PROJECT MANUAL

FOR

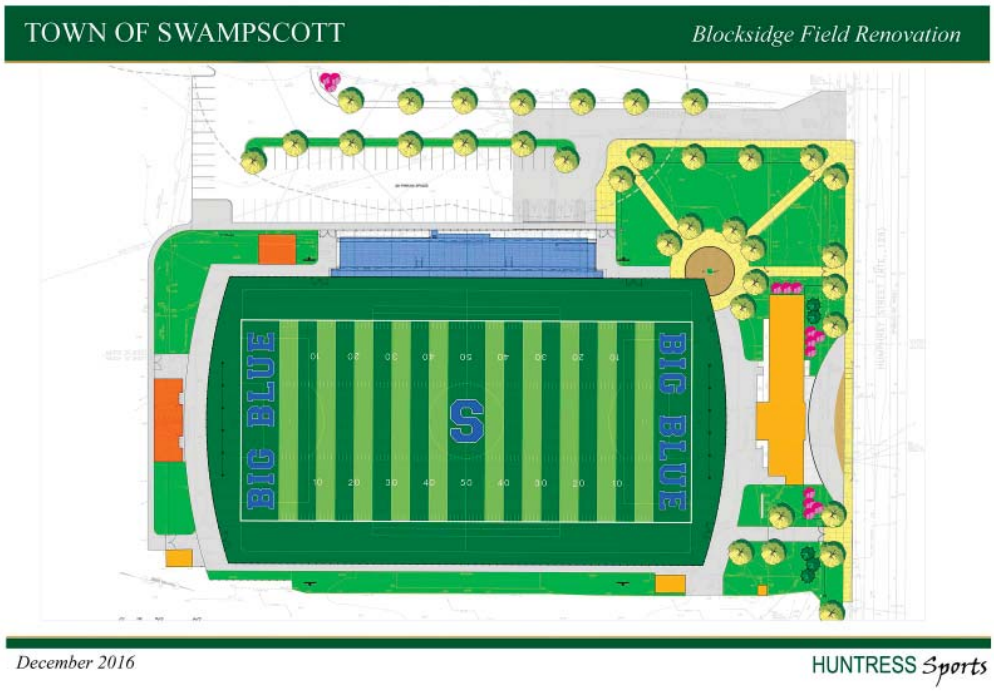
TOWN OF SWAMPSCOTT

Blocksidge Field Renovation

Site Work & Site Improvements

Prepared For:
Town of Swampscott
22 Monument Avenue
Swampscott, MA 01907

January 15, 2017



Prepared by:

HUNTRESS *Sports*
Landscape Architects & Planners
17 Tewksbury Street Andover, MA 01810

TOWN OF SWAMPSCOTT
SWAMPSCOTT, MASSACHUSETTS

INVITATION TO BID

Sealed bids for furnishing the following will be received at the Town of Swampscott Town Hall, Purchasing Dept, 22 Monument Avenue, Swampscott, Massachusetts 01907 until the time specified below at which time the bids will be publicly opened and read. For a consistency, the clock in the Purchasing Dept. will be the determining time.

ITEM	**BID OPENING**
Blocksidge Field Renovation	February 10, 2017
Athletic Field Construction	2:00 PM

Bid Documents and bid forms may be obtained at the Town of Swampscott Town Hall, Dept of Public Works, 22 Monument Avenue, Swampscott, Massachusetts 01907, or electronically by sending a request to chris@huntressassociates.com

Bids will be opened in the Town of Swampscott Town Hall, Purchasing Dept, 22 Monument Avenue, Swampscott, Massachusetts 01907. Each bid must be accompanied by a bid security of **CASH, CERTIFIED CHECK,** or **BID BOND** issued by a responsible bank or trust company licensed to do business in the Commonwealth of Massachusetts in the amount of 5% of the total bid. No bidder may withdraw his bid for a period of thirty (30) days, excluding Saturdays, Sundays, and legal holidays after the date set for the opening thereof.

The bidding and award of this Contract will be under the provisions of M.G. L. Chapter 30, Section 39M and the provisions of M.G.L. Chapter 30, Section 39S.

The Town of Swampscott is an affirmative action/equal opportunity purchaser. The Owner reserves the right to accept or reject, in whole or in part, any or all bids or take whatever, other action may be deemed necessary to be in the best interest of the Town.

Gino Cresta, DPW Director
Town of Swampscott

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LIST OF DRAWINGS

Track & Field Construction

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L-1	Layout & Materials Plan
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L-5	Grandstand Slab Enlargement
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L-7	Construction Details
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L-9	Construction Details
L-10	Grandstand Seating Plan

00 21 13

INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.01 IDENTIFICATION

1. Awarding Authority: Town of Swampscott- Swampscott, Massachusetts.

    1. Address: Town of Swampscott
       22 Monument Avenue
       Swampscott, MA 01907
    2. Telephone: (781) 586-8860
    3. Contact Person: Gino Cresta, DPW Director

2. Landscape Architect: Huntress Associates, Inc.

    1. Address: 17 Tewksbury Street, Andover MA 01810
    2. Telephone: (978) 470-8882.
    3. Fax Number: (978) 470-8890
    4. Contact Person: Mr. Christian Huntress.

1.02 BIDDING DOCUMENTS

3. Instructions to Bidders: This "Instructions to Bidders" contains important information about bidding procedures and is intended to provide guidance and assistance to bidders. This "Instructions to Bidders" does not change or supersede the provisions of Law or the Contract Documents. This "Instructions to Bidders" is not part of the Contract Documents, unless specifically referenced or itemized in the Owner/Contractor Agreement.

4. To view the Bidding Documents: Contact the Landscape Architect. .

5. Bid Documents: Bid Documents: Bid documents consist of one set of Contract Document Drawings and one copy of the Contract Document Project Manual.

    a. General Bidders may obtain one bid set by sending a request via email to chris@huntressassociates.com. Bid Documents are available in PDF format, upon request.
    b. General bidders must provide a contact, including name, address, phone and email.
    c. Bid sets will be issued only in complete sets.
    d. Printed copies of the plans and specs are available from the Landscape Architect.

6. Bid Documents Deposit Required: No deposit is required to receive PDF copies. Deposit amount for printed sets is $50.00 per bid set. Bid document deposit shall be in the form of company check or bank check payable to the Town of Swampscott.

7. Bid Documents Deposit Refund: Deposits will be returned in full, if the bid documents are returned

complete and in good condition within 10 calendar days after general bids are due, otherwise the deposit shall be the property of the Awarding Authority.

8. Mailing and Handling: Bidding documents will be available for pick-up by the bidder at the office of the landscape Architect. Mailing or handling costs are the responsibility of the bidder and are to be coordinated directly with selected printing company. Payment must be received prior to shipment of bidding documents.

1.03 BIDDING REQUIREMENTS

1. Site Visit Required: Each bidder shall visit the site of the proposed work and become fully and completely aware of all existing conditions, existing facilities, and the character of the operations to be carried on under the proposed Contract. Each bidder shall make itself fully understand the facilities, physical conditions, and restrictions attending the work under the Contract. Failure to make such examinations will not relieve the bidder from any obligation under the bidder's bid or sub-bid as submitted, nor shall it serve as the basis for change orders or equitable adjustments.

2. Document Examination: Each bidder shall thoroughly examine and become familiar with the Contract Documents and the Bidding Documents. Failure to make thorough examinations will not relieve the bidder from any obligation under the bidder's bid as submitted, nor shall it serve at the basis for change orders or equitable adjustments.

3. Form of Agreement: An example Form of Owner/Contractor Agreement is included in the bidding documents.

4. Applicable Laws: All bids are subject to all applicable provisions of law.

5. Questions, Clarifications, and Interpretations: Bidders shall promptly notify the Landscape Architect of questions, ambiguities, inconsistencies, errors, or omissions, which they may discover upon examination of the Contract Documents, the site, and local conditions.

    1. Written Request Required: Submit written requests for clarification and interpretation to the Landscape Architect by mail or fax.

    2. Time Required: Requests for clarifications and interpretations must be received by the Landscape Architect at least five working days (Saturdays, Sundays, and Holidays excluded) prior to the date bids are due.

    3. Landscape Architect's Response, Addenda: The Landscape Architect's response will be in the form of written Addenda that shall become part of the Contract Documents. Clarifications and interpretations offered by the Authority, the Landscape Architect, or any of the Landscape Architect's consultant's in any form other than a formal written Addenda shall be invalid.

    4. Issuance of Addenda: Addenda will be issued to every bidder on record as having obtained bid documents. Copies of Addenda will be available at locations where Contract Documents are filed for public inspection as listed in the Advertisement and these

Instructions to Bidders.

5. Addenda Must Be Acknowledged: Bidders shall acknowledge Addenda in the spaces provided on the bid forms. Failure of a bidder to acknowledge Addenda in the spaces provided on the bid form may cause rejection of the bid or lead to a protest. Failure of a bidder to receive any addenda shall not relieve it from any obligation under its bid as submitted.

1.04 ALTERNATES

1. Alternates by General Bidders: Each General Bidder shall bid on all alternates listed and shall list for each alternate only one amount which shall be the total amount in dollars and cents to be added or deducted from base bid amount for the alternate and shall include Sub-Bidders's alternate amounts. Clearly indicate whether the amount is to be added or deducted, if the bid form does not already make this clear. If an alternate does not change the bid amount, print "No Change" or "0" in the amount space provided for that alternate. Do not leave alternate proposal spaces blank.

2. Alternates May Affect Low Bidder Selection: The low bidder will be determined on the basis of the sum of the base bid and the alternates selected by the Awarding Authority.

1.05 PREPARATION AND SUBMISSION OF BIDS

3. Completion of Bid Forms: Use only the Bid Forms furnished with the bidding documents by the Authority. Additional forms will not be mailed by the Landscape Architect. Complete Bid Forms with typewriter or hand printed in ink.

4. Alterations Not Permitted: Do not alter bid forms. Do not include any recapitulation of the work to be done. Do not provide any information not requested. Do not strike out, line out, white out, or erase any information.

5. Amounts: Express amounts in both words and numbers where space for both is provided. In cases of conflict, written amounts shall control over numbers.

6. Blanks: Complete all spaces provided. Do not leave any blanks. Print "N/A" in any space not needed or used.

7. Bid Withdrawal: Any bid may be withdrawn by mailed written request, faxes written request, or telegraphic request prior to date and time of receipt of bids. Withdrawn bids may be resubmitted until date and time of receipt of bids.

    1. Telegraphic Request: Bid withdrawal by telegraph shall be confirmed in writing with the Bidder's signature.

    2. Mailed Written Request: Bid withdrawal by mail shall be in writing and shall be post-

marked on or before the date and time of receipt of bids.

3. Faxed Written Request: Bid withdrawal by fax shall be in writing and shall be received by the Authority on or before the date and time of receipt of bids.

4. Modifications: No written, oral, telephone, or telegraphic modifications to bids will be considered after the bid is received.

8. Bid Deposit (Bid Security): A Bid Deposit (Bid Security) is required for each General Bid in the amount of 5% of the total bid amount including all add alternates.

a. Form of Bid Deposit: Bid Deposit shall be made payable to the Awarding Authority and shall be in the form of cash, certified check, issued by a responsible bank or trust company, or a bid bond issued by a surety company licensed to do business in the Commonwealth of Massachusetts. Form of bid bond shall be similar to AIA A310 and must be acceptable to the Awarding Authority.

b. General Bidder Bid Deposit Return: Bid deposits of General Bidders will be returned within five working days after bid opening, except bid deposits of the three lowest general bidders will be retained by the Authority until a Contract is signed.

9. General Bid Submission: Submit one copy of bid forms, bid deposit and the required, completed Qualifications and References Form, in a sealed envelope. Clearly and boldly identify the envelope with the words, **"General Bid Enclosed for Blocksidge Field Renovation– Hold for Public Opening."** The envelope must also include the name, business address and telephone number of the bidder. Submit Bids as specified in the advertisement of bid.

1.06 PERFORMANCE AND PAYMENT BONDS

1. Performance and Payment Bonds: Bonds shall be issued by a surety company that is licensed to do business in the Commonwealth of Massachusetts and is satisfactory to the awarding authority. Performance and Payment Bonds shall be issued by a company having an A.M. Best rating of A+, XII or higher, subject to the Awarding Authorities' discretion. Bonds shall be issued by a surety company that is licensed to do business in the Commonwealth of Massachusetts, State Division of Insurance. Bond form shall be as bound in the Project Manual or other form approved by the Awarding Authority.

1. Changes in Contract Price: Whenever the Contract Price is adjusted by Change Order, the General Contractor shall adjust the amount of both the Performance Bond and a Labor and Materials Payment Bond to the new full amount of the Contract Price. The cost of this adjustment shall be included in the General Contractor's mark-up on Change Orders.

2. Bond Cost: All Performance Bond and a Labor and Materials Payment Bond costs, shall be included in the Bid Amount and all premiums for bonds shall be paid by the General Contractor.

3. Additional Bond Documents Required: With each bond provide certified power of attorney or other certificate of authority where bond is executed by an agent, officer, or other representative of Contractor or surety.

1.07 CONTRACT TIME

1. Contract Time: Time is of the essence in this Contract. The Awarding Authority expects the work to begin on April 3, 2017 after issuance of Notice to Proceed and expects the work to be Substantially Complete by August 18, 2017, and to achieve Final Completion including all punch list items by August 30, 2017.

1.08 CONTRACT AWARD

1. Bid Opening and Disposition: Bids will be opened in public.
1. Contract Award: The Contract will be awarded within 30 days after receipt of general bids. (Saturdays, Sundays, and legal holidays excluded)
2. General Bids May be Rejected: The Awarding Authority reserves the right to waive informalities in any or all general bids; to reject any or all general bids; to revise the Contract Documents and rebids, if it is in their interest to do so.
3. Definition of "Lowest Responsible and Eligible Bidder": The "lowest responsible and eligible bidder" means the General Bidder whose bid is the lowest of those General Bidders who demonstrably possess the skill, ability, and integrity necessary for faithful performance of the work, and who certify that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

3.10 DOCUMENT SUBMISSION CHECKLIST

1. General Bid Required Submittals: On or before the date and time of receipt of general bids, general bidders must submit the following:

    1. General Bid Form.
    2. Bid Deposit

2. Documents Required at Contact Signing: Three copies of each of the following documents are required prior to Contract Signing.

    3. Signed and executed Section 00 61 13.13 Performance Bonds and Section 00 61 13.16 Labor and Material Payment Bonds including Power-of -Attorney for the General Contractor.
    4. Signed and executed Insurance Certificates for the General Contractor.

END OF SECTION

SECTION 00 30 00
FORM FOR GENERAL BID

From: (Insert name of General Bidder) _____

To the Awarding Authority:

1. The undersigned proposes to furnish all labor and materials required for **BLOCKSIDGE FIELD ATHLETIC FIELD IMPROVEMENTS** in accordance with the accompanying Contract Documents prepared by Huntress Associates, Inc. for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

2. This bid includes addenda numbered _____.

3. GENERAL BID

Base Bid Price in Numbers: _____

Base Bid Price in Words: _____

Add Alt #1 - (Sound System) _____

Add Alt #2 - (Scoreboard) _____

Add Alt #3 - (Safety Netting) _____

Add Alt #4 - (Storage Building) _____

Add Alt #5 - (Area A) _____

Add Alt #6 - (Area B) _____

Add Alt #7 - (Area C) _____

Add Alt #8 - (Area D) _____

Add Alt #9 - (Sports Lighting) _____

Add Alt #10 - (Plants) _____

4. Unit prices for Change Orders as specified in the Project Manual and Unit Price Specification. The difference in Unit Prices between add and deduct shall not exceed 15%.

Description of Work	**Unit**	**Amount to add**	**Amount to deduct**
a. Earth Excavation	Cu. Yd.	$ _____	$ _____
b. Unsuitable material Excavation, including replacement with ordinary borrow	Cu. Yd.	$ _____	$ _____
c. Trench Excavation including all temporary sheeting, shoring, dewatering and granular backfill			
0-5' depth	Cu. Yd.	$ _____	$ _____
over 5' depth	Cu. Yd.	$ _____	$ _____
d. Ordinary Borrow	Cu. Yd.	$ _____	$ _____
e. Processed Gravel	Cu. Yd.	$ _____	$ _____
f. 15.5" paving section, including 3" Bit Conc. and 12" gravel.	Sq. Yd.	$ _____	$ _____
g. 12" paving section including 4" concrete and 8" gravel base.	Sq. Yd.	$ _____	$ _____
h. 4’ Chain Link Fence (Detail #1, Sheet L-9)	100 lf	$ _____	$ _____
i. 4’ Chain Link gate (4’ width) (Detail #1, Sheet L-9)	EA	$ _____	$ _____
j. 6’ Chain Link Fence (Detail #2, Sheet L-9)	100 lf	$ _____	$ _____
k. 6’ Chain Link gate (12’ width) (Detail #2, Sheet L-9)	EA	$ _____	$ _____
l. 8’ Ornamental Bench & Conc. Pad (Detail #9, Sheet L-10)	EA	$ _____	$ _____
m. Trash Receptacle & Conc. Pad (Detail #10, Sheet L-10)	EA	$ _____	$ _____

n. Payment for Off-Site Transport & Disposal of Contaminated Materials:

n1.	Payment for Excess Excavation of Soil, Asphalt, Bricks, & Concrete	(Ton)	$ _____	$ _____
n2.	Payment for Off-Site Transport and Disposal of Excess Excavation	(Ton)	$ _____	$ _____
n3.	Transport and Disposal of Type I-3 Non-reportable Urban Fill Soils	(Ton)	$ _____	$ _____
n4.	Transport and Disposal of Type II-1 In-State Unlined Landfill	(Ton)	$ _____	$ _____

5. The Undersigned agrees that, if he 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.

   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 44A. The Undersigned further 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. The Undersigned further certifies under the penalties of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section 29F of Chapter 29, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

   Date: _____

   Name of General Bidder _____

   Name and Title of Person Signing Bid _____

   Business Address _____

   City and State _____

   Phone & Fax _____

   Email Address _____

Note: This proposal shall bear the written signature of the bidder.

1. If the bidder is an individual, provide residential address if different from business address.
2. If the bidder is a partnership, the proposal must be signed by a partner and provide full names and residential addresses of all partners.
3. If the bidder is a corporation, the proposal must be signed by a duly authorized officer or agent of the corporation, the state of incorporation must be provided, and the corporate seal must be affixed. Provide the state of incorporation and the names of all corporate officers.

If an individual:
Name: _____
Residence: _____

If an individual doing business under a firm name:
Name of Firm: _____
Name of Individual: _____
Business Address: _____
Residence: _____

If a partnership:
Name of Partner: _____
Residence: _____
Name of Partner: _____
Residence: _____
Name of Partner: _____
Residence: _____

If a corporation:
Incorporated in
what State: _____
President: _____
Treasurer: _____
Secretary: _____

END OF SECTION

SECTION 00 35 00

CERTIFICATE OF NON-COLLUSION

Pursuant to MGL Chapter 149, Section 44F, The undersigned certifies under 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.

Date:_____

_____
Name of Bidder

_____
Title and name of Person Signing Bid

_____
Business Address

_____
City and State

END OF SECTION

SECTION 00 48 50

STATEMENT OF STATE TAX COMPLIANCE

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b),

I, (insert name and title) _____ authorized

signatory for (insert name of contracting party) _____,

whose principal place of business is at _____, do

hereby certify under the pains and penalties of perjury that (insert name of contracting party)

_____ has complied

with all laws of the Commonwealth relating to taxes.

_____
Authorized Signature

_____
Date

END OF SECTION

SECTION 00 52 13
OWNER - CONTRACTOR AGREEMENT

THIS AGREEMENT, made this 1st day of March, 2017 by and between the Town of Swampscott, Massachusetts, as represented by the **Swampscott Board of Selectmen** herein called the "Owner" and

_____

a corporation organized and existing under the laws of _____

a partnership consisting of _____

an individual doing business as _____

_____

hereinafter called the "Contractor".

WITNESSETH, that the Owner and the Contractor, for the consideration hereinafter named agree as follows:

Article 1. SCOPE OF THE WORK: The Contractor shall furnish all of the materials and perform all of the work shown and described in the Contract Documents titled **BLOCKSIDGE FIELD - ATHLETIC FIELD IMPROVEMENTS**, prepared by Huntress Associates, Inc., acting as and in these Contract Documents entitled the Landscape Architect, and shall do everything required by this Agreement and the Contract Documents.

Article 2. TIME OF COMPLETION: The Contractor hereby agrees to commence work within 10 calendar days (Saturdays, Sundays and legal holidays excluded) from receipt of a written "Notice to Proceed" and to Substantially Complete the Work by August 18, 2017. The parties acknowledge that time is of the essence in the performance of this Contract.

Article 3. THE CONTRACT PRICE: The Owner shall pay the Contractor for the performance of the Work subject to additions and deductions by Change Order as provided in the Conditions of the Contract, in current funds, the sum of:

_____

DOLLARS ($_____).

Article 4. PAYMENTS: The Owner agrees to pay the Contractor in current funds for the performance of the Contract as provided in the GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, as amended by the SUPPLEMENTARY GENERAL CONDITIONS, if any, and by Massachusetts statutes, including General Laws Chapter 30, Section 39K.

Article 5. THE CONTRACT: The following together with this Agreement, form the CONTRACT:

The Record Documents as listed in the Table of Contents, including all instructions, specifications, plans and requirements contained herein.
The Record Drawings as listed on the Contract Drawing coversheet.

Addenda No. __ through __, inclusive.
Modifications issued after the execution of the Contract.

Article 6. REQUIRED TERMS: This Contract shall be considered to include all items required to be included in it by the Massachusetts General Laws, Chapter 30 and 149, as amended, and any applicable other laws, as though such terms were set forth herein.

Article 7. ALTERNATES: The following ALTERNATES have been accepted and the Contract Sum stated in Article 3 of this Agreement includes and has been adjusted to reflect the total cost of each accepted alternate.

Alternate Number	Indicate Accepted or Rejected	Original Bid Value of Alternate
Alternate No. 1		$
Alternate No. 1		$

IN WITNESS WHEREOF, the parties hereto on the day and year first above written have executed this Agreement in two (2) counterparts, each of which shall, without proof of accounting for the other counterpart, be deemed an original thereof.

TOWN OF SWAMPSCOTT,

SEAL

CONTRACTOR

Address

By

Title

Note: If the Contractor is a corporation, attach Certificate of Vote by Board of Directors stating that the officer signing the contract has the authority of the Corporation to sign contracts binding on the Corporation

COMMONWEALTH OF MASSACHUSETTS

(County) _____, _____

Then personally appeared the above _____

the aforesaid of _____

and acknowledged the foregoing instrument to be the free act and deed of _____

_____ before me.

My Commission expires: _____

Notary Public

END OF SECTION

CERTIFICATE OF VOTE OF AUTHORIZATION

_____ 20 ____

I hereby certify that a meeting of the Board of Directors of the:

_____
(Name of Corporation)

duly called and held at _____ on the ____ day of _____ 20 _____,

at which a quorum was present and acting, it voted that _____
(Name of Corporation Officer)
of the _____, be and hereby is authorized to execute and deliver for
(Name of Corporation)

and on behalf of the Corporation a Contract with the Town of Swampscott, for work to be done on the Blocksidge Field renovation project in Swampscott, Massachusetts, and to act as Principal to execute bonds in connection therewith, which Contract and Bonds were presented to and made a part of the records of said meeting.

I further certify that _____ is duly qualified and acting
(Name of Corporation Officer)

_____ of the Corporation and that said vote has not been repealed,
(Title)
rescinded or amended

A true copy of the record,

ATTEST: _____

(CORPORATE SEAL)

On this _____ day of _____ 20 ____, before me, the undersigned Notary Public, personally appeared _____, duly designated by the board of directors and proved to me, through satisfactory evidence of identification, which was _____, s/he is the person whose name is signed on the foregoing documents, and acknowledged to me that s/he signed it voluntarily for its stated purpose and that it was her/his free act and deed.

_____
Notary Public
My Commission Expires on: _____

END OF SECTION

SECTION 00 61 13.13
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that _____

_____

as Principal, and _____

_____

as Surety, are held and firmly bound unto the Awarding Authority, in the sum of _____

_____
lawful money of the United States to be paid to the Awarding Authority for which payments, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has made a contract with the Awarding Authority bearing the date of

2017, for the construction of _____

_____ (Project),

Now the condition of this obligation is such that if the Principal shall well and truly keep and perform all the undertakings, covenants, agreement, terms and conditions of said contract and any extensions thereof that may be granted by the Awarding Authority, with or without notice to the Surety, and during the life and any guaranty required under the contract, and shall also well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of any and all duly authorized modifications, alterations changes or additions to said contract that may hereafter be made, notice to the Surety of such modifications, alterations, changes or additions being hereby waived, then this obligations shall become null and void; other wise it shall remain in full force and virtue.

