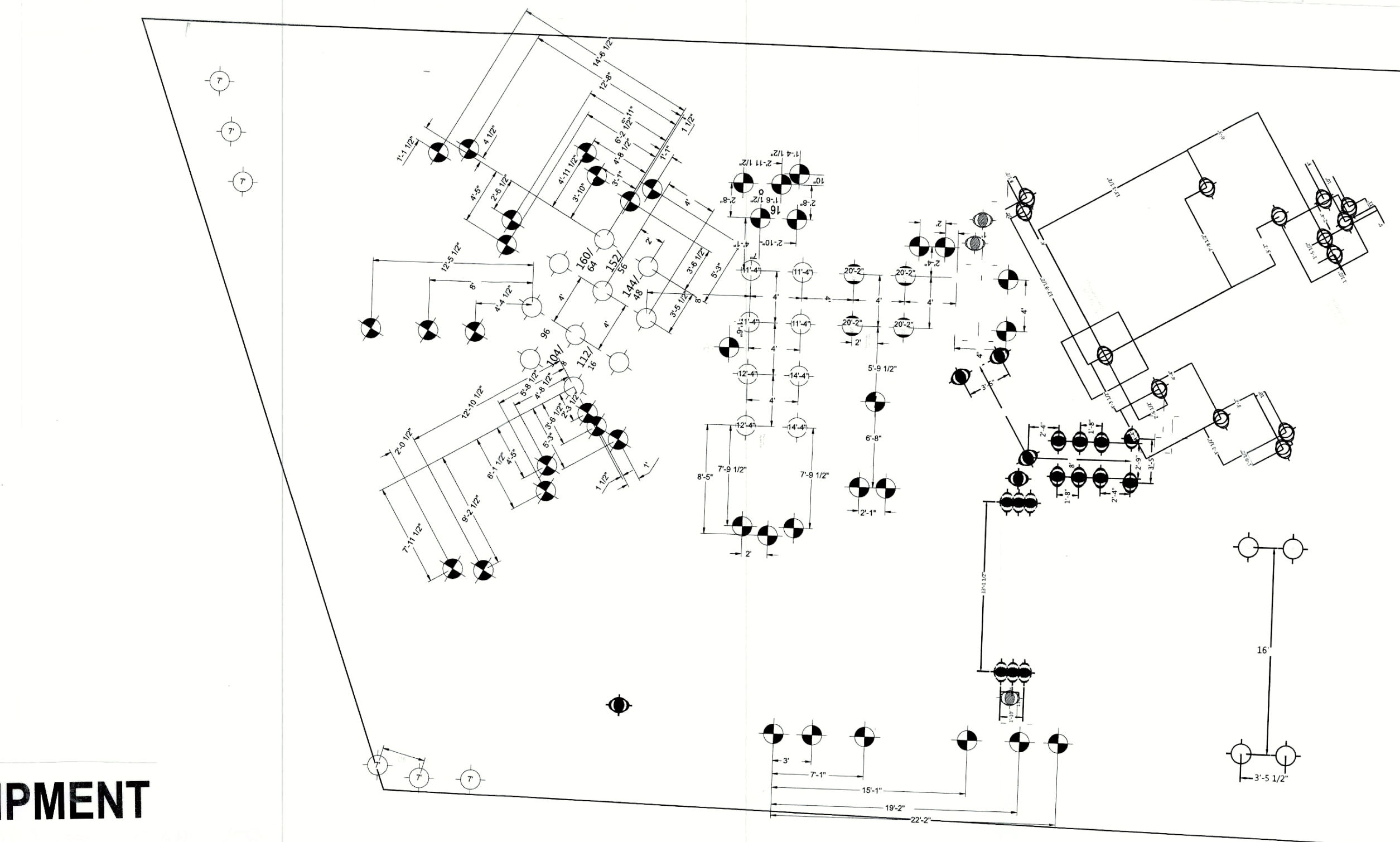


Play Structures

FOOTINGS FOR PLAY STRUCTURES - PLAN

SCALE: 1/8" = 1'-0"