In the event that the contract is abandoned by the Contractor, or is terminated by the Awarding Authority, said Surety hereby further agrees that said Surety shall, if requested in writing by the Awarding Authority, take such action as is necessary to complete said Contract.

In witness whereof we hereto set our hands and seals this day of , 20__.

By Principal: _____ (Seal)

By Surety: _____

Address: _____

Surety Agent: _____ (Seal)

Address:

Telephone: _____

FORM APPROVED BY AWARDING AUTHORITY:

_____

CERTIFICATE AS TO CORPORATE PRINCIPAL
(PERFORMANCE BOND)

I, _____ certify that I am the _____

of the corporation names as Principal in the within bond; that _____

who signed said Bond on behalf of the Principal was then _____
of said corporation and I know his signature and his signature thereon is genuine; and that said Bond was duly signed, sealed and attested for and on behalf of said corporation by authority of its governing body.

Signed: _____ (Seal)

Date: _____, 20___

Rate of Premium on this bond is $ _____ per thousand.

Total Amount of Premium Charge is $ _____ .

END OF SECTION

SECTION 00 61 13.16

LABOR AND MATERIAL PAYMENT BOND

Know all men by these presents, that _____

_____

_____

as principal, and _____

as surety, are held and firmly bound unto the Awarding Authority in the sum of _____

_____

lawful money of the United States of America, to be paid to the Awarding Authority, for which payment, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly b these presents.

Whereas, the said Principal has made a contract with the Awarding Authority under date of

, 2017

for:

Now the conditions of this obligation is such that it the principal shall promptly pay for all labor performed or furnished and for all materials used or employed in said contract and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said contract that may hereafter be made, notice to the surety of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, provisions of Massachusetts General Laws, Chapter 30, Section 39A, and Chapter 149, Section 29 as amended, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

In witness whereof we hereunto set their hands and seals this day of , 20__

By Principal: _____ (Seal)

By Surety: _____

Address: _____

Surety Agent: _____ (Seal)

Address:

_____

Telephone: _____

_____

FORM APPROVED BY AWARDING AUTHORITY:

CERTIFICATE AS TO CORPORATE PRINCIPAL
(LABOR AND MATERIAL BOND)

I, , certify that I am the _____

of the corporation named as principal in the within bond; that _____

who signed said Bond on behalf of the Principal was then _____
of said corporation and I know his signature and his signature thereon is genuine; and that said Bond was duly signed, sealed and attested for and on behalf of said corporation by authority of its governing body.

Signed: _____ (Seal)

Date: , 2017

Rate of Premium on this bond is $ _____ per thousand.

Total Amount of Premium Charge is $ _____ .

END OF SECTION

AIA DOCUMENT A201-1997

General Conditions of the Contract for Construction

GENERAL INFORMATION

PURPOSE. AIA Document A201-1997, a general conditions form, is intended to be used as one of the contract documents forming the construction contract. In addition, it is frequently adopted by reference into a variety of other agreements, including the Owner-Architect agreements and the Contractor-Subcontractor agreements, to establish a common basis for the primary and secondary relationships on the typical construction project.

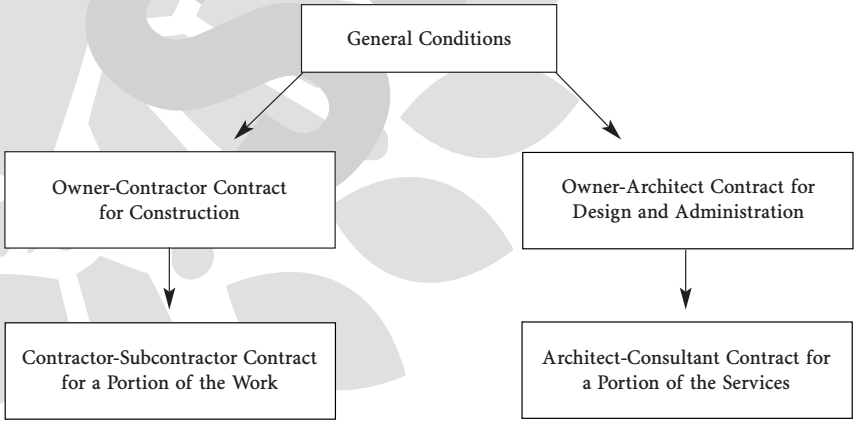
RELATED DOCUMENTS. A201-1997 is incorporated by reference into two AIA Owner-Contractor agreements (A101-1997 and A111-1997), the A401-1997 Contractor-Subcontractor agreement and several AIA Owner-Architect agreements (for example, B141-1997 and B151-1997). It is also incorporated by reference into two design-build agreements (A491-Part 2 and B901-Part 2) and two Owner-Construction Manager/constructor agreements (A121/CMc-Part 2 and A131/CMc-Part 2). A201-1997 may be adopted by indirect reference when the prime Agreement between the Owner and Architect adopts A201-1997 and is in turn adopted into Architect-Consultant agreements such as AIA Documents C141-1997 and C142-1997. Such incorporation by reference is a valid legal drafting method, and documents so incorporated are generally interpreted as part of the respective contract.

The Contract Documents, including A201-1997, record the Contract for Construction between the Owner and the Contractor. The other Contract Documents are:

Owner-Contractor Agreement Form (e.g., A101-1997 or A111-1997)
Supplementary Conditions
Drawings
Specifications
Modifications

Although the AIA does not produce standard documents for Supplementary Conditions, Drawings or Specifications, a variety of model and guide documents are available, including AIA's MASTERSPEC and AIA Document A511, Guide for Supplementary Conditions.

The A201-1997 document is considered the keystone document coordinating the many parties involved in the construction process. As mentioned above and diagrammed below, it is a vital document used to allocate the proper legal responsibilities of the parties.



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On construction projects, hundreds of contractual relationships are created between owners, architects, architects' consultants, contractors, subcontractors, sub-subcontractors, and others down through the multiple tiers of participants. If custom-crafted agreements were written in isolation for each of those contractual relationships, the problems of overlaps and gaps in the numerous participants' responsibilities could lead to mass confusion and chaos. To prevent and solve this problem, the construction industry commonly uses standardized general conditions, such as AIA Document A201-1997, for coordinating those many relationships on the project by its adoption into each contract. AIA expends a great deal of time and resources in the development of A201 and its other documents to provide four types of linkages in the tiers of legal relationships. In addition to adoption of A201 into each agreement, related AIA documents are crafted with common phrasing, uniform definitions and a consistent, logical allocation of responsibilities down through the tiers of relationships. Together these documents are known as the A201 Family of Documents, and are listed below:

A101-1997, Standard Form of Agreement Between Owner and Contractor (Stipulated Sum)
A111-1997, Standard Form of Agreement Between Owner and Contractor (Cost Plus Fee, with GMP)
A401-1997, Standard Form of Agreement Between Contractor and Subcontractor
A511, Guide for Supplementary Conditions
A701-1997, Instructions to Bidders
B141-1997, Standard Form of Agreement Between Owner and Architect
B151-1997, Abbreviated Standard Form of Agreement Between Owner and Architect
B511, Guide for Amendments to AIA Owner-Architect Agreements
C141-1997, Standard Form of Agreement Between Architect and Consultant
C142-1997, Abbreviated Standard Form of Agreement Between Architect and Consultant

The AIA publishes other General Conditions that parallel A201-1997 for the construction management-adviser family of documents (AIA Document A201/CMa) and the interiors family of documents (AIA Document A271).

DISPUTE RESOLUTION—MEDIATION AND ARBITRATION. This document contains provisions for mediation and arbitration of claims and disputes. Mediation is a non-binding process, but is mandatory under the terms of this document. Arbitration is mandatory under the terms of this document and binding in most states and under the Federal Arbitration Act. In a minority of states, arbitration provisions relating to future disputes are not enforceable but the parties may agree to arbitrate after the dispute arises. Even in those states, under certain circumstances (for example, in a transaction involving interstate commerce), arbitration provisions may be enforceable under the Federal Arbitration Act.

The AIA does not administer dispute resolution processes. To submit disputes to mediation or arbitration or to obtain copies of the applicable mediation or arbitration rules, write to the American Arbitration Association or call (800) 778-7879. The American Arbitration Association also may be contacted at *http://www.adr.org*.

WHY USE AIA CONTRACT DOCUMENTS? AIA contract documents are the product of a consensus-building process aimed at balancing the interests of all parties on the construction project. The documents reflect actual industry practices, not theory. They are state-of-the-art legal documents, regularly revised to keep up with changes in law and the industry—yet they are written, as far as possible, in everyday language. Finally, AIA contract documents are flexible: they are intended to be modified to fit individual projects, but in such a way that modifications are easily distinguished from the original, printed language.

For further information on AIA's approach to drafting contract documents, see AIA Document M120, Document Drafting Principles.

USE OF NON-AIA FORMS. If a combination of AIA documents and non-AIA documents is to be used, particular care must be taken to achieve consistency of language and intent among documents.

STANDARD FORMS. Most AIA documents published since 1906 have contained in their titles the words "Standard Form." The term "standard" is not meant to imply that a uniform set of contractual requirements is mandatory for AIA members or others in the construction industry. Rather, the AIA standard documents are intended to be used as fair and balanced baselines from which the parties can negotiate their bargains. As such, the documents have won general acceptance within the construction industry and have been uniformly interpreted by the courts. Within an industry spanning 50 states—each free to adopt different, and perhaps contradictory, laws affecting that industry—AIA documents form the basis for a generally consistent body of construction law.

USE OF CURRENT DOCUMENTS. Prior to using any AIA document, the user should consult an AIA component chapter or a current AIA Documents Price List to determine the current edition of each document.

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This document may not be reproduced for Project Manuals. Rather, if a user wishes to include it as an example in a Project Manual, the normal practice is to purchase a quantity of the original forms and bind one in each of the Project Manuals. Modifications may be accomplished through the use of separate Supplementary Conditions, such as those derived from AIA Document A511.

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CHANGES FROM THE PREVIOUS EDITION.

AIA Document A201-1997 revises the 1987 edition of A201 to reflect changes in construction industry practices and the law. Comments and assistance in this revision were received from numerous individuals and organizations, including those representing owners, architects, engineers, specifiers, general contractors, subcontractors, independent insurance agents, sureties, attorneys and arbitrators.

A number of substantial changes have been made to the A201-1997 document. The principal changes are described below.

ARTICLE 1: Protection of rights in Drawings, Specifications and other documents is now specifically extended to those of the Architect's consultants, and includes documents in electronic form.
ARTICLE 2: The Owner is required to designate a representative empowered to act for the Owner on the Project. The Contractor is entitled to rely on the accuracy and completeness of information furnished by the Owner.
ARTICLE 3: Procedures are given for Contractor's review of field conditions and for review of instructions in the Contract Documents regarding construction means and methods. The rights and responsibilities of the parties with respect to incidental design by the Contractor are set out in detail.
ARTICLE 4: Mediation is included as a precursor to arbitration. The Owner and Contractor waive consequential damages (i.e., indirect damages) arising out of the Contract.
ARTICLE 7: Amounts not in dispute under a Construction Change Directive must be included in Applications for Payment. Interim determinations as to amounts still in dispute will be made by the Architect.
ARTICLE 9: In the absence of a payment bond in the full amount of the contract sum, payments received by the Contractor for the Work of subcontractors are held by the Contractor for the subcontractors. Release of retainage on completed Work is required at substantial completion.
ARTICLE 10: Hazardous materials provisions have been expanded to cover materials other than asbestos and PCB, and indemnification of the Contractor under these provisions has been extended to cover remediation costs.
ARTICLE 11: Project Management Protective Liability insurance, covering risks of the Owner, Contractor and Architect, is now an option for the parties to the Contract.
ARTICLE 12: If, during the correction period, the Owner discovers Work that is not in accordance with the Contract Documents, the Owner must notify the Contractor. Failure to do so results in a waiver of the Owner's rights under the correction of Work and warranty provisions.
ARTICLE 13: The Owner is permitted to assign the Contract to the lender without consent of the Contractor.
ARTICLE 14: The Owner is permitted to terminate the Contract for convenience, with appropriate payment to the Contractor.

USING THE A201-1997 FORM

MODIFICATIONS. Users are encouraged to consult an attorney before completing an AIA document. Particularly with respect to contractor's licensing laws, duties imposed by building codes, interest charges, arbitration and indemnification, this document may require modification with the assistance of legal counsel to fully comply with state or local laws regulating these matters.

Generally, necessary modifications to the General Conditions may be accomplished by Supplementary Conditions included in the Project Manual and referenced in the Owner-Contractor Agreement. See AIA Document A511, Guide for Supplementary Conditions, for model provisions and suggested format for the Supplementary Conditions.

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Because A201-1997 is designed for general usage, it does not provide all the information and legal requirements needed for a specific Project and location. Necessary additional requirements must be provided in the other Contract Documents, such as the Supplementary Conditions. Consult AIA Document A521, Uniform Location of Subject Matter, to determine the proper location for such additional stipulations.

It is definitely not recommended practice to retype the standard document. Besides being a violation of copyright, retyping can introduce typographical errors and cloud the legal interpretation given to a standard clause when blended with modifications, thereby eliminating one of the principal advantages of standard form documents. By merely reviewing the modifications to be made to a standard form document, parties familiar with that document can quickly understand the essence of the proposed relationship. Commercial exchanges are greatly simplified and expedited, good-faith dealing is encouraged, and otherwise latent clauses are exposed for scrutiny. In this way, contracting parties can more confidently and fairly measure their risks.

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1997 EDITION

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General Conditions of the Contract for Construction

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document has been approved and endorsed by The Associated General Contractors of America.

TABLE OF ARTICLES

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ARTICLE 1 GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of Addenda relating to bidding requirements).

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor, (3) between the Owner and Architect or (4) between any persons or entities other than the Owner and Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are

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complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.2.3 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3 CAPITALIZATION

1.3.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents published by the American Institute of Architects.

1.4 INTERPRETATION

1.4.1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5 EXECUTION OF CONTRACT DOCUMENTS

1.5.1 The Contract Documents shall be signed by the Owner and Contractor. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

1.5.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.6 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

1.6.1 The Drawings, Specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect or the Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in

the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' copyrights or other reserved rights.

ARTICLE 2 OWNER

2.1 GENERAL

2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Subparagraph 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 The Owner shall, at the written request of the Contractor, prior to commencement of the Work and thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Furnishing of such evidence shall be a condition precedent to commencement or continuation of the Work. After such evidence has been furnished, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

2.2.2 Except for permits and fees, including those required under Subparagraph 3.7.1, which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

2.2.4 Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness. Any other information or services relevant to the Contractor's performance of the Work under the Owner's control shall be furnished by the Owner after receipt from the Contractor of a written request for such information or services.

2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in

accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a three-day period. If the Contractor within such three-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

3.1 GENERAL

3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Subparagraph 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, any errors, inconsistencies or omissions discovered by the Contractor shall be reported promptly to the Architect as a request for information in such form as the Architect may require.

3.2.2 Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any nonconformity discovered by or made known to the Contractor shall be reported promptly to the Architect.

3.2.3 If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Architect in response to the Contractor's notices or requests for information pursuant to Subparagraphs 3.2.1 and 3.2.2, the Contractor shall make Claims as provided in Subparagraphs 4.3.6 and 4.3.7. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1 and 3.2.2, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized such error, inconsistency, omission or difference and knowingly failed to report it to the Architect.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any resulting loss or damage.

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4.2 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order.

3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.5 WARRANTY

3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract

Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.7 PERMITS, FEES AND NOTICES

3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded.

3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work.

3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

3.8 ALLOWANCES

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances;

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Clause 3.8.2.1 and (2) changes in Contractor's costs under Clause 3.8.2.2.

3.8.3 Materials and equipment under an allowance shall be selected by the Owner in sufficient time to avoid delay in the Work.

3.9 SUPERINTENDENT

3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

3.10.2 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect without action.

3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by

the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action.

3.12.6 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice the Architect's approval of a resubmission shall not apply to such revisions.

3.12.10 The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Subparagraph 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15 CLEANING UP

3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

3.16.1 The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

3.17 ROYALTIES, PATENTS AND COPYRIGHTS

3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law and to the extent claims, damages, losses or expenses are not covered by Project Management Protective Liability insurance purchased by the Contractor in accordance with Paragraph 11.3, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be

construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Subparagraph 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

4.1.3 If the employment of the Architect is terminated, the Owner shall employ a new Architect against whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the former Architect.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Paragraph 12.2. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

4.2.2 The Architect, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Subparagraph 3.3.1.

4.2.3 The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

4.2.4 **Communications Facilitating Contract Administration.** Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.2.6 The Architect will have authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

4.2.7 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.

4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor.

The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and initial decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

4.3 CLAIMS AND DISPUTES

4.3.1 **Definition.** A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 **Time Limits on Claims.** Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Architect and the other party.

4.3.3 **Continuing Contract Performance.** Pending final resolution of a Claim except as otherwise agreed in writing or as provided in Subparagraph 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.4 **Claims for Concealed or Unknown Conditions.** If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.5 **Claims for Additional Cost.** If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.6.

4.3.6 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Paragraph 4.3.

4.3.7 CLAIMS FOR ADDITIONAL TIME

4.3.7.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.7.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

4.3.8 **Injury or Damage to Person or Property.** If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

4.3.9 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

4.3.10 **Claims for Consequential Damages.** The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Subparagraph 4.3.10 shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 **Decision of Architect.** Claims, including those alleging an error or omission by the Architect but excluding those arising under Paragraphs 10.3 through 10.5, shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a

condition precedent to mediation, arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor and persons or entities other than the Owner.

4.4.2 The Architect will review Claims and within ten days of the receipt of the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Architect is unable to resolve the Claim if the Architect lacks sufficient information to evaluate the merits of the Claim or if the Architect concludes that, in the Architect's sole discretion, it would be inappropriate for the Architect to resolve the Claim.

4.4.3 In evaluating Claims, the Architect may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Architect in rendering a decision. The Architect may request the Owner to authorize retention of such persons at the Owner's expense.

4.4.4 If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either provide a response on the requested supporting data, advise the Architect when the response or supporting data will be furnished or advise the Architect that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Architect will either reject or approve the Claim in whole or in part.

4.4.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefor and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation and arbitration.

4.4.6 When a written decision of the Architect states that (1) the decision is final but subject to mediation and arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

4.4.7 Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.4.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the Claim by the Architect, by mediation or by arbitration.

4.5 MEDIATION

4.5.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.4 and 9.10.5 shall, after initial decision by the Architect or 30 days after submission of the Claim to the Architect, be

subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.

4.5.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

4.5.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

4.6 ARBITRATION

4.6.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.10, 9.10.4 and 9.10.5, shall, after decision by the Architect or 30 days after submission of the Claim to the Architect, be subject to arbitration. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions of Paragraph 4.5.

4.6.2 Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect. The demand for arbitration shall be filed in writing with the other party to the Contract and with the American Arbitration Association, and a copy shall be filed with the Architect.

4.6.3 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.4.6 and 4.6.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.

4.6.4 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract shall include, by consolidation or joinder or in any other manner, the Architect, the Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a Claim not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

4.6.5 **Claims and Timely Assertion of Claims.** The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

4.6.6 **Judgment on Final Award.** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5 SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitute.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the

Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Paragraph 4.3.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the

Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work or defective construction of a separate contractor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Subparagraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

7.1 GENERAL

7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

7.2 CHANGE ORDERS

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect, stating their agreement upon all of the following:

.1 change in the Work;

.2 the amount of the adjustment, if any, in the Contract Sum; and

.3 the extent of the adjustment, if any, in the Contract Time.

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 unit prices stated in the Contract Documents or subsequently agreed upon;

.3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 as provided in Subparagraph 7.3.6.

7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Clause 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.6 shall be limited to the following:

.1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

.2 costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

7.3.8 Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Architect will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

7.3.9 When the Owner and Contractor agree with the determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK

7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8 TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

8.1.2 The date of commencement of the Work is the date established in the Agreement.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 9.8.

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.2 PROGRESS AND COMPLETION

8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by the Contract Documents or a notice to proceed given

by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of morgages, mechanic's liens and other security interests.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.

8.3.3 This Paragraph 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents.

9.3.1.1 As provided in Subparagraph 7.3.8, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.

9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's

opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Subparagraph 3.3.2, because of:

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or another contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 persistent failure to carry out the Work in accordance with the Contract Documents.

9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.6 PROGRESS PAYMENTS

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

9.6.4 Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.

9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

9.9 PARTIAL OCCUPANCY OR USE

9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Clause 11.4.1.5 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and

have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that

portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

.1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;

.2 failure of the Work to comply with the requirements of the Contract Documents; or

.3 terms of special warranties required by the Contract Documents.

9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 HAZARDOUS MATERIALS

10.3.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

10.3.2 The Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up, which adjustments shall be accomplished as provided in Article 7.

10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Subparagraph 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity.

10.4 The Owner shall not be responsible under Paragraph 10.3 for materials and substances brought to the site by the Contractor unless such materials or substances were required by the Contract Documents.

10.5 If, without negligence on the part of the Contractor, the Contractor is held liable for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

10.6 EMERGENCIES

10.6.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or

extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.3 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 claims for damages insured by usual personal injury liability coverage;

.5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 claims for bodily injury or property damage arising out of completed operations; and

.8 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

11.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

11.3.1 Optionally, the Owner may require the Contractor to purchase and maintain Project Management Protective Liability insurance from the Contractor's usual sources as primary coverage for the Owner's, Contractor's and Architect's vicarious liability for construction operations under the Contract. Unless otherwise required by the Contract Documents, the Owner

shall reimburse the Contractor by increasing the Contract Sum to pay the cost of purchasing and maintaining such optional insurance coverage, and the Contractor shall not be responsible for purchasing any other liability insurance on behalf of the Owner. The minimum limits of liability purchased with such coverage shall be equal to the aggregate of the limits required for Contractor's Liability Insurance under Clauses 11.1.1.2 through 11.1.1.5.

11.3.2 To the extent damages are covered by Project Management Protective Liability insurance, the Owner, Contractor and Architect waive all rights against each other for damages, except such rights as they may have to the proceeds of such insurance. The policy shall provide for such waivers of subrogation by endorsement or otherwise.

11.3.3 The Owner shall not require the Contractor to include the Owner, Architect or other persons or entities as additional insureds on the Contractor's Liability Insurance coverage under Paragraph 11.1.

11.4 PROPERTY INSURANCE

11.4.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.4 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

11.4.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

11.4.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

11.4.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

11.4.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

11.4.1.5 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial

occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.4.2 **Boiler and Machinery Insurance.** The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.4.3 **Loss of Use Insurance.** The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.4.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.4.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.4.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.4.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Paragraph 11.4. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

11.4.7 **Waivers of Subrogation.** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Paragraph 11.4 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.4.8 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph 11.4.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.4.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.6. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

11.4.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved as provided in Paragraphs 4.5 and 4.6. The Owner as fiduciary shall, in the case of arbitration, make settlement with insurers in accordance with directions of the arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.5 PERFORMANCE BOND AND PAYMENT BOND

11.5.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.5.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

12.2.1.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

12.2.2 AFTER SUBSTANTIAL COMPLETION

12.2.2.1 In addition to the Contractor's obligations under Paragraph 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Paragraph 2.4.

12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Paragraph 12.2.

12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.5 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year period for correction of Work as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Subparagraph 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.2.2 The Owner may, without consent of the Contractor, assign the Contract to an institutional lender providing construction financing for the Project. In such event, the lender shall assume the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Subparagraph 13.5.3, shall be at the Owner's expense.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

.1 **Before Substantial Completion.** As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

.2 **Between Substantial Completion and Final Certificate for Payment.** As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and

.3 **After Final Certificate for Payment.** As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any Warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped;

.2 an act of government, such as a declaration of national emergency which requires all Work to be stopped;

.3 because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Subparagraph 2.2.1.

14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

14.1.3 If one of the reasons described in Subparagraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.3.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

.1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 accept assignment of subcontracts pursuant to Paragraph 5.4; and

.3 finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

SUPPLEMENTARY GENERAL CONDITIONS

I. THE GENERAL CONDITIONS

The "General Conditions of the Contract for Construction", AIA Document A201, Fifteenth Edition (1997), Articles 1 through 14 inclusive, is a part of this contract.

II. THE SUPPLEMENTARY GENERAL CONDITIONS

The following supplements modify, delete and/or add to the General Conditions. Where any Article, Paragraph or subparagraph in the General Conditions is supplemented by one of the following paragraphs, the provisions of such Article, Paragraph, or subparagraph shall remain in effect and the supplemental provisions shall be considered as added thereto. Where any Article, Paragraph, or subparagraph in the General Conditions is amended, voided or superseded by any of the following paragraphs, the provisions of such Article, Paragraph or subparagraph not so amended, voided, or superseded shall remain in effect

Paragraphs or subparagraphs marked with an asterisk (*) are required by or are intended to be consistent with the requirements of Massachusetts statutes governing public construction contracts in the Commonwealth of Massachusetts (referred to in such paragraphs or subparagraphs as the "Commonwealth"). Any other provisions required by statute to be included herein shall be deemed to be so included. In addition, the Owner and Contractor recognize that other rights, duties and obligations with respect to public construction contracts are provided for by statute, notwithstanding the fact that they are not provided for in the Contract Documents. In case of conflict between the asterisked provisions and other provisions of the Contract Documents, the asterisked provisions shall govern. In case of conflict between the provisions of the Contract Documents and the provisions of any applicable statute, the statutory provisions shall govern. Where the term "awarding authority" appears in any asterisked provision, it shall mean the Owner.

III. MODIFICATIONS TO VARIOUS ARTICLES OF THE AIA GENERAL CONDITIONS

ARTICLE l. GENERAL PROVISIONS

1.1.1 Add the following at the end of subparagraph l.l.l

In the event of any conflict among the Contract Documents, the Documents shall be construed according to the following priorities:

Highest Priority:	Modifications
Second Priority:	Agreement
Third Priority:	Addenda -- later date to take precedence
Fourth Priority:	Supplementary General Conditions
Fifth Priority:	General Conditions
Sixth Priority:	Drawings and Specifications

ARTICLE 4. ADMINISTRATION OF THE CONTRACT

4.1.1 Change Subparagraph 4.1.1 to read as follows:

The Architect is the person for this Project licensed to practice architecture and/or landscape architecture identified as such in the Agreement and is referred to throughout the contract documents as if singular in number. The term "Architect" means Architect

and/or Landscape Architect or the Architect's and/or Landscape Architect's authorized representative wherever the term "Architect" shall appear in the Agreement.

4.4 RESOLUTION OF CLAIMS AND DISPATCHES

4.4.1 Delete the word mediation in line 4.

4.4.5 Delete line 4 and substitute the following:

the parties, but subject to arbitration or litigation

4.4.6 Delete the words mediation and in line 2 and insert after the word arbitration the words or litigation.

4.5 MEDIATION

4.5.1 Delete Subparagraph 4.5.1.

4.5.2 Delete Subparagraph 4.5.2.

4.5.3 Delete Subparagraph 4.5.2.

4.6 ARBITRATION

4.6.1 Delete the last sentence.

4.6.2 Delete the words not resolved by mediation in line 1.

4.6.3 At the end of Subparagraph 4.6.3 add the following:

In any such arbitration in which the amount stated in the demand is $100,000 or less, the American Arbitration Association shall appoint a single arbitrator in accordance with such Rules, who shall be a lawyer who is a partner in a private law firm with ten or more partners. In any such arbitration in which the amount stated in the demand is in excess of $100,000, the demand shall include the name of an arbitrator appointed by the claimant. The respondent shall appoint a second arbitrator, and shall notify the claimant in writing of such appointment, within thirty days of receipt of the demand, failing which the matter shall be decided by the arbitrator named in the claimant's demand. Within thirty days after the claimant's receipt of notice of the appointment of the second arbitrator, the two arbitrators shall appoint a neutral arbitrator and shall notify the parties in writing of such appointment, failing which either party may apply to the American Arbitration Association to appoint such neutral arbitrator. If such neutral arbitrator is appointed by the American Arbitration Association, he or she shall be a lawyer who is a partner in a private law firm with ten or more partners.

If the neutral arbitrator is appointed by the American Arbitration Association, the said Association shall administer the arbitration and the Construction Industry Arbitration Rules shall govern all aspects of the proceeding including the enforcement of any award. If the neutral arbitrator is not appointed by the American Arbitration Association then the panel of arbitrators shall act as the administrator of the administration but the Construction Industry Arbitration Rules of the Association shall nonetheless govern all aspects of the proceeding, including the enforcement of any award, provided however that the arbitration panel shall have all of the powers and duties conferred on the Association pursuant to said rules.

In addition, the following rules shall govern the selection of arbitrators and the proceedings:

Neither party may appoint as arbitrator an employee or an owner of that party, nor the parent, spouse or child of an employee or owner of that party.

After the neutral arbitrator has been appointed, neither party may engage in ex parte communication with the arbitrator appointed by that party.

Notwithstanding any provision contained in this Paragraph or elsewhere in the Contract Documents, the Owner reserves the following rights in connection with Claims and disputes between the Owner and the Contractor, which rights may be exercised by the Owner unilaterally and in the Owner's sole discretion:

.1 the right to institute legal action against the Contractor in any court of competent jurisdiction in lieu of demanding arbitration pursuant to this Paragraph, in which case the dispute or disputes which are the subject of such action shall be decided by such court, and not by arbitration;

.2 the right to obtain from any court of competent jurisdiction a stay of any arbitration instituted by the Contractor, provided that the application for such stay is made before the appointment of the neutral arbitrator in such arbitration, in which case the dispute or disputes which are the subject of such arbitration shall be decided by such court, land not by arbitration;

.3 the right to require the Contractor to join as a party in any arbitration between the Owner and the Architect relating to the Project, in which case the Contractor agrees to be bound by the decision of the arbitrator or arbitrators in such arbitration.

In case the Owner elects to proceed in accordance with 4.6.3 above, the word "litigation" shall be deemed to replace the word "arbitration" wherever the latter word appears in the Contract Documents.

END OF SECTION

SECTION 00 83 12

COMMONWEALTH OF MASSACHUSETTS CONTRACT CLAUSES,
WAGE RATES, LABOR STANDARDS & STATEMENT OF COMPLIANCE

PART 1 - GENERAL

1.01 GENERAL

1. All provisions of the Contract Documents shall be subject to all applicable provisions of law, including, without limitation, the Commonwealth of Massachusetts statutes indicated below. The Contractor shall recognize that other duties and obligations are required by statutes which may not be provided herein, but must be considered and made a part of this Contract. Incorrect citations of statutes in this Section shall not relieve the Contractor of its obligations under law. In case of a conflict between the Contract Documents and applicable statutes, the provisions of the statutes shall govern.

1.02 PROVISIONS INCORPORATED BY REFERENCE

1. The statutes incorporated by reference include, but are not limited to, the following:

Chapter 30, Section 39Fa-h	(payment to subcontractors)
Chapter 30, Section 39I	(deviations)
Chapter 30, Section 39J	(decision by contracting body)
Chapter 30, Section 39K	(payment to contractors)
Chapter 30, Section 39L	(foreign corporations)
Chapter 30, Section 39M	equality of materials
Chapter 30, Section 39N	subsurface conditions
Chapter 30, Section 39P	decisions on interpretations
Chapter 30, Section 39O	(price adjustments and delays)
Chapter 30, Section 39R b	(six year record keeping)
Chapter 30, Section 39R c	(statement of management)
Chapter 30, Section 39R d	(yearly audit)
Chapter 44, Section 31 c	(auditor's certification)
Chapter 62C, Section 49A b	(tax compliance certification)
Chapter 149, Section 26	(prevailing wage requirements)
Chapter 149, Section 27	(prevailing wage posting at job site)
Chapter 149, Section 34	(8 hour day)
Chapter 149, Section 34A	(workmen's compensation)

And other applicable laws.

1.03 LABOR PROVISIONS

1. Freedom of Lodging, Boarding, and Trading: Every person employed by the Contractor or Subcontractors in performing the work under this Contract shall lodge, board and trade where and with whom he elects, and it shall not be directly or indirectly required as a condition of employment that an employee shall lodge, board, or trade at a particular place or with a particular person, in accordance with M.G.L., Chapter 149, Section 25.
2. Employment Preferences: In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers by the Contractor and Subcontractors, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for at least six months at the commencement of their employment, who are veterans as defined in Clause 43 of M.G.L., Chapter 4, Section 7, and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, in accordance with M.G.L., Chapter 149, Section 226.

3. Overtime: No laborer, workman, mechanic, foreman or inspector working in the employment of the Contractor, Subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by this Contract, shall be required or permitted to work any more than eight hours in any one day, or more than forty-eight hours in any one week, except in cases of emergency.

4. Wage Rates: The minimum rates of wages of be paid mechanics and apprentices, chauffeurs, teamsters and laborers shall be set forth in the schedule of rates of wages determined by the Commissioner of Labor and Industry, which schedule if appended to this Section and made a part of the Contract, in accordance with and subject to the provisions of M.G.L. Chapter 149, Section 26.

    1. Wage Determination Schedule: A Wage Determination Schedule, provided to the Landscape Architect and the Owner by governmental authorities, is appended to this Section. The Landscape Architect and the Awarding Authority do not guarantee the accuracy of the schedule, and every bidder and contractor shall be responsible for ascertaining the prevailing wages in the area where the work will be performed.

    2. Statement of Compliance: The Contractor and each Subcontractor shall furnish to the Commissioner of Labor and Industries and to the Awarding Authority, within fifteen days after completion of its portion of the work, fully completed and certified copies of the attached "Statement of Compliance" certifying compliance with wage and benefit provisions of M.G.L. Chapter 149, Section 26 and 27. A copy of the "Statement of Compliance" is appended to this Section.

    3. Records: Every Contractor and Subcontractor working under the terms of any contract for construction on this project shall file weekly payroll records with the Awarding Authority

in the form described in M.G.L. Chapter 149, Section 27B in accordance with M.G.L. Chapter 149, Sections 26 and 27B, and 603 CMR 38.03 (2) k.

5. Payment Insurance: In accordance with M.G.L. Chapter 149, Section 34A, the Contractor shall, before commencing performance of the Contract, provide by insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 to all persons to be employed under the Contract, and the Contractor shall continue such insurance in full force and effect during the term of the Contract. Sufficient proof of compliance with this Section must be furnished at the time of execution of this Contract. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of Contract and shall operate as an immediate termination thereof. The attention of the Contractor is directed to that portion of M.G.L. Chapter 149, Section 34A, which provides that whoever violates any of its provisions shall be punished by a fine of not more than one hundred dollars or by imprisonment for six months, or both; and, in addition, any Contractor who violates any provision of this Section shall be prohibited from contracting, directly or indirectly, with the Commonwealth or any political sub-division thereof for the construction, alternation, demolition, maintenance or repair of, or addition to, any public works or public building for a period of two years from the date of conviction of said violation

6. Pay for Police Officers: The Contractor shall pay to any reserve police officer employed by him the prevailing rate of wage paid to regular police officers, as required by M.G.L. Chapter 149, Section 34B.

1.04 EQUAL EMPLOYMENT OPPORTUNITY

1. The Contractor and each Subcontractor shall comply with all applicable Local, State, and Federal laws and regulations regarding equal employment opportunity and with the provisions of the following:

    1. Governor's "Executive Order No. 74", dated July 20, 1970, entitled the "Governors Code of Fair Practices", as amended by the Governor's "Executive Order No. 116", dated May 1, 1975.

    2. The Fair Employment Practices Law of the Commonwealth, Chapter 151B of the General Laws of Massachusetts, as amended.

    3. The rules and regulations of the Massachusetts Commission Against Discrimination, as in force at the date of the Contract.

2. Equal Employment Plan: Implement an effective affirmative action plan to assure equal employment opportunity throughout the performance of work on this project. Do not discriminate against any employee or applicant for employment because of race, color, sex,

religion, age, or national origin. Affirmative action equal employment opportunity plan shall apply to, but not be limited to, the following.

1. Employment, upgrading, demotion, or transfer.
2. Recruitment or recruitment advertising.
3. Layoff or termination.
4. Rates of pay or other forms of compensation.
5. Selection for training, including apprenticeship.

3. Employment Advertisements: State in all solicitations or advertisements for employees that all qualified applicants will receive consideration for employment without regard to race, color, sex, religion, age, or national origin.

4. Referral Notices: Direct special effort toward the recruitment of minority workers through unions and through referral agencies representing the minority community.

5. Advising Labor Unions: Send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding , a notice advising the labor union or worker's representative of the Contractor's commitment to equal employment opportunity.

6. Posting: Post copies of equal opportunity employment notices in conspicuous places available to employees and applicants for employment and post notices setting forth the provisions of this non-discrimination clause.

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FORM OF STATEMENT OF WAGE RATE COMPLIANCE

Date: , 2017

I, (insert name and title of signatory party) _____

do hereby state: That I pay or supervise the payment of the persons employed by (insert name of Contractor

or Subcontractor) _____

on the Project (insert name of 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 26 and 27 of Chapter 149 of the Massachusetts General Laws.

Signature: _____

Title: _____

This statement is signed under penalties of perjury as provided for under M.G.L. Chapter 149, Section 27B.

END OF SECTION

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

RONALD L. WALKER, II
Secretary

WILLIAM D MCKINNEY
Director

Awarding Authority: Town of Swampscott

Contract Number:

City/Town: SWAMPSCOTT

Description of Work: Blocksidge Field - Renovation of the existing athletic field, including new synthetic turf surface, grandstand, sports lighting and associated site improvements.

Job Location: 601 Humphrey Street Swampscott, MA 01907

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.15	$10.91	$10.89	$0.00	$53.95
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.22	$10.91	$10.89	$0.00	$54.02
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.34	$10.91	$10.89	$0.00	$54.14
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2015	$88.29	$9.80	$19.23	$0.00	$117.32
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR *LABORERS - ZONE 2*	12/01/2016	$33.15	$7.45	$12.65	$0.00	$53.25
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	12/01/2016	$33.90	$11.50	$7.10	$0.00	$52.50
	06/01/2017	$34.90	$11.50	$7.10	$0.00	$53.50
	12/01/2017	$35.90	$11.50	$7.10	$0.00	$54.50
	06/01/2018	$36.90	$11.50	$7.10	$0.00	$55.50
	12/01/2018	$37.90	$11.50	$7.10	$0.00	$56.50
	06/01/2019	$38.90	$11.50	$7.10	$0.00	$57.50
	12/01/2019	$39.90	$11.50	$7.10	$0.00	$58.50
	06/01/2020	$40.90	$11.50	$7.10	$0.00	$59.50
	12/01/2020	$41.90	$11.50	$7.10	$0.00	$60.50
ASPHALT RAKER *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$45.38	$10.00	$15.25	$0.00	$70.63
	06/01/2017	$46.38	$10.00	$15.25	$0.00	$71.63
	12/01/2017	$47.38	$10.00	$15.25	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$45.38	$10.00	$15.25	$0.00	$70.63
	06/01/2017	$46.38	$10.00	$15.25	$0.00	$71.63
	12/01/2017	$47.38	$10.00	$15.25	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 2*	12/01/2016	$33.15	$7.45	$12.65	$0.00	$53.25
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2016	$41.62	$6.97	$16.21	$0.00	$64.80
	01/01/2017	$42.92	$6.97	$16.21	$0.00	$66.10

Apprentice - *BOILERMAKER - Local 29*

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$27.05	$6.97	$10.54	$0.00	$44.56
2	65	$27.05	$6.97	$10.54	$0.00	$44.56
3	70	$29.13	$6.97	$11.35	$0.00	$47.45
4	75	$31.22	$6.97	$12.16	$0.00	$50.35
5	80	$33.30	$6.97	$12.97	$0.00	$53.24
6	85	$35.38	$6.97	$13.78	$0.00	$56.13
7	90	$37.46	$6.97	$14.59	$0.00	$59.02
8	95	$39.54	$6.97	$15.40	$0.00	$61.91

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$27.90	$6.97	$10.54	$0.00	$45.41
2	65	$27.90	$6.97	$10.54	$0.00	$45.41
3	70	$30.04	$6.97	$11.35	$0.00	$48.36
4	75	$32.19	$6.97	$12.16	$0.00	$51.32
5	80	$34.34	$6.97	$12.97	$0.00	$54.28
6	85	$36.48	$6.97	$13.78	$0.00	$57.23
7	90	$38.63	$6.97	$14.59	$0.00	$60.19
8	95	$40.77	$6.97	$15.40	$0.00	$63.14

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) *BRICKLAYERS LOCAL 3 (LYNN)*	08/01/2016	$50.76	$10.18	$19.22	$0.00	$80.16
	02/01/2017	$51.33	$10.18	$19.22	$0.00	$80.73

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *BRICK/PLASTER/CEMENT MASON - Local 3 Lynn*

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.38	$10.18	$19.22	$0.00	$54.78
2	60	$30.46	$10.18	$19.22	$0.00	$59.86
3	70	$35.53	$10.18	$19.22	$0.00	$64.93
4	80	$40.61	$10.18	$19.22	$0.00	$70.01
5	90	$45.68	$10.18	$19.22	$0.00	$75.08

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.67	$10.18	$19.22	$0.00	$55.07
2	60	$30.80	$10.18	$19.22	$0.00	$60.20
3	70	$35.93	$10.18	$19.22	$0.00	$65.33
4	80	$41.06	$10.18	$19.22	$0.00	$70.46
5	90	$46.20	$10.18	$19.22	$0.00	$75.60

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2016	$37.95	$7.45	$14.00	$0.00	$59.40
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2016	$36.80	$7.45	$14.00	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2016	$36.80	$7.45	$14.00	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
CARPENTER *CARPENTERS -ZONE 2 (Eastern Massachusetts)*	09/01/2016	$37.80	$9.90	$17.00	$0.00	$64.70
	03/01/2017	$38.77	$9.90	$17.00	$0.00	$65.67
	09/01/2017	$39.78	$9.90	$17.00	$0.00	$66.68
	03/01/2018	$40.78	$9.90	$17.00	$0.00	$67.68
	09/01/2018	$41.82	$9.90	$17.00	$0.00	$68.72
	03/01/2019	$42.85	$9.90	$17.00	$0.00	$69.75

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CARPENTER - Zone 2 Eastern MA*

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.90	$9.90	$1.63	$0.00	$30.43
2	60	$22.68	$9.90	$1.63	$0.00	$34.21
3	70	$26.46	$9.90	$12.11	$0.00	$48.47
4	75	$28.35	$9.90	$12.11	$0.00	$50.36
5	80	$30.24	$9.90	$13.74	$0.00	$53.88
6	80	$30.24	$9.90	$13.74	$0.00	$53.88
7	90	$34.02	$9.90	$15.37	$0.00	$59.29
8	90	$34.02	$9.90	$15.37	$0.00	$59.29

Effective Date - 03/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.39	$9.90	$1.63	$0.00	$30.92
2	60	$23.26	$9.90	$1.63	$0.00	$34.79
3	70	$27.14	$9.90	$12.11	$0.00	$49.15
4	75	$29.08	$9.90	$12.11	$0.00	$51.09
5	80	$31.02	$9.90	$13.74	$0.00	$54.66
6	80	$31.02	$9.90	$13.74	$0.00	$54.66
7	90	$34.89	$9.90	$15.37	$0.00	$60.16
8	90	$34.89	$9.90	$15.37	$0.00	$60.16

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (LYNN)*	07/01/2016	$44.69	$12.20	$19.33	$1.30	$77.52
	01/01/2017	$45.67	$12.20	$19.41	$1.30	$78.58
	07/01/2017	$46.30	$12.20	$19.41	$1.30	$79.21
	01/01/2018	$46.54	$12.20	$19.41	$1.30	$79.45
	07/01/2018	$46.79	$12.20	$19.41	$1.30	$79.70
	01/01/2019	$47.03	$12.20	$19.41	$1.30	$79.94
	07/01/2019	$47.27	$12.20	$19.41	$1.30	$80.18
	01/01/2020	$47.52	$12.20	$19.41	$1.30	$80.43

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CEMENT MASONRY/PLASTERING - Eastern Mass (Lynn)*

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.35	$12.20	$12.33	$0.00	$46.88
2	60	$26.81	$12.20	$14.33	$1.30	$54.64
3	65	$29.05	$12.20	$15.33	$1.30	$57.88
4	70	$31.28	$12.20	$16.33	$1.30	$61.11
5	75	$33.52	$12.20	$17.33	$1.30	$64.35
6	80	$35.75	$12.20	$18.33	$1.30	$67.58
7	90	$40.22	$12.20	$19.33	$1.30	$73.05

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.84	$12.20	$12.41	$0.00	$47.45
2	60	$27.40	$12.20	$14.41	$1.30	$55.31
3	65	$29.69	$12.20	$15.41	$1.30	$58.60
4	70	$31.97	$12.20	$16.41	$1.30	$61.88
5	75	$34.25	$12.20	$17.41	$1.30	$65.16
6	80	$36.54	$12.20	$18.41	$1.30	$68.45
7	90	$41.10	$12.20	$19.41	$1.30	$74.01

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$46.38	$10.00	$15.25	$0.00	$71.63
	06/01/2017	$47.38	$10.00	$15.25	$0.00	$72.63
	12/01/2017	$48.38	$10.00	$15.25	$0.00	$73.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$31.17	$10.00	$15.25	$0.00	$56.42
	06/01/2017	$31.86	$10.00	$15.25	$0.00	$57.11
	12/01/2017	$32.55	$10.00	$15.25	$0.00	$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) *PAINTERS LOCAL 35 - ZONE 2*	07/01/2016	$50.46	$7.85	$16.10	$0.00	$74.41
	01/01/2017	$51.41	$7.85	$16.10	$0.00	$75.36

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.23	$7.85	$0.00	$0.00	$33.08
2	55	$27.75	$7.85	$3.66	$0.00	$39.26
3	60	$30.28	$7.85	$3.99	$0.00	$42.12
4	65	$32.80	$7.85	$4.32	$0.00	$44.97
5	70	$35.32	$7.85	$14.11	$0.00	$57.28
6	75	$37.85	$7.85	$14.44	$0.00	$60.14
7	80	$40.37	$7.85	$14.77	$0.00	$62.99
8	90	$45.41	$7.85	$15.44	$0.00	$68.70

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.71	$7.85	$0.00	$0.00	$33.56
2	55	$28.28	$7.85	$3.66	$0.00	$39.79
3	60	$30.85	$7.85	$3.99	$0.00	$42.69
4	65	$33.42	$7.85	$4.32	$0.00	$45.59
5	70	$35.99	$7.85	$14.11	$0.00	$57.95
6	75	$38.56	$7.85	$14.44	$0.00	$60.85
7	80	$41.13	$7.85	$14.77	$0.00	$63.75
8	90	$46.27	$7.85	$15.44	$0.00	$69.56

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN *LABORERS - ZONE 2*	12/01/2015	$35.50	$7.45	$13.55	$0.00	$56.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR *LABORERS - ZONE 2*	12/01/2015	$36.50	$7.45	$13.55	$0.00	$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS *LABORERS - ZONE 2*	12/01/2015	$36.25	$7.45	$13.55	$0.00	$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 2*	12/01/2015	$36.50	$7.45	$13.55	$0.00	$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 2*	12/01/2015	$36.25	$7.45	$13.55	$0.00	$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER *LABORERS - ZONE 2*	12/01/2015	$35.50	$7.45	$13.55	$0.00	$56.50
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIRECTIONAL DRILL MACHINE OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2015	$58.86	$9.80	$19.23	$0.00	$87.89
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2015	$42.04	$9.80	$19.23	$0.00	$71.07
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2015	$63.06	$9.80	$19.23	$0.00	$92.09
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2015	$88.23	$9.80	$19.23	$0.00	$117.26
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) *ELECTRICIANS LOCAL 103*	09/01/2016	$47.13	$13.00	$17.41	$0.00	$77.54
	03/01/2017	$48.33	$13.00	$17.45	$0.00	$78.78
	09/01/2017	$49.28	$13.00	$17.48	$0.00	$79.76
	03/01/2018	$50.48	$13.00	$17.51	$0.00	$80.99
	09/01/2018	$51.67	$13.00	$17.55	$0.00	$82.22
	03/01/2019	$52.87	$13.00	$17.59	$0.00	$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN *ELECTRICIANS LOCAL 103*	09/01/2016	$47.13	$13.00	$17.41	$0.00	$77.54
	03/01/2017	$48.33	$13.00	$17.45	$0.00	$78.78
	09/01/2017	$49.28	$13.00	$17.48	$0.00	$79.76
	03/01/2018	$50.48	$13.00	$17.51	$0.00	$80.99
	09/01/2018	$51.67	$13.00	$17.55	$0.00	$82.22
	03/01/2019	$52.87	$13.00	$17.59	$0.00	$83.46