PLAY STRUCTURES - PLAN



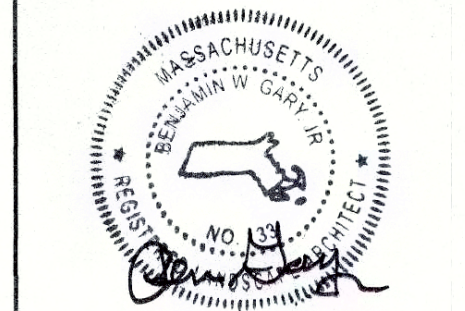
MG
Marshall | Gary LLC
17 Naumkeag Row
Danvers, MA 01923
p. 781.245.7699 c. 617.699.6644
www.mgary.com

Consultants:

Revisions:

Rev Date Description

Seal:



FOR CONSTRUCTION

Date: 8-30-17

Scale: As Shown

Drawn By: JE

Reviewed By:

Checked By: BG

Approved By: BG

Drawing Title:

**PLAYGROUND
ENLARGEMENT
& INSTALLATION
DETAILS**

Sheet Number:

L-5

PLAY EQUIPMENT AND EVENTS

MacArthur School Playground

Equipment	Type	ADA Type	Location	Quantity
Plank Bridge	Bridge	Transfer	Sky Tower	1
Sliding Pole	Overhead Climber	Transfer	KB Deck	1
Cylinder Climber	Climber	Transfer	KB Deck	1
Slalom Slide	Slide	Transfer	KB Deck	1
Balcony Deck	Lookout	Transfer	KB Deck	2
Steel Seat	Activity Panel	Ground	KB Deck	1
Bumpy Climber	Bridge	Transfer	KB Deck	1
Diamond Climber	Net Climber	Transfer	KB Deck	1
Double Slide	Slide	Transfer	KB Deck	1
Rock Wall	Climber	Transfer	KB Deck	1
Leg Lift	Over Head Climber	Ground	KB Deck	2
Quad Rope Tower	Rope Climber	Transfer	KB Deck	1
Banister Rails	Overhead Climber	Ground	Hy Par	1
Fun wheel	Overhead Climber, Spinner	Transfer	Hy Par	1
Cylinder Climber	Climber	Ground	Hy Par	1
Net climber	Rope Climber	Ground	Hy Par	1
tire Climber	Climber, Spinner	Transfer	Hy Par	1
Hammock	Climber	Transfer	Hy Par	1
Loop Rail	Overhead Climber	Ground	Independent	1
Hoop Alley	Bridge	Ground	Independent	1
Piano Panel	Activity Panel	Ground	Independent	1
Beat Blocks	Activity Panel	Ground	Independent	1
Beat Bubble	Activity Panel	Ground	Independent	1
General Store and Valance	Activity Panel	Ground	Under Sky Tower	1
Tic-Tac-Toe	Activity Panel	Ground	Under Sky Tower	1
Volcano Panel	Activity Panel	Transfer	In Sky Tower	1
Animal Sounds	Activity Panel	Transfer	In Sky Tower	1
Mountain Climber	Activity Panel	Transfer	In Sky Tower	1
Monkey Lean out Seat	Activity Panel	Transfer	In Sky Tower, Top of Slalom Slide	2
Bubble Panel	Activity Panel	Transfer	In Sky Tower	1
Bongo Panel	Activity Panel	Ground	Independent	1
Melody Maker	Activity Panel	Ground	Independent	1
Stand-N--Spin	Spinner	Ground	Independent	1
Sway Net	Climber	Ground	Independent	1
Stepping Stones	Balance	Ground	Linking	7
Pogo Pod	Balance	Ground	Linking	4
Tire Swing	Swing	Ground	Independent	1
Grand Canyon	Balance	Ground	Independent	1
Tunnel Slide	Slide	Transfer	Sky Tower	2
Hypersonic Slide	Slide	Transfer	Sky Tower	1