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELECTRICIAN - Local 103*

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$18.85	$13.00	$0.57	$0.00	$32.42
2	40	$18.85	$13.00	$0.57	$0.00	$32.42
3	45	$21.21	$13.00	$13.36	$0.00	$47.57
4	45	$21.21	$13.00	$13.36	$0.00	$47.57
5	50	$23.57	$13.00	$13.73	$0.00	$50.30
6	55	$25.92	$13.00	$14.09	$0.00	$53.01
7	60	$28.28	$13.00	$14.46	$0.00	$55.74
8	65	$30.63	$13.00	$14.83	$0.00	$58.46
9	70	$32.99	$13.00	$15.20	$0.00	$61.19
10	75	$35.35	$13.00	$15.57	$0.00	$63.92

Effective Date - 03/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$19.33	$13.00	$0.58	$0.00	$32.91
2	40	$19.33	$13.00	$0.58	$0.00	$32.91
3	45	$21.75	$13.00	$13.37	$0.00	$48.12
4	45	$21.75	$13.00	$13.37	$0.00	$48.12
5	50	$24.17	$13.00	$13.75	$0.00	$50.92
6	55	$26.58	$13.00	$14.11	$0.00	$53.69
7	60	$29.00	$13.00	$14.48	$0.00	$56.48
8	65	$31.41	$13.00	$14.85	$0.00	$59.26
9	70	$33.83	$13.00	$15.22	$0.00	$62.05
10	75	$36.25	$13.00	$15.60	$0.00	$64.85

Notes: :
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2016	$54.53	$14.43	$14.96	$0.00	$83.92
	01/01/2017	$55.86	$15.28	$15.71	$0.00	$86.85

Apprentice - *ELEVATOR CONSTRUCTOR - Local 4*

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$27.27	$14.43	$0.00	$0.00	$41.70
2	55	$29.99	$14.43	$14.96	$0.00	$59.38
3	65	$35.44	$14.43	$14.96	$0.00	$64.83
4	70	$38.17	$14.43	$14.96	$0.00	$67.56
5	80	$43.62	$14.43	$14.96	$0.00	$73.01

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$27.93	$15.28	$0.00	$0.00	$43.21
2	55	$30.72	$15.28	$15.71	$0.00	$61.71
3	65	$36.31	$15.28	$15.71	$0.00	$67.30
4	70	$39.10	$15.28	$15.71	$0.00	$70.09
5	80	$44.69	$15.28	$15.71	$0.00	$75.68

Notes:
Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2016	$38.17	$14.43	$14.96	$0.00	$67.56
	01/01/2017	$39.10	$15.28	$15.71	$0.00	$70.09
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/01/2016	$41.37	$10.00	$15.15	$0.00	$66.52
	05/01/2017	$42.25	$10.00	$15.15	$0.00	$67.40
	11/01/2017	$42.98	$10.00	$15.15	$0.00	$68.13
	05/01/2018	$43.69	$10.00	$15.15	$0.00	$68.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/01/2016	$42.82	$10.00	$15.15	$0.00	$67.97
	05/01/2017	$43.71	$10.00	$15.15	$0.00	$68.86
	11/01/2017	$44.44	$10.00	$15.15	$0.00	$69.59
	05/01/2018	$45.16	$10.00	$15.15	$0.00	$70.31
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/01/2016	$21.98	$10.00	$15.15	$0.00	$47.13
	05/01/2017	$22.51	$10.00	$15.15	$0.00	$47.66
	11/01/2017	$22.93	$10.00	$15.15	$0.00	$48.08
	05/01/2018	$23.36	$10.00	$15.15	$0.00	$48.51
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 103*	09/01/2016	$47.13	$13.00	$17.41	$0.00	$77.54
	03/01/2017	$48.33	$13.00	$17.45	$0.00	$78.78
	09/01/2017	$49.28	$13.00	$17.48	$0.00	$79.76
	03/01/2018	$50.48	$13.00	$17.51	$0.00	$80.99
	09/01/2018	$51.67	$13.00	$17.55	$0.00	$82.22
	03/01/2019	$52.87	$13.00	$17.59	$0.00	$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING*ELECTRICIANS LOCAL 103*	09/01/2016	$35.35	$13.00	$15.57	$0.00	$63.92
	03/01/2017	$36.25	$13.00	$15.60	$0.00	$64.85
	09/01/2017	$36.96	$13.00	$15.62	$0.00	$65.58
	03/01/2018	$37.86	$13.00	$15.65	$0.00	$66.51
	09/01/2018	$38.75	$13.00	$15.67	$0.00	$67.42
	03/01/2019	$39.65	$13.00	$15.70	$0.00	$68.35
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$37.65	$10.00	$15.25	$0.00	$62.90
	06/01/2017	$38.49	$10.00	$15.25	$0.00	$63.74
	12/01/2017	$39.32	$10.00	$15.25	$0.00	$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER *LABORERS - ZONE 2*	12/01/2016	$20.50	$7.45	$12.65	$0.00	$40.60
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER *FLOORCOVERERS LOCAL 2168 ZONE I*	03/01/2016	$42.13	$9.80	$17.62	$0.00	$69.55

Apprentice - *FLOORCOVERER - Local 2168 Zone I*

Effective Date - 03/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.07	$9.80	$1.79	$0.00	$32.66
2	55	$23.17	$9.80	$1.79	$0.00	$34.76
3	60	$25.28	$9.80	$12.25	$0.00	$47.33
4	65	$27.38	$9.80	$12.25	$0.00	$49.43
5	70	$29.49	$9.80	$14.04	$0.00	$53.33
6	75	$31.60	$9.80	$14.04	$0.00	$55.44
7	80	$33.70	$9.80	$15.83	$0.00	$59.33
8	85	$35.81	$9.80	$15.83	$0.00	$61.44

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$45.38	$10.00	$15.25	$0.00	$70.63
	06/01/2017	$46.38	$10.00	$15.25	$0.00	$71.63
	12/01/2017	$47.38	$10.00	$15.25	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$31.17	$10.00	$15.25	$0.00	$56.42
	06/01/2017	$31.86	$10.00	$15.25	$0.00	$57.11
	12/01/2017	$32.55	$10.00	$15.25	$0.00	$57.80

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 35 (ZONE 2)*	07/01/2016	$39.96	$7.85	$16.10	$0.00	$63.91
	01/01/2017	$40.91	$7.85	$16.10	$0.00	$64.86

Apprentice - *GLAZIER - Local 35 Zone 2*

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.98	$7.85	$0.00	$0.00	$27.83
2	55	$21.98	$7.85	$3.66	$0.00	$33.49
3	60	$23.98	$7.85	$3.99	$0.00	$35.82
4	65	$25.97	$7.85	$4.32	$0.00	$38.14
5	70	$27.97	$7.85	$14.11	$0.00	$49.93
6	75	$29.97	$7.85	$14.44	$0.00	$52.26
7	80	$31.97	$7.85	$14.77	$0.00	$54.59
8	90	$35.96	$7.85	$15.44	$0.00	$59.25

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.46	$7.85	$0.00	$0.00	$28.31
2	55	$22.50	$7.85	$3.66	$0.00	$34.01
3	60	$24.55	$7.85	$3.99	$0.00	$36.39
4	65	$26.59	$7.85	$4.32	$0.00	$38.76
5	70	$28.64	$7.85	$14.11	$0.00	$50.60
6	75	$30.68	$7.85	$14.44	$0.00	$52.97
7	80	$32.73	$7.85	$14.77	$0.00	$55.35
8	90	$36.82	$7.85	$15.44	$0.00	$60.11

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$45.38	$10.00	$15.25	$0.00	$70.63
	06/01/2017	$46.38	$10.00	$15.25	$0.00	$71.63
	12/01/2017	$47.38	$10.00	$15.25	$0.00	$72.63

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 12/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$24.96	$10.00	$0.00	$0.00	$34.96
2	60	$27.23	$10.00	$15.25	$0.00	$52.48
3	65	$29.50	$10.00	$15.25	$0.00	$54.75
4	70	$31.77	$10.00	$15.25	$0.00	$57.02
5	75	$34.04	$10.00	$15.25	$0.00	$59.29
6	80	$36.30	$10.00	$15.25	$0.00	$61.55
7	85	$38.57	$10.00	$15.25	$0.00	$63.82
8	90	$40.84	$10.00	$15.25	$0.00	$66.09

Effective Date - 06/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$25.51	$10.00	$0.00	$0.00	$35.51
2	60	$27.83	$10.00	$15.25	$0.00	$53.08
3	65	$30.15	$10.00	$15.25	$0.00	$55.40
4	70	$32.47	$10.00	$15.25	$0.00	$57.72
5	75	$34.79	$10.00	$15.25	$0.00	$60.04
6	80	$37.10	$10.00	$15.25	$0.00	$62.35
7	85	$39.42	$10.00	$15.25	$0.00	$64.67
8	90	$41.74	$10.00	$15.25	$0.00	$66.99

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 17 - A*	11/01/2016	$43.40	$10.70	$23.07	$2.32	$79.49
	02/01/2017	$44.50	$10.70	$23.07	$2.32	$80.59
	08/01/2017	$45.60	$10.70	$23.07	$2.32	$81.69
	02/01/2018	$46.75	$10.70	$23.07	$2.32	$82.84
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 103*	09/01/2016	$47.13	$13.00	$17.41	$0.00	$77.54
	03/01/2017	$48.33	$13.00	$17.45	$0.00	$78.78
	09/01/2017	$49.28	$13.00	$17.48	$0.00	$79.76
	03/01/2018	$50.48	$13.00	$17.51	$0.00	$80.99
	09/01/2018	$51.67	$13.00	$17.55	$0.00	$82.22
	03/01/2019	$52.87	$13.00	$17.59	$0.00	$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) *SHEETMETAL WORKERS LOCAL 17 - A*	11/01/2016	$43.40	$10.70	$23.07	$2.32	$79.49
	02/01/2017	$44.50	$10.70	$23.07	$2.32	$80.59
	08/01/2017	$45.60	$10.70	$23.07	$2.32	$81.69
	02/01/2018	$46.75	$10.70	$23.07	$2.32	$82.84
For apprentice rates see "Apprentice- SHEET METAL WORKER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING -WATER) *PIPEFITTERS LOCAL 537*	09/01/2016	$50.19	$9.70	$18.14	$0.00	$78.03
	03/01/2017	$51.19	$9.70	$18.14	$0.00	$79.03
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC *PIPEFITTERS LOCAL 537*	09/01/2016	$50.19	$9.70	$18.14	$0.00	$78.03
	03/01/2017	$51.19	$9.70	$18.14	$0.00	$79.03
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS *LABORERS - ZONE 2*	12/01/2016	$33.15	$7.45	$12.65	$0.00	$53.25
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	09/01/2016	$45.09	$11.75	$14.20	$0.00	$71.04
	09/01/2017	$47.09	$11.75	$14.20	$0.00	$73.04
	09/01/2018	$49.34	$11.75	$14.20	$0.00	$75.29
	09/01/2019	$51.84	$11.75	$14.20	$0.00	$77.79

Apprentice - *ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston*

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.55	$11.75	$10.45	$0.00	$44.75
2	60	$27.05	$11.75	$11.20	$0.00	$50.00
3	70	$31.56	$11.75	$11.95	$0.00	$55.26
4	80	$36.07	$11.75	$12.70	$0.00	$60.52

Effective Date - 09/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.55	$11.75	$10.45	$0.00	$45.75
2	60	$28.25	$11.75	$11.20	$0.00	$51.20
3	70	$32.96	$11.75	$11.95	$0.00	$56.66
4	80	$37.67	$11.75	$12.70	$0.00	$62.12

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 7 (BOSTON AREA)*	09/16/2016	$44.05	$7.80	$20.85	$0.00	$72.70
	03/16/2017	$44.65	$7.80	$20.85	$0.00	$73.30

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *IRONWORKER - Local 7 Boston*

Effective Date - 09/16/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$26.43	$7.80	$20.85	$0.00	$55.08
2	70	$30.84	$7.80	$20.85	$0.00	$59.49
3	75	$33.04	$7.80	$20.85	$0.00	$61.69
4	80	$35.24	$7.80	$20.85	$0.00	$63.89
5	85	$37.44	$7.80	$20.85	$0.00	$66.09
6	90	$39.65	$7.80	$20.85	$0.00	$68.30

Effective Date - 03/16/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$26.79	$7.80	$20.85	$0.00	$55.44
2	70	$31.26	$7.80	$20.85	$0.00	$59.91
3	75	$33.49	$7.80	$20.85	$0.00	$62.14
4	80	$35.72	$7.80	$20.85	$0.00	$64.37
5	85	$37.95	$7.80	$20.85	$0.00	$66.60
6	90	$40.19	$7.80	$20.85	$0.00	$68.84

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR — 12/01/2016 — $32.65 — $7.45 — $12.65 — $0.00 — $52.75
LABORERS - ZONE 2

For apprentice rates see "Apprentice- LABORER"

LABORER — 12/01/2016 — $32.40 — $7.45 — $12.65 — $0.00 — $52.50
LABORERS - ZONE 2

Apprentice - *LABORER - Zone 2*

Effective Date - 12/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$19.44	$7.45	$12.65	$0.00	$39.54
2	70	$22.68	$7.45	$12.65	$0.00	$42.78
3	80	$25.92	$7.45	$12.65	$0.00	$46.02
4	90	$29.16	$7.45	$12.65	$0.00	$49.26

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER — 12/01/2016 — $32.40 — $7.45 — $12.65 — $0.00 — $52.50
LABORERS - ZONE 2

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER — 12/01/2016 — $32.40 — $7.45 — $12.65 — $0.00 — $52.50
LABORERS - ZONE 2

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 2*	12/01/2015	$31.35	$7.45	$12.60	$0.00	$51.40
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 2*	12/01/2016	$32.40	$7.45	$12.65	$0.00	$52.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER *LABORERS - ZONE 2*	12/01/2016	$32.40	$7.45	$12.65	$0.00	$52.50
This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2016	$38.78	$10.18	$17.78	$0.00	$66.74
	02/01/2017	$39.24	$10.18	$17.78	$0.00	$67.20

Apprentice - *MARBLE & TILE FINISHER - Local 3 Marble & Tile*

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.39	$10.18	$17.78	$0.00	$47.35
2	60	$23.27	$10.18	$17.78	$0.00	$51.23
3	70	$27.15	$10.18	$17.78	$0.00	$55.11
4	80	$31.02	$10.18	$17.78	$0.00	$58.98
5	90	$34.90	$10.18	$17.78	$0.00	$62.86

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.62	$10.18	$17.78	$0.00	$47.58
2	60	$23.54	$10.18	$17.78	$0.00	$51.50
3	70	$27.47	$10.18	$17.78	$0.00	$55.43
4	80	$31.39	$10.18	$17.78	$0.00	$59.35
5	90	$35.32	$10.18	$17.78	$0.00	$63.28

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2016	$50.80	$10.18	$19.22	$0.00	$80.20
	02/01/2017	$51.37	$10.18	$19.22	$0.00	$80.77

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile*

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.40	$10.18	$19.22	$0.00	$54.80
2	60	$30.48	$10.18	$19.22	$0.00	$59.88
3	70	$35.56	$10.18	$19.22	$0.00	$64.96
4	80	$40.64	$10.18	$19.22	$0.00	$70.04
5	90	$45.72	$10.18	$19.22	$0.00	$75.12

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.69	$10.18	$19.22	$0.00	$55.09
2	60	$30.82	$10.18	$19.22	$0.00	$60.22
3	70	$35.96	$10.18	$19.22	$0.00	$65.36
4	80	$41.10	$10.18	$19.22	$0.00	$70.50
5	90	$46.23	$10.18	$19.22	$0.00	$75.63

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1) *MILLWRIGHTS LOCAL 1121 - Zone 1*	04/01/2015	$37.64	$9.80	$16.21	$0.00	$63.65

Apprentice - *MILLWRIGHT - Local 1121 Zone 1*

Effective Date - 04/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$20.70	$9.80	$4.48	$0.00	$34.98
2	65	$24.47	$9.80	$13.36	$0.00	$47.63
3	75	$28.23	$9.80	$14.18	$0.00	$52.21
4	85	$31.99	$9.80	$14.99	$0.00	$56.78

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MORTAR MIXER *LABORERS - ZONE 2* For apprentice rates see "Apprentice- LABORER"	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$22.96	$10.00	$15.25	$0.00	$48.21
	06/01/2017	$23.47	$10.00	$15.25	$0.00	$48.72
	12/01/2017	$23.99	$10.00	$15.25	$0.00	$49.24
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$26.94	$10.00	$15.25	$0.00	$52.19
	06/01/2017	$27.54	$10.00	$15.25	$0.00	$52.79
	12/01/2017	$28.15	$10.00	$15.25	$0.00	$53.40
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 2*	07/01/2016	$50.46	$7.85	$16.10	$0.00	$74.41
	01/01/2017	$51.41	$7.85	$16.10	$0.00	$75.36

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.23	$7.85	$0.00	$0.00	$33.08
2	55	$27.75	$7.85	$3.66	$0.00	$39.26
3	60	$30.28	$7.85	$3.99	$0.00	$42.12
4	65	$32.80	$7.85	$4.32	$0.00	$44.97
5	70	$35.32	$7.85	$14.11	$0.00	$57.28
6	75	$37.85	$7.85	$14.44	$0.00	$60.14
7	80	$40.37	$7.85	$14.77	$0.00	$62.99
8	90	$45.41	$7.85	$15.44	$0.00	$68.70

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.71	$7.85	$0.00	$0.00	$33.56
2	55	$28.28	$7.85	$3.66	$0.00	$39.79
3	60	$30.85	$7.85	$3.99	$0.00	$42.69
4	65	$33.42	$7.85	$4.32	$0.00	$45.59
5	70	$35.99	$7.85	$14.11	$0.00	$57.95
6	75	$38.56	$7.85	$14.44	$0.00	$60.85
7	80	$41.13	$7.85	$14.77	$0.00	$63.75
8	90	$46.27	$7.85	$15.44	$0.00	$69.56

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2016	$41.36	$7.85	$16.10	$0.00	$65.31
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	01/01/2017	$42.31	$7.85	$16.10	$0.00	$66.26

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - New*

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.68	$7.85	$0.00	$0.00	$28.53
2	55	$22.75	$7.85	$3.66	$0.00	$34.26
3	60	$24.82	$7.85	$3.99	$0.00	$36.66
4	65	$26.88	$7.85	$4.32	$0.00	$39.05
5	70	$28.95	$7.85	$14.11	$0.00	$50.91
6	75	$31.02	$7.85	$14.44	$0.00	$53.31
7	80	$33.09	$7.85	$14.77	$0.00	$55.71
8	90	$37.22	$7.85	$15.44	$0.00	$60.51

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.16	$7.85	$0.00	$0.00	$29.01
2	55	$23.27	$7.85	$3.66	$0.00	$34.78
3	60	$25.39	$7.85	$3.99	$0.00	$37.23
4	65	$27.50	$7.85	$4.32	$0.00	$39.67
5	70	$29.62	$7.85	$14.11	$0.00	$51.58
6	75	$31.73	$7.85	$14.44	$0.00	$54.02
7	80	$33.85	$7.85	$14.77	$0.00	$56.47
8	90	$38.08	$7.85	$15.44	$0.00	$61.37

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	07/01/2016	$39.42	$7.85	$16.10	$0.00	$63.37
	01/01/2017	$40.37	$7.85	$16.10	$0.00	$64.32

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint*

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.71	$7.85	$0.00	$0.00	$27.56
2	55	$21.68	$7.85	$3.66	$0.00	$33.19
3	60	$23.65	$7.85	$3.99	$0.00	$35.49
4	65	$25.62	$7.85	$4.32	$0.00	$37.79
5	70	$27.59	$7.85	$14.11	$0.00	$49.55
6	75	$29.57	$7.85	$14.44	$0.00	$51.86
7	80	$31.54	$7.85	$14.77	$0.00	$54.16
8	90	$35.48	$7.85	$15.44	$0.00	$58.77

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.19	$7.85	$0.00	$0.00	$28.04
2	55	$22.20	$7.85	$3.66	$0.00	$33.71
3	60	$24.22	$7.85	$3.99	$0.00	$36.06
4	65	$26.24	$7.85	$4.32	$0.00	$38.41
5	70	$28.26	$7.85	$14.11	$0.00	$50.22
6	75	$30.28	$7.85	$14.44	$0.00	$52.57
7	80	$32.30	$7.85	$14.77	$0.00	$54.92
8	90	$36.33	$7.85	$15.44	$0.00	$59.62

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) *LABORERS - ZONE 2* For Apprentice rates see "Apprentice- LABORER"	12/01/2016	$32.40	$7.45	$12.65	$0.00	$52.50
PAINTER / TAPER (BRUSH, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	07/01/2016	$39.96	$7.85	$16.10	$0.00	$63.91
	01/01/2017	$40.91	$7.85	$16.10	$0.00	$64.86

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER - Local 35 Zone 2 - BRUSH NEW*

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.98	$7.85	$0.00	$0.00	$27.83
2	55	$21.98	$7.85	$3.66	$0.00	$33.49
3	60	$23.98	$7.85	$3.99	$0.00	$35.82
4	65	$25.97	$7.85	$4.32	$0.00	$38.14
5	70	$27.97	$7.85	$14.11	$0.00	$49.93
6	75	$29.97	$7.85	$14.44	$0.00	$52.26
7	80	$31.97	$7.85	$14.77	$0.00	$54.59
8	90	$35.96	$7.85	$15.44	$0.00	$59.25

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.46	$7.85	$0.00	$0.00	$28.31
2	55	$22.50	$7.85	$3.66	$0.00	$34.01
3	60	$24.55	$7.85	$3.99	$0.00	$36.39
4	65	$26.59	$7.85	$4.32	$0.00	$38.76
5	70	$28.64	$7.85	$14.11	$0.00	$50.60
6	75	$30.68	$7.85	$14.44	$0.00	$52.97
7	80	$32.73	$7.85	$14.77	$0.00	$55.35
8	90	$36.82	$7.85	$15.44	$0.00	$60.11

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	07/01/2016	$38.02	$7.85	$16.10	$0.00	$61.97
	01/01/2017	$38.97	$7.85	$16.10	$0.00	$62.92

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 2 - BRUSH REPAINT*

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.01	$7.85	$0.00	$0.00	$26.86
2	55	$20.91	$7.85	$3.66	$0.00	$32.42
3	60	$22.81	$7.85	$3.99	$0.00	$34.65
4	65	$24.71	$7.85	$4.32	$0.00	$36.88
5	70	$26.61	$7.85	$14.11	$0.00	$48.57
6	75	$28.52	$7.85	$14.44	$0.00	$50.81
7	80	$30.42	$7.85	$14.77	$0.00	$53.04
8	90	$34.22	$7.85	$15.44	$0.00	$57.51

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.49	$7.85	$0.00	$0.00	$27.34
2	55	$21.43	$7.85	$3.66	$0.00	$32.94
3	60	$23.38	$7.85	$3.99	$0.00	$35.22
4	65	$25.33	$7.85	$4.32	$0.00	$37.50
5	70	$27.28	$7.85	$14.11	$0.00	$49.24
6	75	$29.23	$7.85	$14.44	$0.00	$51.52
7	80	$31.18	$7.85	$14.77	$0.00	$53.80
8	90	$35.07	$7.85	$15.44	$0.00	$58.36

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2012	$30.28	$9.07	$8.00	$0.00	$47.35
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) *PILE DRIVER LOCAL 56 (ZONE 1)* For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2015	$42.04	$9.80	$19.23	$0.00	$71.07
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2015	$42.04	$9.80	$19.23	$0.00	$71.07

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PILE DRIVER - Local 56 Zone 1*

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.02	$9.80	$19.23	$0.00	$50.05
2	60	$25.22	$9.80	$19.23	$0.00	$54.25
3	70	$29.43	$9.80	$19.23	$0.00	$58.46
4	75	$31.53	$9.80	$19.23	$0.00	$60.56
5	80	$33.63	$9.80	$19.23	$0.00	$62.66
6	80	$33.63	$9.80	$19.23	$0.00	$62.66
7	90	$37.84	$9.80	$19.23	$0.00	$66.87
8	90	$37.84	$9.80	$19.23	$0.00	$66.87

Notes:

Apprentice to Journeyworker Ratio:1:3

PIPEFITTER & STEAMFITTER *PIPEFITTERS LOCAL 537*	09/01/2016	$50.19	$9.70	$18.14	$0.00	$78.03
	03/01/2017	$51.19	$9.70	$18.14	$0.00	$79.03

Apprentice - *PIPEFITTER - Local 537*

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$20.08	$9.70	$7.50	$0.00	$37.28
2	45	$22.59	$9.70	$18.14	$0.00	$50.43
3	60	$30.11	$9.70	$18.14	$0.00	$57.95
4	70	$35.13	$9.70	$18.14	$0.00	$62.97
5	80	$40.15	$9.70	$18.14	$0.00	$67.99

Effective Date - 03/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$20.48	$9.70	$7.50	$0.00	$37.68
2	45	$23.04	$9.70	$18.14	$0.00	$50.88
3	60	$30.71	$9.70	$18.14	$0.00	$58.55
4	70	$35.83	$9.70	$18.14	$0.00	$63.67
5	80	$40.95	$9.70	$18.14	$0.00	$68.79

Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.

Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

PIPELAYER *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS *PLUMBERS & GASFITTERS LOCAL 12*	09/01/2016	$51.69	$11.32	$15.46	$0.00	$78.47
	03/01/2017	$52.69	$11.32	$15.46	$0.00	$79.47

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PLUMBER/GASFITTER - Local 12*

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$18.09	$11.32	$5.74	$0.00	$35.15
2	40	$20.68	$11.32	$6.49	$0.00	$38.49
3	55	$28.43	$11.32	$8.73	$0.00	$48.48
4	65	$33.60	$11.32	$10.23	$0.00	$55.15
5	75	$38.77	$11.32	$11.72	$0.00	$61.81

Effective Date - 03/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$18.44	$11.32	$5.74	$0.00	$35.50
2	40	$21.08	$11.32	$6.49	$0.00	$38.89
3	55	$28.98	$11.32	$8.73	$0.00	$49.03
4	65	$34.25	$11.32	$10.23	$0.00	$55.80
5	75	$39.52	$11.32	$11.72	$0.00	$62.56

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic$58.50 Step5 with lic$65.36

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) *PIPEFITTERS LOCAL 537*	09/01/2016	$50.19	$9.70	$18.14	$0.00	$78.03
	03/01/2017	$51.19	$9.70	$18.14	$0.00	$79.03
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER *LABORERS - ZONE 2*	12/01/2016	$33.40	$7.45	$12.65	$0.00	$53.50
For apprentice rates see "Apprentice- LABORER"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$45.38	$10.00	$15.25	$0.00	$70.63
	06/01/2017	$46.38	$10.00	$15.25	$0.00	$71.63
	12/01/2017	$47.38	$10.00	$15.25	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$45.38	$10.00	$15.25	$0.00	$70.63
	06/01/2017	$46.38	$10.00	$15.25	$0.00	$71.63
	12/01/2017	$47.38	$10.00	$15.25	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$31.17	$10.00	$15.25	$0.00	$56.42
	06/01/2017	$31.86	$10.00	$15.25	$0.00	$57.11
	12/01/2017	$32.55	$10.00	$15.25	$0.00	$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
READY-MIX CONCRETE DRIVER *TEAMSTERS LOCAL 42*	05/01/2016	$24.15	$8.49	$10.68	$0.00	$43.32
	04/30/2017	$24.15	$8.49	$11.07	$0.00	$43.71
	05/01/2017	$24.21	$8.49	$11.54	$0.00	$44.24
	04/30/2018	$24.21	$8.49	$11.96	$0.00	$44.66
	05/01/2018	$24.24	$8.49	$12.46	$0.00	$45.19
	04/30/2019	$24.24	$8.49	$12.92	$0.00	$45.65
RECLAIMERS *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) *CARPENTERS -ZONE 2 (Residential Wood)*	06/01/2016	$25.32	$9.80	$16.82	$0.00	$51.94
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement.*CARPENTERS -ZONE 2 (Residential Wood)*	10/01/2016	$25.69	$7.07	$7.18	$0.00	$39.94
	04/01/2017	$26.31	$7.07	$7.18	$0.00	$40.56
	10/01/2017	$26.93	$7.07	$7.18	$0.00	$41.18
	04/01/2018	$27.35	$7.07	$7.18	$0.00	$41.60
	10/01/2018	$27.77	$7.07	$7.18	$0.00	$42.02
	04/01/2019	$28.20	$7.07	$7.18	$0.00	$42.45
	10/01/2019	$28.63	$7.07	$7.18	$0.00	$42.88
As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CARPENTER (Residential Wood Frame) - Zone 2*

Effective Date - 10/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$15.41	$7.07	$0.00	$0.00	$22.48
2	60	$15.41	$7.07	$0.00	$0.00	$22.48
3	65	$16.70	$7.07	$7.18	$0.00	$30.95
4	70	$17.98	$7.07	$7.18	$0.00	$32.23
5	75	$19.27	$7.07	$7.18	$0.00	$33.52
6	80	$20.55	$7.07	$7.18	$0.00	$34.80
7	85	$21.84	$7.07	$7.18	$0.00	$36.09
8	90	$23.12	$7.07	$7.18	$0.00	$37.37

Effective Date - 04/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$15.79	$7.07	$0.00	$0.00	$22.86
2	60	$15.79	$7.07	$0.00	$0.00	$22.86
3	65	$17.10	$7.07	$7.18	$0.00	$31.35
4	70	$18.42	$7.07	$7.18	$0.00	$32.67
5	75	$19.73	$7.07	$7.18	$0.00	$33.98
6	80	$21.05	$7.07	$7.18	$0.00	$35.30
7	85	$22.36	$7.07	$7.18	$0.00	$36.61
8	90	$23.68	$7.07	$7.18	$0.00	$37.93

Notes:

Apprentice to Journeyworker Ratio:1:5

RIDE-ON MOTORIZED BUGGY OPERATOR *LABORERS - ZONE 2*	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) *ROOFERS LOCAL 33*	08/01/2016	$41.11	$11.00	$13.00	$0.00	$65.11
	02/01/2017	$42.26	$11.00	$13.00	$0.00	$66.26
	08/01/2017	$43.36	$11.00	$13.00	$0.00	$67.36
	02/01/2018	$44.51	$11.00	$13.00	$0.00	$68.51
	08/01/2018	$45.61	$11.00	$13.00	$0.00	$69.61
	02/01/2019	$46.76	$11.00	$13.00	$0.00	$70.76

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ROOFER - Local 33*

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.56	$11.00	$3.44	$0.00	$35.00
2	60	$24.67	$11.00	$13.00	$0.00	$48.67
3	65	$26.72	$11.00	$13.00	$0.00	$50.72
4	75	$30.83	$11.00	$13.00	$0.00	$54.83
5	85	$34.94	$11.00	$13.00	$0.00	$58.94

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.13	$11.00	$3.44	$0.00	$35.57
2	60	$25.36	$11.00	$13.00	$0.00	$49.36
3	65	$27.47	$11.00	$13.00	$0.00	$51.47
4	75	$31.70	$11.00	$13.00	$0.00	$55.70
5	85	$35.92	$11.00	$13.00	$0.00	$59.92

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE *ROOFERS LOCAL 33*	08/01/2016	$41.36	$11.00	$13.00	$0.00	$65.36
	02/01/2017	$42.51	$11.00	$13.00	$0.00	$66.51
	08/01/2017	$43.61	$11.00	$13.00	$0.00	$67.61
	02/01/2018	$44.76	$11.00	$13.00	$0.00	$68.76
	08/01/2018	$45.86	$11.00	$13.00	$0.00	$69.86
	02/01/2019	$47.01	$11.00	$13.00	$0.00	$71.01
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 17 - A*	11/01/2016	$43.40	$10.70	$23.07	$2.32	$79.49
	02/01/2017	$44.50	$10.70	$23.07	$2.32	$80.59
	08/01/2017	$45.60	$10.70	$23.07	$2.32	$81.69
	02/01/2018	$46.75	$10.70	$23.07	$2.32	$82.84

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SHEET METAL WORKER - Local 17-A*

Effective Date - 11/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.36	$10.70	$5.24	$0.00	$33.30
2	40	$17.36	$10.70	$5.24	$0.00	$33.30
3	45	$19.53	$10.70	$10.31	$1.22	$41.76
4	45	$19.53	$10.70	$10.31	$1.22	$41.76
5	50	$21.70	$10.70	$11.21	$1.31	$44.92
6	50	$21.70	$10.70	$11.46	$1.32	$45.18
7	60	$26.04	$10.70	$13.02	$1.49	$51.25
8	65	$28.21	$10.70	$13.93	$1.59	$54.43
9	75	$32.55	$10.70	$15.74	$1.77	$60.76
10	85	$36.89	$10.70	$17.05	$1.94	$66.58

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.80	$10.70	$5.24	$0.00	$33.74
2	40	$17.80	$10.70	$5.24	$0.00	$33.74
3	45	$20.03	$10.70	$10.31	$1.24	$42.28
4	45	$20.03	$10.70	$10.31	$1.24	$42.28
5	50	$22.25	$10.70	$11.21	$1.32	$45.48
6	50	$22.25	$10.70	$11.46	$1.33	$45.74
7	60	$26.70	$10.70	$13.02	$1.51	$51.93
8	65	$28.93	$10.70	$13.93	$1.61	$55.17
9	75	$33.38	$10.70	$15.74	$1.79	$61.61
10	85	$37.83	$10.70	$17.05	$1.97	$67.55

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SIGN ERECTOR *PAINTERS LOCAL 35 - ZONE 2*	06/01/2013	$25.81	$7.07	$7.05	$0.00	$39.93

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SIGN ERECTOR - Local 35 Zone 2*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$12.91	$7.07	$0.00	$0.00	$19.98
2	55	$14.20	$7.07	$2.45	$0.00	$23.72
3	60	$15.49	$7.07	$2.45	$0.00	$25.01
4	65	$16.78	$7.07	$2.45	$0.00	$26.30
5	70	$18.07	$7.07	$7.05	$0.00	$32.19
6	75	$19.36	$7.07	$7.05	$0.00	$33.48
7	80	$20.65	$7.07	$7.05	$0.00	$34.77
8	85	$21.94	$7.07	$7.05	$0.00	$36.06
9	90	$23.23	$7.07	$7.05	$0.00	$37.35

Notes:

Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.44	$10.91	$10.89	$0.00	$54.24
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.73	$10.91	$10.89	$0.00	$54.53
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1*	10/01/2016	$55.48	$8.52	$17.05	$0.00	$81.05
	01/01/2017	$55.08	$8.77	$17.20	$0.00	$81.05
	03/01/2017	$56.08	$8.77	$17.20	$0.00	$82.05

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SPRINKLER FITTER - Local 550 (Section A) Zone 1*

Effective Date - 10/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$19.42	$8.52	$8.55	$0.00	$36.49
2	40	$22.19	$8.52	$8.55	$0.00	$39.26
3	45	$24.97	$8.52	$8.55	$0.00	$42.04
4	50	$27.74	$8.52	$8.55	$0.00	$44.81
5	55	$30.51	$8.52	$8.55	$0.00	$47.58
6	60	$33.29	$8.52	$10.05	$0.00	$51.86
7	65	$36.06	$8.52	$10.05	$0.00	$54.63
8	70	$38.84	$8.52	$10.05	$0.00	$57.41
9	75	$41.61	$8.52	$10.05	$0.00	$60.18
10	80	$44.38	$8.52	$10.05	$0.00	$62.95

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$19.28	$8.52	$8.70	$0.00	$36.50
2	40	$22.03	$8.52	$8.70	$0.00	$39.25
3	45	$24.79	$8.52	$8.70	$0.00	$42.01
4	50	$27.54	$8.52	$8.70	$0.00	$44.76
5	55	$30.29	$8.52	$8.70	$0.00	$47.51
6	60	$33.05	$8.52	$10.20	$0.00	$51.77
7	65	$35.80	$8.52	$10.20	$0.00	$54.52
8	70	$38.56	$8.52	$10.20	$0.00	$57.28
9	75	$41.31	$8.52	$10.20	$0.00	$60.03
10	80	$44.06	$8.52	$10.20	$0.00	$62.78

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN *ELECTRICIANS LOCAL 103*	09/01/2016	$35.35	$13.00	$15.57	$0.00	$63.92
	03/01/2017	$36.25	$13.00	$15.60	$0.00	$64.85
	09/01/2017	$36.96	$13.00	$15.62	$0.00	$65.58
	03/01/2018	$37.86	$13.00	$15.65	$0.00	$66.51
	09/01/2018	$38.75	$13.00	$15.67	$0.00	$67.42
	03/01/2019	$39.65	$13.00	$15.70	$0.00	$68.35

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TELECOMMUNICATION TECHNICIAN - Local 103*

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$14.14	$13.00	$0.42	$0.00	$27.56
2	40	$14.14	$13.00	$0.42	$0.00	$27.56
3	45	$15.91	$13.00	$11.53	$0.00	$40.44
4	45	$15.91	$13.00	$11.53	$0.00	$40.44
5	50	$17.68	$13.00	$11.80	$0.00	$42.48
6	55	$19.44	$13.00	$12.07	$0.00	$44.51
7	60	$21.21	$13.00	$12.36	$0.00	$46.57
8	65	$22.98	$13.00	$12.63	$0.00	$48.61
9	70	$24.75	$13.00	$13.91	$0.00	$51.66
10	75	$26.51	$13.00	$14.19	$0.00	$53.70

Effective Date - 03/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$14.50	$13.00	$0.44	$0.00	$27.94
2	40	$14.50	$13.00	$0.44	$0.00	$27.94
3	45	$16.31	$13.00	$12.54	$0.00	$41.85
4	45	$16.31	$13.00	$12.54	$0.00	$41.85
5	50	$18.13	$13.00	$12.81	$0.00	$43.94
6	55	$19.94	$13.00	$13.09	$0.00	$46.03
7	60	$21.75	$13.00	$13.37	$0.00	$48.12
8	65	$23.56	$13.00	$13.65	$0.00	$50.21
9	70	$25.38	$13.00	$13.93	$0.00	$52.31
10	75	$27.19	$13.00	$14.21	$0.00	$54.40

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2016	$49.70	$10.18	$19.22	$0.00	$79.10
	02/01/2017	$50.27	$10.18	$19.22	$0.00	$79.67

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TERRAZZO FINISHER - Local 3 Marble & Tile*

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.85	$10.18	$19.22	$0.00	$54.25
2	60	$29.82	$10.18	$19.22	$0.00	$59.22
3	70	$34.79	$10.18	$19.22	$0.00	$64.19
4	80	$39.76	$10.18	$19.22	$0.00	$69.16
5	90	$44.73	$10.18	$19.22	$0.00	$74.13

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.14	$10.18	$19.22	$0.00	$54.54
2	60	$30.16	$10.18	$19.22	$0.00	$59.56
3	70	$35.19	$10.18	$19.22	$0.00	$64.59
4	80	$40.22	$10.18	$19.22	$0.00	$69.62
5	90	$45.24	$10.18	$19.22	$0.00	$74.64

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE*	12/01/2016	$38.20	$7.45	$14.00	$0.00	$59.65
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER *LABORERS - FOUNDATION AND MARINE*	12/01/2016	$36.92	$7.45	$14.00	$0.00	$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2016	$36.80	$7.45	$14.00	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$44.94	$10.00	$15.25	$0.00	$70.19
	06/01/2017	$45.93	$10.00	$15.25	$0.00	$71.18
	12/01/2017	$46.92	$10.00	$15.25	$0.00	$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$33.02	$10.91	$10.89	$0.00	$54.82
TUNNEL WORK - COMPRESSED AIR *LABORERS (COMPRESSED AIR)*	12/01/2016	$49.08	$7.45	$14.40	$0.00	$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) *LABORERS (COMPRESSED AIR)*	12/01/2016	$51.08	$7.45	$14.40	$0.00	$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR *LABORERS (FREE AIR TUNNEL)*	12/01/2016	$41.15	$7.45	$14.40	$0.00	$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) *LABORERS (FREE AIR TUNNEL)*	12/01/2016	$43.15	$7.45	$14.40	$0.00	$65.00
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
VAC-HAUL *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2016	$32.44	$10.91	$10.89	$0.00	$54.24
WAGON DRILL OPERATOR *LABORERS - ZONE 2* For apprentice rates see "Apprentice- LABORER"	12/01/2016	$32.65	$7.45	$12.65	$0.00	$52.75
WASTE WATER PUMP OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2016	$45.38	$10.00	$15.25	$0.00	$70.63
	06/01/2017	$46.38	$10.00	$15.25	$0.00	$71.63
	12/01/2017	$47.38	$10.00	$15.25	$0.00	$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER *PLUMBERS & GASFITTERS LOCAL 12*	09/01/2016	$51.69	$11.32	$15.46	$0.00	$78.47
	03/01/2017	$52.69	$11.32	$15.46	$0.00	$79.47
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$26.61	$7.50	$1.80	$0.00	$35.91
	09/03/2017	$27.14	$7.75	$1.81	$0.00	$36.70
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$37.70	$7.50	$8.87	$0.00	$54.07
	09/03/2017	$38.45	$7.75	$9.53	$0.00	$55.73
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$31.05	$7.50	$8.89	$0.00	$47.44
	09/03/2017	$31.66	$7.75	$9.44	$0.00	$48.85
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$24.39	$7.50	$1.73	$0.00	$33.62
	09/03/2017	$24.88	$7.75	$1.75	$0.00	$34.38
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$37.70	$7.50	$12.95	$0.00	$58.15
	09/03/2017	$38.45	$7.75	$13.61	$0.00	$59.81
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$33.26	$7.50	$9.63	$0.00	$50.39
	09/03/2017	$33.92	$7.75	$10.21	$0.00	$51.88
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$24.39	$7.50	$1.73	$0.00	$33.62
	09/03/2017	$24.88	$7.75	$1.75	$0.00	$34.38
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$19.96	$7.50	$1.60	$0.00	$29.06
	09/03/2017	$20.35	$7.75	$1.61	$0.00	$29.71
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	08/28/2016	$44.35	$7.50	$15.83	$0.00	$67.68
	09/03/2017	$45.23	$7.75	$16.61	$0.00	$69.59

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *LINEMAN (Outside Electrical) - East Local 104*

Effective Date - 08/28/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$26.61	$7.50	$3.30	$0.00	$37.41
2	65	$28.83	$7.50	$3.36	$0.00	$39.69
3	70	$31.05	$7.50	$3.43	$0.00	$41.98
4	75	$33.26	$7.50	$5.00	$0.00	$45.76
5	80	$35.48	$7.50	$5.06	$0.00	$48.04
6	85	$37.70	$7.50	$5.13	$0.00	$50.33
7	90	$39.92	$7.50	$7.20	$0.00	$54.62

Effective Date - 09/03/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$27.14	$7.75	$3.31	$0.00	$38.20
2	65	$29.40	$7.75	$3.38	$0.00	$40.53
3	70	$31.66	$7.75	$3.45	$0.00	$42.86
4	75	$33.92	$7.75	$5.02	$0.00	$46.69
5	80	$36.18	$7.75	$5.09	$0.00	$49.02
6	85	$38.45	$7.75	$5.15	$0.00	$51.35
7	90	$40.71	$7.75	$7.22	$0.00	$55.68

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	01/01/2016	$28.98	$4.25	$3.12	$0.00	$36.35
TELEDATA LINEMAN/EQUIPMENT OPERATOR *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	01/01/2016	$27.31	$4.25	$3.07	$0.00	$34.63
TELEDATA WIREMAN/INSTALLER/TECHNICIAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	01/01/2016	$27.31	$4.25	$3.07	$0.00	$34.63
TREE TRIMMER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	01/31/2016	$18.51	$3.55	$0.00	$0.00	$22.06

This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is not on the ground. This classification does not apply to wholesale tree removal.

TREE TRIMMER GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	01/31/2016	$16.32	$3.55	$0.00	$0.00	$19.87

This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is on the ground. This classification does not apply to wholesale tree removal.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)
Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.
*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

SECTION 00 84 00
INSURANCE REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL

1. This Section specifies the Owner's insurance requirements and relates to the General Conditions of the Contract for Construction and Supplementary General Conditions of the Contract for Construction.

2. Provisions of the General Conditions of the Contract for Construction and Supplementary General Conditions of the Contract for Construction which are not modified by the following Insurance Requirements remain in full effect.

1.02 INSURANCE REQUIREMENTS

1. The insurance required shall be written for not less than the limits of liability required by law or the following limits, whichever is greater:

State and Federal Workmen's Compensation	Statutory
Employer's Liability (Each Accident)	$ 500,000.00
Benefits Required by Union Contract	As Required
GENERAL LIABILITY*	
General Liability - Bodily Injury Each Occurrence	$1,000,000.00
General Liability - Bodily Injury Aggregate	$ 3,000,000.00
General Liability - Property Damage Each Occurrence	$ 1,000,000.00
General Liability - Property Damage Aggregate	$ 3,000,000.00

*General Liability shall include coverage for the following:
- Comprehensive Form
- Premises/Operations Liability
- Explosion, Collapse and Underground (XCU)
- Products/Completed Operations
- Contractual Liability
- Independent Contractors
- Broad Form Property Damage
- Personal Injury including Libel and Slander Coverage
- Broad Form CGL Endorsement

AUTOMOBILE LIABILITY**	
Comp. Automobile Liability** - Bodily Injury Per Person	$ 500,000.00
Comp. Automobile Liability** - Bodily Injury Per Accident	$ 1,000,000.00
Comp. Automobile Liability** - Property Damage	$ 500,000.00

**Provide coverage for all Owned, Non-Owned, and Hired Vehicles.
EXCESS LIABILITY (UMBRELLA COVERAGE)

Bodily Injury and Property Damage Combined Aggregate $ 3,000,000.00

2. Exclusions: The Owner's property insurance shall not cover tools, equipment, shoring, staging, forms, temporary buildings or other equipment owned or rented by the Contractor, its Subcontractors, or any worker.

3. Insurance Certificates: The Contractor and all Subcontractors who are required to provide insurance under the Contract shall provide accurate and bona fide "Certificates of Insurance" issued by a responsible agent of the insurance company.

    1. Certificate Content: Such "Certificates of Insurance" shall clearly indicate the insurance coverage provided including all riders and limits specified. Each "Certificates of Insurance" shall be accompanied by a sworn and duly notarized statement from the responsible agent of the insurance company issuing the Certificate clearly stating that all insurance specified and required by the Contract Documents is provided and in force, and also a clear statement of all exceptions and deviations, if any, from the Contract Document insurance requirements.

    2. Responsibility: The insurance agent issuing and authorizing the "Certificates of Insurance" shall be responsible and liable for the accuracy and validity of the "Certificates of Insurance". Each insured party shall certify by sworn and duly notarized statement that the "Certificates of Insurance" issued for them are bona fide.

    3. Disclaimers Prohibited: "Certificates of Insurance" shall not contain any disclaimers such as: "This Certificate is issued as a matter of information only and confers no rights upon the certificate holder. This Certificate does not amend, extend, or alter the coverage afforded by the policies listed below." Disclaimers are not accepted.

    4. Certificates of Insurance can be Relied Upon: Parties receiving "Certificates of Insurance" shall be entitled to rely upon the "Certificates of Insurance" and shall have the right to claim the benefits and protection provided by the insurance as it applies to them.

    5. Alternate to "Certificates of Insurance": Instead of providing the "Certificates of Insurance" and the sworn statements required above, the insured may provide bona fide and accurate copies of all insurance policies and riders accompanied by a sworn and duly notarized statement from the insured that the policies, riders, and documents submitted are bona fide and valid, and that parties receiving the insurance documents may rely on the documents as satisfied of the Contract insurance requirements.

END OF SECTION

01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. The General Conditions of the Contract, Supplementary General Conditions and all other Sections of Division l, General Requirements apply to this section.

1.02 SCOPE

A. Project Description: This project is located in Swampscott, Massachusetts.

1. Selective reclamation/demolition and removal of existing vegetation, site pavement, footings and posts, chain link fences, existing concrete and natural turf identified to be removed within limit of work.
2. Protection of existing pavement and utilities outside the limit of work, and associated facilities as indicated.
3. Site work: Sawcut existing asphalt and concrete turf anchor, preparation of Subbase to meet proposed grades, installation of all improvements, including concrete turf anchor, fences, gates, safety netting, asphalt, drainage improvements, sports lighting and associated site improvements. Top dress all disturbed areas with loam and seed.

4. All work either shown on the Drawings or included in the specifications unless specifically indicated as not to be done.

B. In addition, the work under the Contract includes:

1. Work outside the Project Site as called for in the Contract Documents and as required for the performance of the Work.

2. The restoration of any items damaged or destroyed by encroaching upon areas outside the Project Site.

3. Providing and restoring, where appropriate, all temporary facilities.

1.03 TIME OF COMPLETION

A. In accordance with the General Conditions, the Work shall be commenced at the time stated in the Notice to Proceed and shall be substantially completed by August 18, 2017.

END OF SECTION

PRICING AND PAYMENT PROCEDURES
SECTION 012000

PART 1 - GENERAL

1.1 GENERAL

A. Division 1.0 – General Requirements, describes the measurement of and payment for the work to be done under the items listed in the FORM OF UNIT PRICES, Table 012000-1, included herein.

B. All work performed as described in these contract documents shall be paid for under one or more of the items listed in the Form of Unit Prices. All other activities required in connection with performance of the work, including all work required under DIVISION 01 - GENERAL REQUIREMENTS, whether described in the contract documents or mandated by applicable codes, permits and laws, will not be separately paid for unless specifically provided for in the FORM OF UNIT PRICES, but will be considered incidental to performance of the overall project.

1. Specifically, as outlined in the report and accompanying appendices prepared by Cooperstown Environmental, Dated October 28, 2016, the contractor shall include in the base bid price the excavation, handling, removal, reuse and/or proper disposal of the following quantities of clean and contaminated topsoil material:

2. Type I-3: Non-Reportable Urban Fill Soils (Clean)
(With the exception of Type II-1 soils identified below, all existing topsoil is classified as Type I-3 Soils, and shall be screened and reused on site, with any remaining quantities being trucked to the Swampscott Cemetery - 400 Essex Street - Swampscott, MA 01907. The cost for off-site transport of excess topsoil to the cemetery shall be included in the base bid. See Section 02200 Earthwork, for additional information.)

3. Type II-1: Instate un-lined Landfill (Contaminated) 150 tons

C. Under the price specified to be paid for each item, the Contractor shall furnish all materials and equipment, furnish all labor and plant, and do all operations necessary to complete all work specified or shown. All supervision, overhead items, protection and precautions and all other costs, incidental to the construction work, complete, and as specified, shall be included.

D. A complete, finished, working job, as intended by the general nature of these Specifications, shall be produced whether or not any particular wording or direction is omitted or inadvertently not clearly stated.

E. Measurement for payment shall be by the Contractor to be verified by Engineer, except where noted elsewhere in this Specification. Measurement of payment for lump sum items shall require the Contractor to submit a breakdown of all lump sum items. The Engineer and Contractor must agree on all breakdowns prior to any partial payments of these items.

F. Each unit or lump sum price stated in the Form of Unit Prices shall constitute full compensation

as herein specified for each item of work completed in accordance with the drawings and specifications.

G. The payment items listed in the Form of Unit Prices are intended to provide full payment including all overhead, profit, or other markups of any kind for the work shown on the drawings and specified herein. Any work called for or implied in the documents but not listed, as a payment item shall be considered incidental to the overall project.

H. The Unit Price payment items are presented to address the uncertainty of certain portions of the construction, in particular the potential presence and extent of impacted materials. Bidders shall calculate their own quantities for the purposes of preparing bids and shall not rely on the accuracy of the quantities provided or implied.

1.2 EXCESS EXCAVATION OF SOIL, ASPHALT, BRICKS, AND CONCRETE

A. Measurement
1. Measurement will be on a weight basis in tons as verified by weight slips for soils and materials in excess of the quantity within the original limits of excavation considered part of the base bid.

B. Payment
1. Payment for excess excavation of soil, asphalt, bricks, and concrete will be made at the unit price as shown on the Form for General Bid. Excavation of materials considered part of **base bid** will not be compensated as part of this item but rather will be paid as part of General Contract. Price and payment shall be full compensation for following work activities associated with over-excavating beyond the original limits necessary to remove contaminated as directed by Engineer:

a. Remove, segregate, and stockpile soil, bituminous asphalt, bricks, and concrete as directed by the Engineer and as specified in Section 02100 and 02200. Transportation and disposal of these materials to approved facilities shall be as specified in Section 026100 and payment for transportation and disposal of these materials shall be made under the unit price as shown on the Form for General Bid.

b. Provide and deliver backfill required for makeup volume of materials to the depths and laterally for any additional excavation as directed by the Engineer, and place and compact in excavations as specified in Section 02200. Payment shall be made under the unit price as shown on the Form for General Bid.

1.4 OFF-SITE TRANSPORT AND DISPOSAL OF EXCESS EXCAVATION

A. Measurement
1. Measurement will be on a weight basis in tons based on scale reading at the disposal facility.

B. Payment
1. Payment for off-site transport and disposal of excess excavation will be made at the unit price as shown on the Form for General Bid. Price and payment shall be full compensation for the following work activities associated with this work item as directed by the Engineer:

a. Manage and characterize by sampling materials as Non-Reportable.
b. Loading, transporting, and disposing of materials to an approved in-state and/or out of state landfills, recycling facilities, or treatment, storage and disposal (TSD) facilities as specified in Section 026100.
c. The Licensed Site Professional (LSP) engaged by the owner will prepare all shipping documents including Material Shipping Records, Bills of Lading, manifests, or similar documents that may be required to transport and dispose of the materials.

1.5 EXCESS SUBGRADE AND BASE COURSE BACKFILL

A. Measurement
1. Measurement will be on a weight basis in tons based on facility weight receipts. Measurement will apply only to backfill that may be required in excess of the quantity included in the base bid.

B. Payment
1. Payment for excess subgrade and base course backfill will be made at the unit price as shown on the Form for General Bid. Price and payment shall be full compensation for purchasing, delivering, placing, and compacting subgrade and base course backfill to bring the excavation up to grade as specified in Section 02200 and as shown on the Drawings.

END OF SECTION 01 20 00

SECTION 01 22 00
UNIT PRICES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The unit prices for items set forth in the schedule of unit prices shall be used to determine adjustments to the contract sum when changes in the work involving said items are made in accordance with General Conditions, Supplementary General Conditions and other Sections of the Contract Documents.

1.02 REQUIREMENTS

A. Unit prices for changes to the work not part of the Base bid will be paid in accordance with unit prices listed by the Contractor on the Schedule of unit prices, based on quantities measured in the field.
B. All unit prices shall include their pro-rata share of all costs for overhead, profit, bond, materials, equipment and disposal required to complete the work item.
C. The Owner may choose not to approve any or all unit prices prior to award of the contract if it deems the unit price unreasonable. In this case, the change order process described in the general conditions will be used for work described in the unit price schedule, when any change of the base contract scope is required.

1.03 APPLICABILITY OF UNIT PRICES

A. The payment lines shall be as indicated in the Contract Documents.
B. Prior to commencing any change to the work involving removal or placement of materials set forth in the schedule of unit prices, the Contractor shall notify the Architect in sufficient time to permit proper measurements to be taken on behalf of the Owner. Only quantities which have been approved in writing by the Architect and/or Owner will be considered in the determination of adjustments to the contract sum.
C. Performance of work which is not required under the Contract Documents or which is not authorized by Change Order, whether or not such work item is set forth hereunder as a Unit price item, shall not be considered cause for extra payment. The Contractor will be held fully responsible for such unauthorized work, including the performance of all corrective measures required by the Architect and/or Owner.

1.04 SCHEDULE OF UNIT PRICES

A. The List of proposed unit prices for the above referenced project are included in the bid form for completion by the Contractor.

END OF SECTION 01035

01 23 00
ALTERNATES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. The General Conditions of the Contract, Supplementary General Conditions and all other Sections of Division l, General Requirements apply to this section.

1.02 SCOPE

A. This Section lists the Alternates which appear in the Contract Documents. Consult the individual Sections for requirements applicable to all alternatives.

B. Bid prices for each Alternate shall include overhead, profit, and all other expenses incidental to the Work under each Alternate.

C. 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.

1.03 **Base Bid Scope of Work:**

1. Site Preparation — All work as shown on sheet SP-1.

2. Site Improvements — All work shown on sheets L-1, L-2, L-5 (As noted), L-6, and all detail sheets unless otherwise noted below.

   a. Synthetic Turf & Pad - The Synthetic Turf, including the infill and resilient pad will be supplied and installed by other. (NIC)

   b. Sports Light Bases - Musco light pole foundations, conduits, handholes and pull ropes only in the base bid. All four (4) Sports light poles, fixtures, wires and control are to be included in Alternate #9.

   b. Grandstand - Concrete slab only in the base bid, including conduits and handholes shown within the limits of the slab on sheet L-1 & L-6. Grandstand structure, including pressbox and lift are to be provided by others. (NIC)

ADD Alternate #1 Provide and install a new **Sound System**, as shown on the electrical site plan and as outlined in the specifications.

ADD Alternate #2 Provide and install a new **Scoreboard**, as shown on detail #8, sheet L-7, and as outlined in the specifications.

Add Alternate #3 Provide and install new **Safety Netting**, as shown on sheet L-1 and detail #5, sheet L-8, including footings, posts and netting.

Add Alternate #4 Provide and install a new **Storage Building**, as shown on detail #7 & 8, sheet L-9, including electrical connections as shown on the electrical site plan and details.

ADD Alternate #5 Provide and install all site improvements shown in **Area A** on sheet L-4, and as

detailed on sheet L-5, that are not already included in the base bid. Alt 5 scope of work to include all concrete paving, curbs, fences, gates, granite posts, bituminous concrete pavement in Bondelevitch Way, and parking lot striping, and as outlined in the specifications.

ADD Alternate #6 Provide and install all site improvements shown in **Area B** on sheet L-4 that are not already included in the base bid. Alt 6 scope of work to include all gravel parking, landscape areas and split rail fencing as shown sheet L-4, and as outlined in the specifications.

ADD Alternate #7 Provide and install all site improvements shown in **Area C** on sheet L-4 that are not already included in the base bid. Alt 7 scope of work to include all bituminous concrete walkways, fences, gates and landscape areas as shown sheet L-4, and as outlined in the specifications.

ADD Alternate #8 Provide and install all site improvements shown in **Area D** on sheet L-4 that are not already included in the base bid. Alt 8 scope of work to include all concrete paving, curbs, fences, gates, granite posts, landscape areas, bituminous concrete pavement and brick pavers and as outlined in the specifications.

ADD Alternate #9 Provide and install all sports lighting poles, fixtures, wires and control shown on the electrical site plan. Alt 9 scope of work to include the provision of the electrical transformer, connection to the main power service in Humphrey Street, and installation of all sports light poles, fixtures, wires and control. Sports Light poles bases, conduits and pull ropes are to be included in the base bid.

ADD Alternate #10 Provide and install all new Plant Material, as shown on sheet L-3, and as outlined in the specifications.

END OF SECTION

SECTION 01 31 00

PROJECT REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

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

2. Examine all other Sections of the Specifications for requirements that affect work of this Section, whether or not such work is specifically mentioned in this Section.

3. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all under the Contract.

1.02 EXAMINATION OF SITE

1. Prior to bidding the Contractor shall thoroughly examine the site and the Contract Documents to ensure his knowledge of conditions and requirements affecting the work. No claim for extra compensation or extension of time will be allowed for Contractor's failure to comply with this requirement nor will any condition at the site, whether or not in agreement with conditions shown or called for on the Bid and Contract Documents, be allowed as a basis for such claims, except as otherwise specifically provided for.

1.03 DISCOVERY

1. If during the demolition, excavation, disposal, or other work, articles of unusual value, or of historical or archeological significance are encountered, the ownership of such articles is retained by the Owner, and information regarding their discovery shall be immediately furnished to the Landscape Architect. If the nature of the article is such that the work can not proceed without danger of damaging same, work in that area shall be immediately discontinued until the Landscape Architect and/or Owner has decided the proper procedure to be followed. Any time lost thereby shall be a condition for which the time of the Contract may be extended. All costs incurred after discovery in the salvaging of such articles shall be borne by the Owner.

1.04 COORDINATION WITH EXISTING UTILITIES

A. The Contractor shall give all advance notice to public utility companies as required by law, and shall provide proper disposition, subject to Landscape Architect's and/or Owner's approval of all existing pipe lines, conduits, sewers, drains, poles, wiring, and other utilities that in any way interfere with the work, whether or not they are specifically shown on the Drawings. The Contractor shall immediately notify the Owner and appropriate authorities when coming across an unknown utility line, and await decision as to how to dispose of same. When an existing

utility line must be cut and plugged or capped, moved, or relocated, or has become damaged he shall notify the Owner and the Utility company involved, and assure the protection, support, or moving of utilities to adjust them to the new work. The Contractor shall be responsible for all damage caused to existing, active utilities under the work of this Contract, whether or not such utilities are shown on the Drawings, including resultant damages or injuries to persons or properties.

2. Agents of various public service agencies, municipal and State departments may be entering on the work site to remove existing facilities, to construct or place new facilities or to make alterations to existing facilities.

   Prior to starting work or erecting permanent construction signing, the Contractor shall notify the "DIG-SAFE" program with a minimum of 72 hours advance warning. Once located and marked, the Contractor shall maintain such marks and access to installations to permit repairs and maintenance of service if interrupted.

   The Contractor shall perform the work in cooperation with the various agencies in a manner that causes the least interference with the operations of the aforementioned agencies and shall have no claim for daily due to said work of these agencies.

3. Written notice shall be given by the Contractor to all public service corporations or municipal and State officials owning or having charge of publicly or privately owned utilities of his intention to commence operations affecting such utilities at least one week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the engineer.

1.06 FIELD LAYOUT

A. Contractor shall maintain a level and transit on the job, and shall employ personnel for use thereof trained and registered as a Civil Engineer or as a Registered Professional Surveyor by the State of Massachusetts. The Owner shall have reasonable use of these instruments at all times.

2. Contractor shall establish benchmarks in at least two widely separated locations, and shall establish and maintain grades, lines, levels and other dimensional reference guides as required. The Contractor shall annotate project record documents to indicate all modifications of grades, utilities, etc.

1.07 PROTECTION OF PROPERTY AND THE PUBLIC

1. Construct all fences, barricades, and protective facilities required for the protection of the public, in accordance with local and State regulations. Furnish and install all signs, lights, reflectors and all such protection facilities as may be required.

2. Contractor shall save the Owner harmless from all claims arising from the use of public streets, sidewalks and adjoining premises for construction purposes.

3. Keep all access roads and walks clear of debris, materials, construction plans and equipment, during building operation. Repair streets, drives, curbs, sidewalks, fences, poles and the like, where disturbed by construction, and leave them in as good conditions after completion of the work as before operations started. The Contractor shall contact appropriate City officials concerning hauling of construction materials over City roads and bridges.

4. Provide ways and means to control the flow of water from every source which may cause delay or damage during the building operation.

5. Protect all planting, landscaping, trees and site improvements as indicated on the Drawings.

6. The Contractor shall be responsible for the maintenance of construction barriers and traffic barriers in order to maintain traffic, over, through, or around the work included in his Contract with the maximum of safety and practicable convenience to such traffic during the life of the Contract, and whether or not work has been suspended temporarily. He shall take all precautions for preventing injuries to persons or damage to property to or about the work.

7. The work shall be carried on and barriers erected in such a manner as to provide safe passage at all times for public travel and with least obstruction to traffic. The Contractor shall provide and maintain, at his own expense, in a safe and passable condition, such temporary by-passes as created by the barriers as may be necessary to accommodate both pedestrian and vehicular traffic.

8. The Contractor shall maintain all legally required means of egress.

9. Where the new construction or repair work coincides with the presently traveled way, the Contractor shall carry on his work so that travel will not be obstructed.

10. Whenever gale or high winds are forecast, take proper measures to secure all loose material, equipment or other items which could blow about and be damaged or cause damage to other work. No such loose items shall be left unsecured at end of working day.

1.08 POLICE

1. Whenever, in the opinion of the Owner, traffic is sufficiently congested or public safety is endangered the Contractor shall furnish at his expense a uniformed police detail to direct traffic or to keep traffic off the area affected by construction operations. Such officers shall be in addition to flagmen required under other provisions of the Contract.

2. The employment of traffic flagmen, or the presence of special officers or police shall in no way relieve the Contractor of any responsibility or liability which is his under the terms of the Contract.

1.09 FIRE ACCESS

1. The Contractor shall maintain fire lanes as required by the Swampscott Fire Department throughout the course of construction.

1.10 SPECIAL SECURITY AND CONTRACTOR'S RESPONSIBILITY FOR THE WORK

1. The Owner shall not provide security within the storage, staging, or construction areas nor will the Owner assume responsibility for acts of vandalism, within these areas.

2. Until written acceptance of the physical work by the Landscape Architect and/or Owner, the Contractor shall assume full charge thereof and he shall take every necessary precaution against damage to the work by action of the elements, or from any cause whatever, whether arising from the execution of the Contractor or not.

3. The Contractor shall bear all losses resulting to him on account of vandalism.

4. The Contractor shall rebuild, repair, restore and make good all damages to any portion of the work occasioned by any of the above causes before the completion and written acceptance of the physical work, and shall bear the expense thereof.

5. Should the Contractor fail to take prompt action whenever conditions make it necessary, the Owner shall make emergency repairs or cause the same to be made, with the stipulation that the costs for such repairs shall be charged against the Contractor and deducted from monies due to him.

6. In case of suspension of work from any cause whatever, the Contractor shall be responsible for the project and shall take such precautions as may be necessary to prevent damage to the project, provide for normal drainage and shall erect any necessary temporary structures, signs, or other facilities at his expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings and seedings furnished under this Contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

1.11 TEMPORARY BRACING, SHORING, SHEETING, TIE DOWN

1. Provide all sheeting, shoring, bracing, underpinning, reinforcement and other temporary supports as may be required to maintain the integrity of, and prevent damage to, any structure or finish to be subjected to or adjacent to cutting work. Patch to restore to sufficient final strength, and acceptable appearance, subject to Landscape Architect’s and/or Owner's approval.

1.12 SITE DRAINAGE

1. Contractor shall take over responsibilities for existing site drainage upon entering premises, and maintain such drainage during the life of his Contract in a manner approved by the Landscape Architect and so as not to adversely affect adjacent areas.

2. Keep excavations, pits, trenches and other construction areas free of water at all times, including backing up of drains and sewers. Provide hydraulic equipment to control surface and ground

water. Pumping equipment shall be adequate to remove all hydrostatic pressure from structures until sufficient strength has been developed by the structure to protect work from displacement or other damage.

3. Maintain ground water level where required sufficiently below excavation level at all times to maintain stable working platform. Ground water shall be controlled so as to avoid adverse effects on established ground water elevation of adjacent sites.

1.13 SITE TRENCHING AND EXCAVATION

1. Open excavation adjacent to the traveled way or shoulders shall not remain through the hours of darkness, holiday or periods of shutdown, unless adequately protected and specifically authorized by the City. The Contractor shall obtain a street opening permit from the City Department Public Works prior to excavating in City streets or right-of-ways.

   If live service connections are to be interrupted by excavations of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall be plugged off or otherwise made secure.

   Full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved in protecting or repairing property as specified in this section, shall be considered included in the Contract price, ,and not additional compensation will be allowed therefore.

2. Before starting any work for this Contract, the Contractor shall prepare and submit to the Landscape Architect for approval, a plan which indicates the traffic routing proposed by the Contractor during the various stages and time periods of the work and the temporary barricades, signs, cones, drums and other safety and traffic control devices to be employed during each stage and time period of the work to maintain traffic and access to abutting properties.

   Particular care should be taken to establish and maintain methods and procedures which will not create unnecessary or unusual hazards to public safety. Traffic control and safety devices required only during working hour operations shall be removed at the end of each working day.

   Signs having messages that are irrelevant to normal traffic conditions shall be removed or properly covered at the end of each work period. Signs shall be kept clean at all times and legends shall be distinctive and unmarred.

   All trenches with the right-of-way in pavements to remain shall be hot patched at the end of each work day as directed.

3. All existing and other materials not required or needed for use on the project, and not required to be removed and stacked, shall become the property of the contractor and shall be removed from the site and legally disposed of. No separate payment will be made for this work, but all costs in connection therewith shall be included in the bid price of this Contract.

1.14 COORDINATION

1. Before commencing any work, or any phase of the work, the Contractor shall prepare a sequence of operations for all work under this Division, and shall submit it for approval by the Landscape Architect and Owner at a Pre-Construction Conference.

2. Before commencing any work, the Contractor shall consult with the Owner regarding any use of any facility, including, but not limited to, loading docks, parking areas, storage areas, etc., that may be required to prosecute the work.

3. If, in the judgement of the Landscape Architect, continued work under the approved sequence of operations may interfere with the operations of any other construction projects at any time during the progress of the work, the Landscape Architect may direct the Contractor to accelerate, interrupt, or cease work at particular points. The Contractor shall make reasonable changes in the sequence of operations to accommodate these directions, at no additional cost to the Owner.

4. The Contractor shall be responsible for the proper fitting of all work and the coordination of the operations of all trades, Subcontractors, or material and equipment engaged upon the work. He shall be prepared to guarantee each of his Subcontractors the dimensions which they may require for the fitting of their work to all surrounding work and shall perform or cause the subcontractors to perform all cutting, fitting or adjusting and patching necessary to make the several parts of the work come together properly and to fit the work to receive or be received by that of other Contractors.

5. The Contractor shall give his personal supervision to the work or have a competent superintendent on the job at all times during the progress of the work, with the authority to act for him. The Contractor shall also provide an adequate staff for the proper coordination and expedition of his work.

6. The Contractor shall lay out his own work and shall be responsible for all lines, elevations and measurements of the grading, landscaping and other work executed by him under the Contract. He shall exercise proper precaution to verify the dimensions shown on the Drawings before laying out the work, and will be held responsible for any error resulting from his failure to exercise such precaution.

7. The Contractor's responsibility for the coordination of all work under the Contract shall be complete, and shall extend to all modifications in the work, whether or not such modifications entail a change in the Contract price. Where the Contract Documents allow an optional material or method, the Contractor shall provide all other coordination and additional work that such change necessitates, without any additional cost to the Owner.

1.15 MEASUREMENTS

1. Before ordering any material or doing any work, the Contractor shall verify all measurements

and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of difference between actual dimensions and the measurements indicated on the Drawings; any difference which may be found shall be submitted to the Landscape Architect, in writing, for consideration before proceeding with the work.

1.16 CONDUCT OF WORK

1. The Contractor shall coordinate with the Owner and Landscape Architect, work in connection with adjacent occupied buildings or areas, driveways, walks or other facilities which would prevent access thereto or interrupt, restrict or otherwise infringe upon the Owner's use thereof.

2. Damage to existing work, if caused by Contractor's operations under this Contract, shall be repaired at Contractor's expense.

3. The Contract Site shall be shown on Drawings, and shall include the entire area bounded by the "Contractor's Work Area" or "Limit of Work" lines when required for performance of work under this Contract.

4. Any street or other paving, curbs and/or sidewalks damaged as the result of work under this Contract, whether within or outside of the limits of the work, shall be repaired and/or replaced with new matching construction by the Contractor causing such damage, at his expense, and in a manner satisfactory to the Landscape Architect and authorities having jurisdiction thereover.

5. Where existing curbs or walks are to remain, or after new curbs or walks are constructed and trucking is required over them, they shall be suitably protected in an approved manner.

6. The Contractor shall provide continuous, lawful, safe, adequate and convenient access to the site. Access to the site shall generally be via existing roadways and paved surfaces which the Contractor shall maintain and restore to original condition. Contractor shall construct and maintain in good usable condition temporary roads or appurtenances as required, and when no longer required, remove temporary construction and restore such areas to their original condition.

1.17 CLEANING UP

A. The following specific cleaning work shall be done:

   1. Concrete and masonry shall be cleaned free of all foreign matter. If, in opinion of the Landscape Architect, further cleaning of specific areas is required they shall be scrubbed with water or other cleaning agents. Acid cleaners shall not be used, except as may otherwise specifically be permitted in the trade sections.
   2. Surfaces with integral finishes shall be washed with clean water, mild soap and soft rags, thoroughly rinsed, and then wiped with clean, soft white rags. Abrasive cleansers shall not be used.
   3. Painted surfaces shall be cleaned free of all foreign matter, and if necessary, shall be lightly scrubbed at specific stains with clean water, mild soap, and soft rags thoroughly

rinsed, and wiped with clean, soft white rags.

4. Metal surfaces, hardware, equipment, and similar items shall be cleaned free of all foreign matter and, if necessary, shall be lightly scrubbed at specific stains with clean water, mild soap, and soft rags, thoroughly rinsed and wiped with clean soft, white rags. Abrasive cleaners shall not be used.
5. All advertising matter and temporary instructional material shall be removed from exposed surfaces throughout.

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

2. This Section contains general information that applies to all work performed under the Contract and is inherently made a part of each specification section.

1.02 PROJECT MEETINGS

1. Preconstruction Conferences: Conduct a preconstruction conference prior to beginning work on site. Require all major subcontractors and suppliers to attend. In general, the meeting shall cover the following subjects:

    1. Creation of project team directory listing contract person for each organization.
    2. Issuance of Contract Documents.
    3. Review of project constraints and work hours.
    4. Unloading policies, storage locations, temporary office locations, and temporary facilities.
    5. First aid, safety, and security procedures.
    6. Cleaning, housekeeping, and waste removal.
    7. Change order requirements.
    8. Progress payment requirements.
    9. Submittal requirements, schedules, and procedures.
    10. Record document requirements and procedures.
    11. Other subjects as determined by the Contractor, Owner, and Landscape Architect.

2. Regular Progress Meetings: Conduct Progress Meetings to aid coordination and planning of the work and to create a forum to resolve coordination and scheduling problems and conflicts. Regular project meetings will be held on a weekly basis at the job site. Special project meetings may be called at any time by the Owner or Landscape Architect, and shall be attended by the Contractor and any required Subcontractors.

    1. Chairperson and Minutes: The Landscape Architect will chair the meetings and will prepare written meeting minutes.

    2. The Contractor shall require representatives of all major subcontractors and supplies to attend each Progress Meeting as required,. Representatives of Contractor, Subcontractors, and suppliers who are present at Progress Meetings shall have the full authority to commit their respective organizations to decisions, commitments, and agreements made at Progress

Meetings.

3. Progress Meeting Agenda: Progress Meetings shall have at least the following agenda:

    1. Review and approval of minutes and record of previous meeting.
    2. Review progress of work, Progress Schedule, and status of Submittals.
    3. Identify problems which impede planned progress.
    4. Develop corrective measures and procedures to maintain planned schedule.
    5. Review apparent conflicts and other problems, and develop corrective measures.
    6. Monthly review of payment applications.
    7. Pre-installation discussions regarding specific project items.
    8. Other current business.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Consult the individual sections of the specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.

1.02 GENERAL PROCEDURES FOR SUBMITTALS

A. Timeliness - The Contractor shall transmit each submittal to the Landscape Architect at least 5 days in advance of performing related Work or other applicable activities, so that the installation will not be delayed by processing times, including disapproval and re-submittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Landscape Architect in advance of the Work.

B. Sequence - The Contractor shall transmit each submittal in a sequence which will not result in the approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

C. Contractor's Review and Approval - Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Landscape Architect. Submittals shall be accompanied by a transmittal notice stating name of Project, date of submittal, "To" or "From" (Contractor, Subcontractor, Installer, Manufacturer, Supplier), Specification Section or Drawing No. to which the submittal refers, purpose (first submittal, re-submittal), description, remarks, distribution record, and signature of transmitter.

D. Any reference as to a specific type or manufacturer in these specifications is for identification purposes only. Equivalent products will be considered. In the event that samples or specifications on equivalent products are required, it will be at the vendor’s expense.

E. Or-Equivalents - On the transmittal, or on a separate sheet attached to the transmittal, the Contractor shall direct attention to any deviations including minor limitations and variations from the Contract Documents.

1. The Contractor and all Subcontractors shall submit to the Landscape Architect for consideration of any Or-equivalent substitution, a written point by point comparison containing the name and full particulars of the proposed product to the product named or described in the Contract Documents.

2. Such submittal shall in no event be made later than 5 calendar days prior to the incorporation of the item into the Work. In any case in which the time period specified in the Contract Documents from the Notice to Proceed to Substantial Completion is less than

5 days, this requirement can be waived by the Landscape Architect.

3. Upon receipt of a written request for approval of an Or-equivalent substitution, the Landscape Architect shall investigate whether the proposed item shall be considered equal to the item named or described in the Contract Documents. Upon conclusion of the investigation, the Landscape Architect shall promptly advise that the item is, or is not, considered acceptable as on Or-equivalent substitution. Such written notice must have the concurrence of the Owner.

4. In no case may an item be furnished on the Work other than the item named or described, unless the Landscape Architect, with the Authority's concurrence, shall consider the item equal to the item so named or described, as provided by M.G.L. c.30 § 39M.

5. The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Landscape Architect at the expense of the Contractor or Subcontractor submitting the substitution.

6. The Landscape Architect and/or the Authority may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor or Subcontractor, as the case may be, shall bear full cost for providing, delivering, and disposal of all such samples.

7. The Contractor or Subcontractor, as the case may be, shall assume full responsibility for the performance of any item submitted as an "Or-equivalent" and assume the costs of any changes in any Work which may be due to such substitution.

F. Processing - All costs for printing, preparing, packaging, submitting, resubmitting, and mailing, or delivering submittals required by this contract shall be included in the Contract Sum.

1.03 LANDSCAPE ARCHITECT'S ACTION

A. The Landscape Architect will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings:

1. Final Unrestricted Release: Where marked "Reviewed, and no exception made" the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.

2. Final-But-Restricted Release: When marked "Make corrections as Noted" the Work may proceed provided it complies with the Landscape Architect's notations or corrections on the submittal and complies with the requirements of the Contract Documents. Acceptance of the Work will depend upon these compliances.

3. Returned for Resubmittal: When marked "Revise & Resubmit" or "Reject", the Work covered by the submittal (purchasing, fabrication, delivery, or other activity) should not proceed. The submittal should be revised or a new submittal resubmitted without delay, in

accordance with the Landscape Architect's notations stating the reasons for returning the submittal.

1.04 SUBMISSION OF SHOP DRAWINGS & PRODUCT DATA

A. Shop Drawings shall be complete, give all information necessary or requested in the individual section of the specifications. They shall also show adjoining Work and details of connection thereto.

B. Shop Drawings shall be for whole systems. Partial submissions will not be accepted.

C. The Landscape Architect reserves the right to review and approve shop drawings only after approval of related product data and samples.

D. Shop drawings shall be properly identified and contain the name of the project, name of the firm submitting the shop drawings, shop drawing number, date of shop drawings and revisions, Contractor's stamp of approval, and sufficient spaces near the title block for the Landscape Architect's stamp.

E. The Contractor shall submit to the Landscape Architect one legible, reproducible transparency and two black line prints of each shop drawing. Transparency and prints shall be mailed or delivered in roll form. Each submittal shall be accompanied by a transmittal notice.

F. When the transparency is returned by the Landscape Architect with the stamp "Revise and Resubmit" or "Rejected", the Contractor shall correct the original drawing or prepare a new drawing and resubmit a transparency and two prints thereof to the Landscape Architect for approval. This procedure shall be repeated until the Landscape Architect's approval is obtained.

G. When the transparency is returned by the Landscape Architect with the stamp "Reviewed, and no exception taken", the Contractor shall provide and distribute the prints for all Contractor and Subcontractors use, and in addition submit, within 10 calendar days after approval, 5 prints to the Landscape Architect.

H. The Contractor shall maintain one full set of approved shop drawings at the site.

1.05 SUBMISSION OF SAMPLES

A. Unless otherwise specified in the individual section, the Contractor shall submit two specimens of each sample.

B. Samples shall be of adequate size to permit proper evaluation of materials. Where variations in color or in other characteristics are to be expected, samples shall show the maximum range of variation. Materials exceeding the variation of approved samples will not be approved on the Work.

C. Samples which can be conveniently mailed shall be sent directly to the Landscape Architect,

accompanied by a transmittal notice. All transmittals shall be stamped with the Contractor's approval stamp of the material submitted.

D. All other samples shall be delivered at the field office of the Project Representative with sample identification tag attached and properly filled in. Transmittal notice of samples so delivered with the Contractor's stamp of approval shall be mailed to the Landscape Architect.

E. If a sample is rejected by the Landscape Architect, a new sample shall be resubmitted in a manner specified herein above. This procedure shall be repeated until the sample is approved by the Landscape Architect.

F. Samples will not be returned unless return is requested at the time of submission. The right is reserved to require submission of samples whether or not particular mention is made in the specifications.

END OF SECTION

SECTION 13740
HEALTH AND SAFETY PLAN REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This work shall consist of preparing and implementing a Health and Safety Plan to establish in detail the protocols necessary for protecting workers from potential hazards during the Work specified in Sections 01568, 02100, and 02200 and other relevant sections.

B. Potential chemical hazards include semi-volatile organic compounds (SVOCs) in the soil and other compounds that could be present on the site due to past activities or filling operations.

1.02 SUBMITTALS

A. Submit, as a single submittal, within 7 days after issuance of the Notice to Proceed, a health and safety plan meeting the requirements of OSHA 1926.65, and the requirements of this Section.

B. On a daily basis, complete and submit to Engineer, Daily Trench and Excavation Inspection Log and Environmental Engineering Daily Site Safety Checklist.

1.03 DESCRIPTION OF REQUIREMENTS

A. Site specific health and safety procedures as specified herein are required due to potentially hazardous conditions that may be encountered at this site. These procedures shall be described in a Health and Safety (H&S) Plan prepared by the Contractor. The H&S Plan shall be submitted to the Engineer before any work covered in the specific procedures can be initiated. The Contractor is responsible for its workers' health and safety. Therefore, the Engineer will not approve the H&S Plan but only review to verify that items specified in this Section are addressed. The Contractor shall implement, maintain and enforce these procedures at the appropriate time prior to and during all phases of the work.

B. This Section describes the minimum health and safety requirements for this project. The Contractor shall develop a detailed H&S Plan using this section as a basis and delineating additional details and requirements as deemed necessary. The H&S plan must establish in detail the protocols necessary for protecting workers from potential hazards encountered during construction activities.

C. The Contractor shall utilize the services of a Certified Industrial Hygienist (CIH) by the American Board of Industrial Hygienists (ABIH) or other qualified personnel to develop and implement the H&S plan, including conducting initial site specific training and provide continued support for all health and safety activities as needed, including the upgrading or downgrading of the level of personnel protection.

D. In addition, a Site Safety and Health Officer (SSHO) shall assist and represent the CIH in the continued implementation and enforcement of the H&S Plan. The SSHO shall be assigned to the site on a full time basis and shall be either the Contractor's employee or reports to the Contractor and the CIH in matters pertaining to site safety and health.

1.05 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. The site-specific H&S Plan shall be consistent with the requirements of:

1. OSHA 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response.
2. EPA Standard Operating Guidelines, Revised November, 1984.
3. ACOE Accident Prevention and Safety and Health Requirements Manual, EM 385 1 1, Revised October 1984.
4. NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Site Activities, October 1985, DHHS (NIOSH) Publ. No. 85 115.
5. FEMA Emergency Operations Plan Requirements.

B. The H&S Plan shall include but not necessarily be limited to, the following components as required by OSHA 29 CFR 1926.65(b)4 and 1926.65(l)(2):

1. Site Description and Evaluation.
2. Names of key personnel and alternate responsible for site safety and health (responsibilities and chain of command).
3. Safety and health hazard assessment and risk analysis for each site task and operator (Accident Prevention Plan).
4. Education and Training.
5. Personnel Protective Equipment.
6. Medical Surveillance.
7. Air Monitoring (Environmental).
8. Standard Operating Procedures, Contracting Controls and Work Practices.
9. Site Control Measures (Work Zones, Communications and Security).
10. Personnel Hygiene and Decontamination.
11. Equipment Decontamination.
12. Logs, Reports and Record Keeping.
13. Heat/Cold Stress Monitoring.
14. Pre emergency planning
15. Personnel roles, lines of authority, training and communication
16. Emergency recognition and prevention
17. Safe distances and places of refuge
18. Site security and control
19. Evacuation routes and procedures
20. Decontamination
21. Emergency Medical treatment and first aid

22. Emergency alerting and response procedures
23. Critique of response and follow up
24. Personnel Protection Equipment and emergency equipment

C. The Contractor's CIH shall follow an initial site survey to determine the appropriate safety procedures and level of worker safety equipment. The Contractor's SSHO shall maintain a continuous health and safety monitoring program throughout the performance of the work. It shall be the SSHO's responsibility to notify the Engineer of any deviations in the health and safety monitoring program.

D. Requirements delineated in this Section are in addition to or an amplification of procedures and requirements of the above referenced regulations and documents.

E. It shall be the Contractor's responsibility to notify the Engineer's on site representative verbally and in writing as quickly as possible should any unforeseen safety hazard or condition become evident during the performance of the work. In the interim, the Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard employees, the public and the environment.

F. Any disregard for the provision of these specifications shall be deemed just and sufficient cause for termination of the Contractor or any Subcontractor without compromise or prejudice to the rights of the Contractor.

1.05 SITE CONTROL PLAN

A. The Contractor shall prepare a Site Control Plan to establish work zones on site, based on the Drawings and requirements specified in this Section. The Contractor shall also develop operational procedures in order to properly implement the plan.

B. Following review of the Site Control Plan by the Engineer, the Contractor shall maintain temporary site fencing to physically separate the temporary hazardous materials and contaminated soil stockpile areas.

C. The work zones shall be defined as follows:

1. The support zone shall be clearly delineated and shall be secured against active or passive contamination from the exclusion zone. The function of the support zone is to provide:

    a. An entry for personnel, materials and equipment to the exclusion zone of site operations.
    b. An exit area for decontaminated personnel, materials and equipment from the exclusion zone of site operations.
    c. Location for support facilities.
    d. A storage area for clean work equipment.

2. The contamination reduction zone shall be located at the interface of the exclusion and support zone. The function of the contamination reduction zone is to provide:

    a. An area to decontaminate personnel equipment and vehicles prior to entering the support zone from the exclusion zone. A physical separation of the support and exclusion zones.

3. The exclusion zones shall include and encompass all work areas. The level of personnel protective equipment required in the exclusion zones shall be in accordance with the Contractor's H&S Plan as determined by the CIH and SSHO.

D. The Site Control Plan shall also show the location of the:

1. Decontamination station within the contamination reduction zone.
2. Soil stockpile areas within the Exclusion Zone.

E. The operational procedures shall include the following as a minimum:

1. The methods the Contractor shall employ when performing excavated soil management.
2. An estimated progress schedule indicating the starting and completion dates of the various stages of the work.
3. The overall methods the Contractor shall employ to maintain site control during the performance of the work.
4. The methods the Contractor shall employ at the completion of the work to return the site to its original condition including removing all site barricades.

1.06 TRAINING

A. The Contractor shall certify that all Contractor personnel assigned for performing or supervising work in accordance with the provisions of the H&S plan have received appropriate safety training in accordance with 29 CFR 1926.65. Training shall consist of a minimum of 40 hours of health and safety training and 8 hours refresher training annually. In addition, Contractor's supervisory personnel shall have a minimum of 8 hours additional specialized training for managing hazardous waste operations.

B. Additionally, the Contractor shall be responsible for, and shall guarantee that, only personnel successfully completing the required training are permitted to enter designated areas of the site where worker protection is required.

1.07 MEDICAL SURVEILLANCE

A. The services of the occupational physician shall be utilized to provide the minimum medical examinations and surveillance specified herein.

B. The entire medical surveillance program shall meet the requirements of OSHA standard 29 CFR 1926.65(f) including the provision requiring the Contractor to obtain a physician's written

medical opinion based on site specific information furnished by the Contractor.

1. Maintain all medical surveillance records in accordance with 29 CFR 1926.65 and make these records available to the Engineer or other regulatory agencies as required.

1.08 PERSONAL PROTECTIVE EQUIPMENT

A. Provide on-site personnel when required by the H&S Plan with appropriate personal safety equipment and protective clothing and ensure that all safety equipment and protective clothing is kept clean and well maintained. The Contractor's CIH shall establish upgrade/downgrade "action levels" from the specified minimum levels of protection based upon air monitoring results and direct contact potential. Protocols formally changing the level of protection and the communication network for doing so shall be described in the H&S Plan. Any changes to the minimum level of protection shall be approved by the SSHO with notification to the Engineer.

B. All personal protective equipment worn on site shall be decontaminated or properly disposed of at the end of the work day. The SSHO shall be responsible for ensuring all personal protective equipment is decontaminated before being reissued.

1.09 PERSONAL HYGIENE AND DECONTAMINATION

A. All on site personnel performing or supervising work within exclusion zones or exposed or subject to exposure to hazardous chemical vapors, liquids, or contaminated solids shall observe and adhere to the personal hygiene related provisions of Health and Safety Plan. A detailed discussion of personnel decontamination protocols to be followed by site workers shall be submitted as part of the H&S Plan. Any personnel found to be disregarding the personal hygiene-related provisions of the H&S Plan shall be barred from the site.

1.10 LOGS, REPORTS AND RECORDKEEPING

A. Maintain logs and reports covering the implementation of the H&S Plan including the Air Monitoring Program. The format shall be developed by the Contractor to include daily logs, weekly reports and a phase out report.

B. Daily Safety Logs

1. Date
2. Area (site specific) checked
3. Employees in a particular area
4. Equipment being utilized by employees
5. Protective clothing being worn by employees
6. Protective devices being used by:

    a. Contractor's Personnel
    b. Visitors
    c. Designated State and Federal Representatives

7. Air Monitoring Data
8. Site Safety and Health Officer’s signature and date.

1.11 HEAT/COLD STRESS MONITORING

A. Heat Stress Monitoring: The climate combined with the requirements for personal protective equipment may create heat stress. Monitoring of personnel wearing impervious clothing shall commence when the ambient temperature is 70 degrees F or above. Monitoring frequency shall increase as the ambient temperature increases or as slow recovery rates are observed. Monitoring shall be performed by a person with a current first aid certification who is trained to recognize the symptoms of heat stress.

   1. The Contractor's Certified Industrial Hygienist shall specify the work cycle period and the rest period based on this heat stress monitoring. The action levels at which the corrective action shall be taken shall be addressed in the Contractor's written H&S Plan.

B. Cold Stress Monitoring: To guard against cold injury the Contractor shall provide appropriate clothing, warm shelter for the rest periods and shall monitor worker's condition using one or more of the following techniques. Workers who are exposed to temperatures below minus 10 degrees F with wind speeds of less than 5 miles per hour shall be medically certified by the Physician as suitable for such exposure. All workers certified as suitable for exposure shall adhere to the Work Warm-up schedule as specified in the current ACGIH TLV Booklet for Physical Agents.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. The General Conditions of the Contract, Supplementary General Conditions and all other Sections of Division l, General Requirements apply to this section.

B. The Contractor shall be responsible for providing and maintaining all temporary facilities until Substantial Completion. Removal of such, prior to Substantial Completion must be with the concurrence of the Landscape Architect. The Contractor bears full responsibility for re-providing any facility removed prior to Substantial Completion if required for the work.

C. Removal of all temporary facilities shall be a condition precedent to Substantial Completion unless directed otherwise by the Landscape Architect or specifically noted in the Specifications.

D. The Contractor must comply with all safety laws and regulations of the Commonwealth of Massachusetts, the United States Government, and local government agencies applicable to work under this contract. The Contractor's attention is directed to the Commonwealth of Massachusetts, Department of Labor and Industries Regulation 454 CMR.

1.02 TEMPORARY TELEPHONES

A. Telephone service, in the form of a cellular phone and beeper, shall be available on site.

B. The Contractor shall pay for the installation and removal of the foregoing temporary telephones and for all calls and charges in connection therewith.

1.03 TOILETS

A. The Contractor shall provide portable bathroom facilities as required.

1.04 TEMPORARY CONSTRUCTION FENCE

A. The Contractor shall be responsible for providing and maintaining temporary fencing or barricades around the construction as may be necessary to assure the safety of all persons authorized or unauthorized. Such protective measures shall be located and constructed as required by local, state and federal ordinances, laws, codes or regulations at no additional cost to the owner.

1.05 TEMPORARY STRUCTURES AND MATERIAL HANDLING

A. Materials shall be handled, stored, installed, cleaned, 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 TEMPORARY WATER

A. The Contractor may make use of the available water supply at the site for construction purposes, provided the permission of the Owner is obtained beforehand and only as long as the water is not used wastefully.

B. The Contractor shall provide all necessary piping and hoses to utilize the available sources of water.

C. The Contractor shall provide an adequate supply of cool drinking water with individual drinking cups for personnel on the job.

1.07 TEMPORARY ELECTRICITY

A. The Contractor may make use of the electricity available at the site, metered and paid for by the Owner, provided that the Contractor shall supply proper adapters and extension cords. Where heavy duty electric equipment drawing current in excess of 15 amp. is involved, the Contractor shall provide temporary service to supply the power. The temporary electric service shall include, but not be limited to labor, materials, and equipment necessary to supply temporary power of adequate capacity for the project. Transformers and meters, when required by the power company, will be furnished by the power company and the Contractor shall be the costs therefore.

B. Temporary electrical work shall be performed under the direct supervision of at least one master electrician, who will be present on the project at all times when such work is being performed.

C. All lamps installed in permanent lighting fixtures and used as temporary lights during the construction period shall be removed and replaced shortly before Substantial Completion

D. All temporary work shall be provided in conformity with the National Electric Code, State Laws and requirements of the power company. Particular attention is called to Commonwealth of Massachusetts, Department of Labor and Industries Regulation, 454CMR.

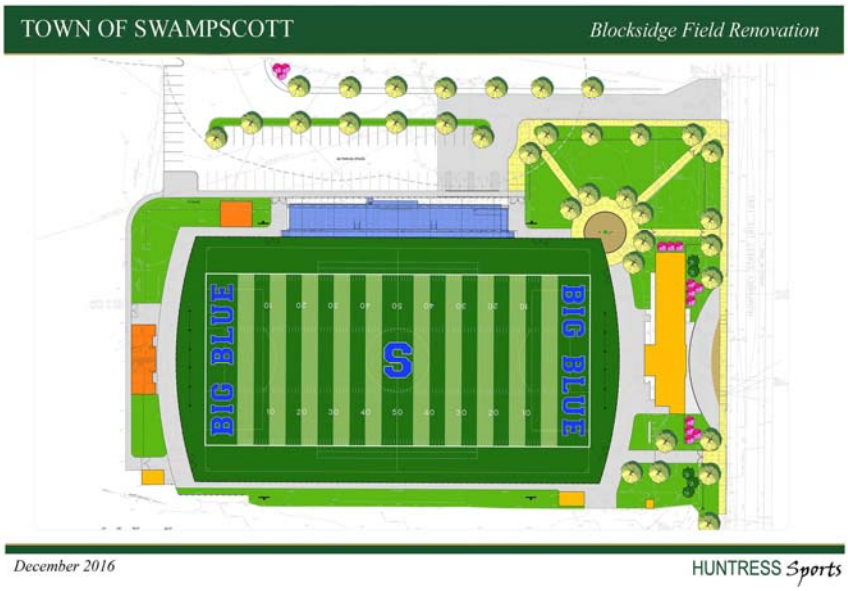
E. The Contractor shall dismantle and completely remove from the project site, temporary electrical facilities only when the permanent electrical system is operational.

1.08 WINTER CONDITIONS

1. The project will be completed after the months when winter conditions would be a factor. No winter conditions are contemplated.

1.09 PROJECT SIGN

1. Provide one project sign. Locate sign as directed by the Landscape Architect.
2. The sign shall be 4’ x 8’ on ¾" thick MDO/EXT-APA plywood, attached to 4"x4" wood posts with galvanized or stainless steel fasteners.
3. Paint all surfaces of sign with a minimum of 2 coats of exterior sign paint as directed.
4. The sign shall contain the following information:
    1. Town of Swampscott (With Town Seal)
    2. Huntress Associates, Inc. - Landscape Architect
    3. Name of General Contractor
    4. Include Rendering as shown below. File available from Landscape Architect:



5. Remove sign at Substantial Completion and dispose of or deliver to storage area as directed by the Owner.

END OF SECTION

SECTION 01 57 13
EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

1. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

2. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

3. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

1. This Section specifies equipment and materials for an erosion and sediment control program for minimizing erosion and siltation during the construction phase of the project. The erosion and sediment control provisions detailed on the Drawings and specified herein are the minimum requirements for an erosion control program. The Contractor shall provide additional erosion and sediment control materials and methods as required to effect the erosion and siltation control principles specified herein.

1.03 RELATED WORK UNDER OTHER SECTIONS

1. Site Preparation
2. Earthwork
3. Lawns

1.04 REFERENCES

1. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

    1. Commonwealth of Massachusetts Highway Department "Standard Specifications for Highways and Bridges" (MHD Specifications).

1.05 SUBMITTALS

1. Proposed methods, materials to be employed, and schedule for effecting erosion and siltation control and preventing erosion damage shall be submitted for approval. Submittals shall include:

    1. Proposed methods for effecting erosion and siltation control including 1" = 40' scale plans indicating location of erosion control devices and siltation basins.
    2. List of proposed materials including manufacturer's product data.
    3. Schedule of erosion control program indicating specific dates from implementing programs in each major area of work.

2. The following samples shall be submitted:

Filter fabric	12 x 12 in. Sample

1.06 EROSION CONTROL PRINCIPLES

1. The following erosion control principles shall apply to the land grading and construction phases:

    1. Stripping of vegetation, grading, or other soil disturbance shall be done in a manner which will minimize soil erosion.
    2. Whenever feasible, natural vegetation shall be retained and protected.
    3. Extent of area which is exposed and free of vegetation and duration of its exposure shall be kept within practical limits.
    4. Temporary seeding, mulching, or other suitable stabilization measures shall be used to protect exposed critical areas during prolonged construction or other land disturbance.
    5. Drainage provisions shall accommodate increased runoff resulting from modifications of soil and surface conditions during and after development or disturbance. Such provisions shall be in addition to existing requirements.
    6. Sediment shall be retained on-site.
    7. Erosion control devices shall be installed as early as possible in the construction sequence prior to start of clearing and grubbing operations and excavation work.

2. Cut and fill slopes and stockpiled materials shall be protected to prevent erosion. Slopes shall be protected with permanent erosion protection when erosion exposure period is expected to be greater than or equal to six months, and temporary erosion protection when erosion exposure period is expected to be less than six months.

    1. Permanent erosion protection shall be accomplished by seeding with grass and covering with an erosion protection material, as appropriate for prevailing conditions.
    2. Temporary erosion protection shall be accomplished by covering with an erosion protection material appropriate for prevailing conditions.
    3. Except where specified slope is indicated on Drawings, fill slopes shall be limited to a grade of 3:1 (horizontal: vertical) cut slopes shall be limited to a grade of 2:1.

PART 2 - PRODUCTS

2.01 HAY BALES

1. Hay bales for construction of erosion control devices shall be new, firm, wire- or nylon-bound livestock feed-grade.

2.02 TEMPORARY SEED COVER

1. Seed mixture for temporary cover by hydroseeding application shall conform to the following:

Material	Quan./1000 sf. coverage
Wood Fiber Mulch	27-1/2 lb.

Seed	4 lb.
Annual Ryegrass	1/2 lb.
10-6-4 Fertilizer	22 lb.
Water	69 gal.

1. Wood fiber mulch shall conform to MHD Specifications Section M6.04.4, "Wood Fiber Mulch".
2. Seed shall conform to MHD Specifications Section M6.03.0, "Seed for Slopes and Shoulders".

2. Hydroseeding equipment may be either portable or truck mounted, with dual agitation, a minimum working volume of 1000 gallons and a minimum spray range of 80 ft.

3. Hydroseeding equipment must be capable of uniformly applying the slurry mix including wood fiber mulch if required, at the specified rate, and at the required locations.

4. Hydromulching equipment, either trailer or truck mounted, must be capable of uniformly applying straw or hay mulch at a minimum mulching rate of 8 tons per hour, at a distance of not less than 80 ft.

PART 3 - EXECUTION

3.01 HAY BALE CATCH BASIN FILTER

1. Catch basin filters shall be placed at all inlets to drainage structures as structures are installed. Outlet protection work shall be constructed before runoff is allowed to enter the drainage system. Construction and location of catch basin filters shall be as indicated on the Drawings.

3.02 HYDROSEEDING

1. Seed for temporary cover shall be spread by the hydroseeding method, utilizing power equipment commonly used for that purpose. Seed, fertilizer, mulch and water shall be mixed and applied to achieve application quantities specified. Material shall be applied in 2 equal applications, with the equipment during the second pass moving perpendicular to direction employed during the first pass. Hydroseeding shall not be done when it is raining or snowing, or when wind velocity exceeds 5 mph.

2. If the results of hydroseeding application are unsatisfactory, the mixture and/or application rate and methods shall be modified to achieve the required results.

3. After the grass has appeared, all areas and parts of areas which fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded and such areas and parts of areas seeded repeatedly until all areas are covered with a satisfactory growth of grass.

3.03 MAINTENANCE AND REMOVAL OF EROSION CONTROL DEVICES

1. Wetland areas, water courses, and drainage swales adjacent to construction activities shall be monitored twice each month for evidence of silt intrusion and other adverse environmental impacts, which shall be corrected immediately upon discovery.

2. Culverts and drainage ditches shall be kept clean and clear of obstructions during construction period.

3. Erosion Control Devices

    1. Sediment behind the erosion control device shall be checked twice each month and after each heavy rain. Silt shall be removed if greater than 6 in. deep.
    2. Condition of erosion control device shall be checked twice each month or more frequently as required. Damaged and/or deteriorated items shall be replaced. Erosion control devices shall be maintained in place and in effective condition.
    3. Hay bales shall be inspected frequently and maintained or replaced as required to maintain both their effectiveness and essentially their original condition. Underside of bales shall be kept in close contact with the earth below at all times, as required to prevent water from washing beneath bales.
    4. Sediment shall be removed from the retention ponds at the completion of the Project and periodically during construction. Sediment deposits shall be removed when sediment has accumulated to a depth of 12 in. or as directed.
    5. Sediment deposits shall be disposed of off- site, in a location and manner which will not cause sediment nuisance elsewhere.

4. Removal of Erosion Control Devices

    1. Erosion control devices shall be maintained until all disturbed earth has been paved or vegetated, at which time they shall be removed. After removal, areas disturbed by these devices shall be regraded and seeded.
    2. Erosion control netting shall be kept securely anchored until start of permanent turf construction.
    3. Erosion protection material shall be kept securely anchored until acceptance of completed slope or entire Project, whichever is later.

END OF SECTION

SECTION 01 77 00

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. The General Conditions of the Contract, Supplementary General Conditions and all other Sections of Division I, General Requirements apply to this section.

1.02 RELATED DOCUMENTS

A. This section supplements the General Conditions, Supplementary General Conditions and Div. 1.

B. Consult the individual sections of the specifications for specific items required under those sections.

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, in writing, the Landscape Architect that the Work is Substantially Complete. The Landscape Architect shall then conduct a similar thorough inspection. If the Landscape Architect agrees that the Work is Substantially Complete, the Landscape Architect will promptly make a thorough inspection and 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.

G. The Landscape Architect shall prepare the Certificate of Substantial Completion in accordance with the General Conditions.

1.04 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Prior to final payment and completion the Contractor shall provide all Operating Manuals and Maintenance Instructions as required by the Contract Documents and as requested by the Owner.

B. Consult the individual sections of the specifications for the specific requirements for those sections and for further details and descriptions of the requirements.

C. Operating Instructions and Manuals

1. The Contractor shall collect all of the above instructions and copies of all approved submittals and bind them into two complete sets in three ring binders, and submit them to the Landscape Architect who will deliver them to the Owner.

2. Submission of operating and maintenance instructions shall be a condition precedent to final payment.

D. Instruction of Owner's Personnel

1. Where specified in the individual sections of the specifications, the Contractor and Subcontractor shall instruct the Owner's personnel at the site, in the use and maintenance of equipment installed under the Contract.

2. Submission to the Landscape Architect of a certificate of compliance to this requirement, signed by the Contractor and the Owner's Representative, shall be a condition precedent to final payment.

1.05 FINAL COMPLETION

A. Related Requirements

The Contractor's attention is directed to the General Conditions of the Contract.

B. Final Completion

1. Within 30 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 may assign a monetary value for each incomplete item as well as any other items as provided by M.G.L. c.30 sec.39K.

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 of the Contract.

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 closeout process.

END OF SECTION

SECTION 01 78 36

WARRANTIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

2. This Section contains general information that applies to all work performed under the Contract and is inherently made a part of each specification section.

1.02 WARRANTY REQUIREMENTS

1. Warranties Required: All materials, equipment, and work of the Project shall be covered by comprehensive written warranties. Refer to individual specification sections for additional specific warranty requirements. For work not specified to have additional specific warranty requirements or warranties longer than one year, provide a comprehensive one year written warranty signed by the Contractor and Subcontractor.

    1. Warranty Limitations: Warranties required under the Contract are in addition to and not in lieu of any remedy or warranty to which the Owner is entitled under law. Warranties required under the Contract shall not be interpreted as a waiver of any of the Owner's rights.

    2. Warranty Procurement: Do not purchase or subcontract for materials, equipment or work until it has been verified that parties required to provide and sign warranties are willing to do so and that warranty language, content, and form are approved by the Owner. Special warranty terms, conditions, and requirements are often specified. Ensure that warrantors subcontracting or purchasing the work.

    3. Warranties are Irrevocable: After a specific warranty's language, content, and form has been approved by the Owner and after the work covered by a specific warranty is subcontracted or purchase order given to a manufacturer, the warrantor shall not revoke or withhold the warranty for any reason including, without limitation, non-payment or incomplete payment by any party other than the Owner, except that if the work has not been installed in compliance with the warrantor's installation requirements, then the warranty may be temporarily withheld until corrections are made and the warrantor's installation requirements have been met.

    4. Warranty Forms: Submit written warranty forms to Owner through Landscape Architect for approval prior to award of subcontract, submission or purchase order, and execution of warranty. The manufacturer's standard warranty forms may not

comply with the requirements of the Contract Documents. Special warranty terms, conditions, and requirements are often specified and required.

1. Standard Warranty Form: In the absence of specific written permission by the Owner, provide all warranties including the Contractor's comprehensive one year warranty on fully executed copies of the "Standard Warranty Form" included in this Section.

5. Executed Warranties: Furnish original or certified copies of each executed warranty to Owner for warranty and maintenance manuals. Comply with requirements of Section 01720, Record Documents.

6. Work Covered by Warranty: Contractor and warrantor shall remove and replace other work damaged as a result of failure of warranted materials, equipment, or work, and shall remove and replace other work which must be removed and replaced to provide access to and replacement of materials, equipment, or work covered under warranty. Warranties shall include full payment to the Owner for work related to warranty repair or replacement including, without limitation, painting.

7. Pro-Rated Warranties: Unless otherwise specified or approved in writing by Owner, each warranty shall cover full cost of replacement or repair, and shall not be pro-rated on basis of useful service life or warranty period.

8. Warranty Extensions: Work repaired or replaced under warranty shall be provided with a new warranty equal to the full length of the original warranty. The new warranty shall begin on the date of Owner's acceptance and use of the replaced or repaired item.

9. Warranty Effective Starting Date: All warranties shall begin on Date of Final Acceptance of the entire project or Owner's acceptance of the work or item covered by the warranty, whichever is later, and the warranty coverage shall continue for the period specified. If no specific warranty period is specified, the warranty shall extend for two years (730 days).

10. Contractor's Responsibilities for Warranties: The Contractor shall implement and invoke all guarantees and warranties provided by subcontractors, manufacturers, material suppliers, and other parties, including warranties longer than one year duration. The Contractor shall make every effort to facilitate, expedite, and aid the Owner in warranty claims the Owner may have throughout the warranty periods.

END OF SECTION

SECTION 01 78 39
RECORD DOCUMENTS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. The General Conditions of the Contract, Supplementary General Conditions and all other Sections of Division I, General Requirements apply to this section.

1.02 RECORD DRAWINGS

A. Record Drawings shall consist of all the Contract Drawings.

B. From the sets of drawings furnished by the Owner, the Contractor shall reserve one set for record purposes. From this set, the Contractor shall detach and furnish, at no charge to all Subcontractors, the drawings of their portion of the Work for the same purpose.

C. The Contractor and the above Subcontractors shall keep their record set on the site at all times and note on it in colored ink or pencil, neatly and accurately, at the end of each working day, the exact location of their work as actually installed. This shall include the location and dimensions of underground and concealed Work, and any variations from the Contract Drawings. All changes, including those issued by Addendum, Change Order or instructions by the Landscape Architect shall be recorded. Record Drawings shall be prepared for the entire project and include all Work.

D. The Landscape Architect may periodically inspect the Record Drawings at the site. The proper and current maintenance of the information required on these drawings shall be a condition precedent to approval of the monthly requisitions for periodic payment.

E. At Substantial Completion the Contractor shall submit the complete set of Record Drawings to the Landscape Architect. The Landscape Architect will review these drawings and return them to the Contractor with necessary comments.

6. Upon receipt of AUTOCAD compatible disk of the original contract drawings from the Landscape Architect, the Contractor and Subcontractors shall transfer the As-Built information shown on the Record Drawings. This electronic drafting shall be done by an experienced CAD operator and match the original Drawings.

G. From the disks, the Contractor shall, at its own expense, prepare two sets of mylar transparencies, two microfilm copies, and one set of blue-line prints and then submit the transparencies, microfilm copies, and the blue-line prints to the Landscape Architect. Each sheet shall be clearly marked "Record Drawing" and bear the date of printing. Submission of accurate Record Drawings and their approval by the Landscape Architect shall be a condition precedent to final payment.

END OF SECTION

02 00 00
EXISTING CONDITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

2. This Section contains general information that applies to all work performed under the Contract and is inherently made a part of each specification section.

1.02 EXISTING CONDITIONS

1. Before submitting a bid, the Contractor shall make a thorough examination of the conditions at the site, checking the requirements of the Plans and Specifications with the existing site conditions.

2. No claim for extra compensation or extension of time will be allowed on account of the Contractor's failure to estimate properly the quantities, locations, and measurements of all items required to complete the work which could be discerned from visiting the site and a thorough review of bid documents, drawings and specifications.

3. The Contractor shall report an discrepancies to the Landscape Architect and request an interpretation prior to submission of bid.

4. Prior to any work, the Contractor shall contact Dig Safe (1-888-DIG-SAFE) to have utilities located and delineated.

1.03 SUBSURFACE DATA

1. Subbase soil testing has been completed and the results are attached to this Section. A sieve analysis is provided. Sieve analysis may be subject to interpretation and any conclusions drawn or generalizations made are the responsibility of the Contractor.

END OF SECTION

GEOTECHNICAL REPORT

BROCKSIDGE FIELD IMPROVEMENTS
SWAMPSCOTT, MASSACHUSETTS

July 21, 2016

GSI Project No. 216190

Prepared for:

Mr. Chris Huntress
Huntress Sports
17 Tewksbury Street
Andover, MA 01810

Prepared by:

Geotechnical Services, Inc.
55 North Stark Highway
Weare, NH 03281

Geotechnical Services Inc.
Geotechnical Engineering ◣ Environmental Studies ◣ Materials Testing ◣ Construction Monitoring

GEOTECHNICAL SERVICES INC.
Geotechnical Engineering ◢ Environmental Studies ◢ Materials Testing ◢ Construction Monitoring

July 21, 2016

Mr. Chris Huntress
Huntress Sports
17 Tewksbury Street
Andover, MA 01810

Advanced via Email: chris@huntressassociates.com

RE: Geotechnical Investigation Report
Brocksidge Field Improvements
Swampscott, Massachusetts
GSI Project No. 216190

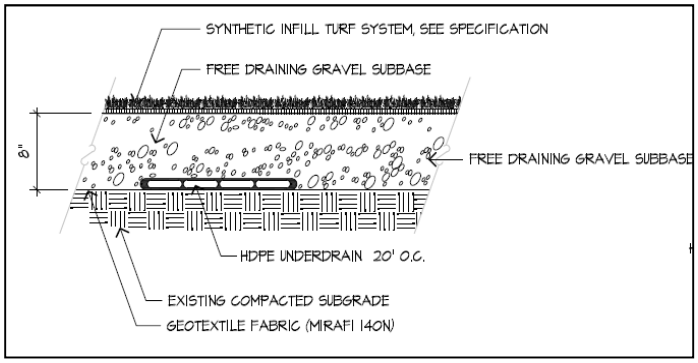
Dear Mr. Huntress:

Geotechnical Services, Inc. (GSI) is pleased to submit this report on the proposed design-development of a synthetic turf athletic field at the Brocksidge Field located in Swampscott, MA. The report consists of the subsurface data obtained through implementation of an exploration program, evaluation of the subsurface data, a summary of our understanding of the proposed development, and the results of an assessment for earthwork design options. In addition, issues identified as pertinent to the construction of the planned facilities are discussed. The work has been undertaken in accordance with our proposal letter, dated June 9, 2016 and your subsequent authorization. The content of this report is subject to the **Limitations** stated in Appendix A.

PROJECT UNDERSTANDING

The project site is located at 585 Humphrey Street in Swampscott, MA (See Figure 1, Project Locus). We understand that the planned athletic field renovation will replace the existing grass turf with a synthetic turf surface. The overall site is generally flat. We understand that the existing field was constructed in the mid to early 1900's apparently with fill soils over a wetlands/marsh area.

At the time this report was prepared, the proposed design of the synthetic turf system and the overall grading for the field has not been finalized for our review; however, we assume that the synthetic turf system will have a typical cross section shown in Detail 1 consisting of the synthetic turf infill, an 8-in. thick layer of free draining gravel Subbase and a geotextile fabric placed over the existing subgrade soils. The grading for the new synthetic field is assumed to match that of the existing grades with the possibility of re-grading on the order of up to 2-ft (cut/fill).



Detail 1 - Typical Synthetic Turf System

SUBSURFACE INVESTIGATION

Eleven (11) geoprobes, designated as G-1 to G-11, were drilled at the site on June 30, 2016 by New England Boring Contractors located in Derry, NH. The probes were conducted using a Geoprobe soil probing machine which collects continuous 5-ft long soil samples. Soil samples were collected in lengths ranging from 10 to 15-ft below the existing grade. The Geoprobes were observed by the GSI engineer and the soils encountered were classified in accordance with the Burmister Classification system. The approximate locations of the Geoprobes are shown on Figures 2, Exploration Location Plan. The finalized logs for the Geoprobes are included in Appendix B. Photographs of the collected soil samples were taken and are provided as Appendix C.

SUBSURFACE CONDITIONS

The subsurface conditions encountered in the investigation indicate that the site is underlain by the following soil units/deposits, described in order of increasing depth:

Surface Deposits: Topsoil, Track Surface and Pavement were encountered at the ground surface. Topsoil was encountered in probes G-4 to G-7 and G-9. The topsoil was generally 6-in. to 2-ft in thickness. The pavement was encountered in probe G-10 and was about 1.5-in in thickness and the track surface, consisting of stone dust material was encountered in probes G-2, G-3, and G-8. The thickness for the track surface material was 9 to 12-in.

Fill: The Fill soils were encountered in all of the probes. The thickness of the Fill soils varies from about 4-ft to 8-ft across the site. The Fill soils generally consist of gray to brown fine to coarse SAND with varying amounts of gravel and silt. Isolated pockets of Coal Ash were encountered within the Fill soils in probes G-5 and G-10.

Organic Soils: Organic Soils were encountered in all the probes except G-3. The Organic Soils generally consisted of brown PEAT and occasional pockets of gray to brown organic SILT. The thickness of the Organic Soils varies from about 2 to 5-ft, in probes G-1 to G-4, G-, G-7, G-10 and G-11, to 7 to 8.5-ft, in probes G-5, G-8 and G-9.

Clay: Clay soils were encountered beneath the Organic Soils at depths ranging from 4-ft (G-3) to 14-ft (G-5, G-8) below the existing grade. The Clay soils generally consist of gray CLAY with occasional pockets of gray fine sand or gray silt. All the probes terminated within the Clay stratum.

Groundwater: Groundwater was observed in all of the probes. The groundwater was encountered at depth ranging from 1.6 to 2.5-ft below the existing grade. Groundwater levels should be expected to vary with season, precipitation, snowmelt, and other factors such as tidal fluctuations. As a result, groundwater levels encountered during construction may differ from those encountered in the explorations.

GEOTECHNICAL DESIGN RECOMMENDATIONS

General

As a general guideline, foundation design and construction must conform to the applicable provisions of the Massachusetts Building Code, 8th Edition (Building Code).

Athletic Field Subgrade

Grading plans for the field renovation were not available at the time this report was prepared; however, we assume that minimal site grading (cutting and filling on the order of 2-ft or less) will be required to prepare the field and for the planned construction.

Considering the age of the existing field and our understanding that the field has not experienced any issues with settlement or differential settlements of the field surface, we anticipate that the existing fill soils will support the new turf field without having to excavate the organic soils encountered with depth beneath the field area.

We anticipate that the construction of the new athletic field will involve the following; stripping off the existing Topsoil, removing/relocating any existing utilities (drainage pipe, electric utilities and any other utilities), grading the field to the planned rough grade, proof-rolling the subgrade and constructing the synthetic turf system. The existing Fill soils are suitable for support of the synthetic turf system provided the subgrade is prepared using the recommendation provided herein.

CONSTRUCTION CONSIDERATIONS

General

In general, all excavation work, dewatering, and other construction activities should conform to the requirements of OSHA and all other applicable regulations. The site soils would typically be classified as Type C based on OSHA 29 CFR 1926.

Excavation

Construction will involve stripping off the Topsoil, adding or cutting fill to achieve design grades and constructing the synthetic field. We anticipate that most of the site grading can be accomplished with conventional earth-moving equipment.

Temporary cut soil slopes should, typically, be stable if constructed no steeper than about 1.5H:1V. Some sloughing and raveling should be anticipated in temporary earth slopes.

Construction Dewatering

It is anticipated that during the general site work, some dewatering measures will be necessary to conduct the construction "in-the-dry." The Contractor should take measures to prevent groundwater and stormwater from entering into excavated areas, and be prepared to remove ponded surface water by means of localized sumps and pumps. The Contractor should select whichever dewatering procedures may be effective to maintain dry, stable excavation bottoms. Tidal fluctuations may impact the groundwater levels at the site and create periodically high groundwater levels.

Existing Utilities and Foundations of Former Structures

Unknown and/or undocumented subsurface features, structures, and utilities may be present within the project site. The unknown structures and piping, along with the existing foundations and utilities for the existing seating structures, light poles, and associated construction debris should be anticipated during excavation work, and will need to be carefully removed to limit disturbance to underlying soil deposits and backfilled with compacted Granular Fill prior to construction of the planned field.

Preparation and Protection of Bearing Surfaces

Final excavation should be conducted in a manner that minimizes disturbance to the subgrade soils when excavating for bearing surfaces. All final excavation and construction should be conducted in-the-dry. We recommend that the exposed subgrade soils be observed in the field by a geotechnical engineer to confirm the projected soil bearing conditions. It may be necessary to over-excavate and replace weak, disturbed or otherwise unacceptable bearing materials.

Following excavation to bearing grades, exposed soil surfaces should be re-compacted (proofrolled) prior to placing engineered fill, with a minimum of four passes with a heavy vibratory roller or other heavy vibratory compaction equipment.

If subgrade protection difficulties are encountered due to surface or groundwater, various methods can be utilized:

- Leave subgrades high until immediately before construction of the turf field to minimize the time the subgrade is exposed.
- Use a smooth edged bucket to excavate to the bearing subgrade and eliminate proof-rolling activities.

Each such encounter is probably best resolved individually in the field upon observation of the subgrade conditions.

Compaction

Minimum compaction requirements refer to percentages of the maximum dry density determined in accordance with ASTM D1557. Recommended compaction requirements are as follows:

Location	Minimum Compaction Requirements
Beneath athletic field	95 %
Landscaped areas	90 % nominal compaction

Filling and Backfilling

Placement of compacted soil fills should not be conducted when air temperatures are low enough (approximately 30 degrees F, or below) to cause freezing of the moisture in the fill during or before placement. Fill materials should not be placed on snow, ice or uncompacted frozen soil. Compacted 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.

Soil Materials

- ***Granular Fill***

  Granular Fill should consist of clean, sand and gravel, free of organic material, snow ice, or other objectionable materials and should be well-graded within the following limits:

Sieve Size	Percent Passing by Weight
6 inch	100
No. 4	30-90
No. 40	10-50
No. 200	0-12

  Granular Fill should be placed in 9-inch loose lift thickness, unless otherwise specified. Cobbles exceeding 6 inch in size should be screened and removed prior to compaction. Compaction equipment should be selected to meet the requirements of that particular location in earthwork operation, thus the Contractor should provide both vibratory and static rollers, as well as hand-guided vibratory plate compactors. Where vibratory plate compactor is used the loose lift thickness should not exceed 6 inch. A minimum of four systematic passes of the compaction equipment should be implemented to compact each lift.

FUTURE STRUCTURES

We understand that a new grandstand, bleachers and a utilities building are planned in a future phase of the development. The design recommendations for these structures should be evaluated based on the anticipated load requirements of their respective foundation systems. It may be necessary to conduct an additional subsurface investigation (test borings) to determine the anticipate soil bearing capacity and finalize the foundation system for the planned structures.

CONSTRUCTION MONITORING

It is recommended that a geotechnical engineer or technician qualified by training and experience be present during construction to:

- Confirm that soils used as fill and backfill are in accordance with the contract requirements.
- Observe and test placement and compaction of Granular Fill and other compacted fills.
- Observe preparation of field bearing surfaces.

Monitoring by experienced personnel will be important to the efficiency and integrity of the geotechnical aspects of the project construction. It is recommended that GSI be retained to provide the recommended monitoring services during construction. This will enable us to observe compliance with the design concepts, help resolve construction problems and to facilitate design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

PLAN REVIEW

It is recommended that GSI be provided the opportunity to review the final plans in order to confirm that the recommendations made in this report were interpreted and implemented as intended.

CLOSURE

GSI appreciates the opportunity for participating in this early phase of the project, and looks forward to our continuing association during its subsequent phases towards its successful completion. In the mean time, please do not hesitate to contact us, if you have any questions on the content of this report.

Very truly yours,

GEOTECHNICAL SERVICES, INC.

Glen V. Zoladz, P.E.
Project Manager

Harry K. Wetherbee, P.E.
Principal Engineer

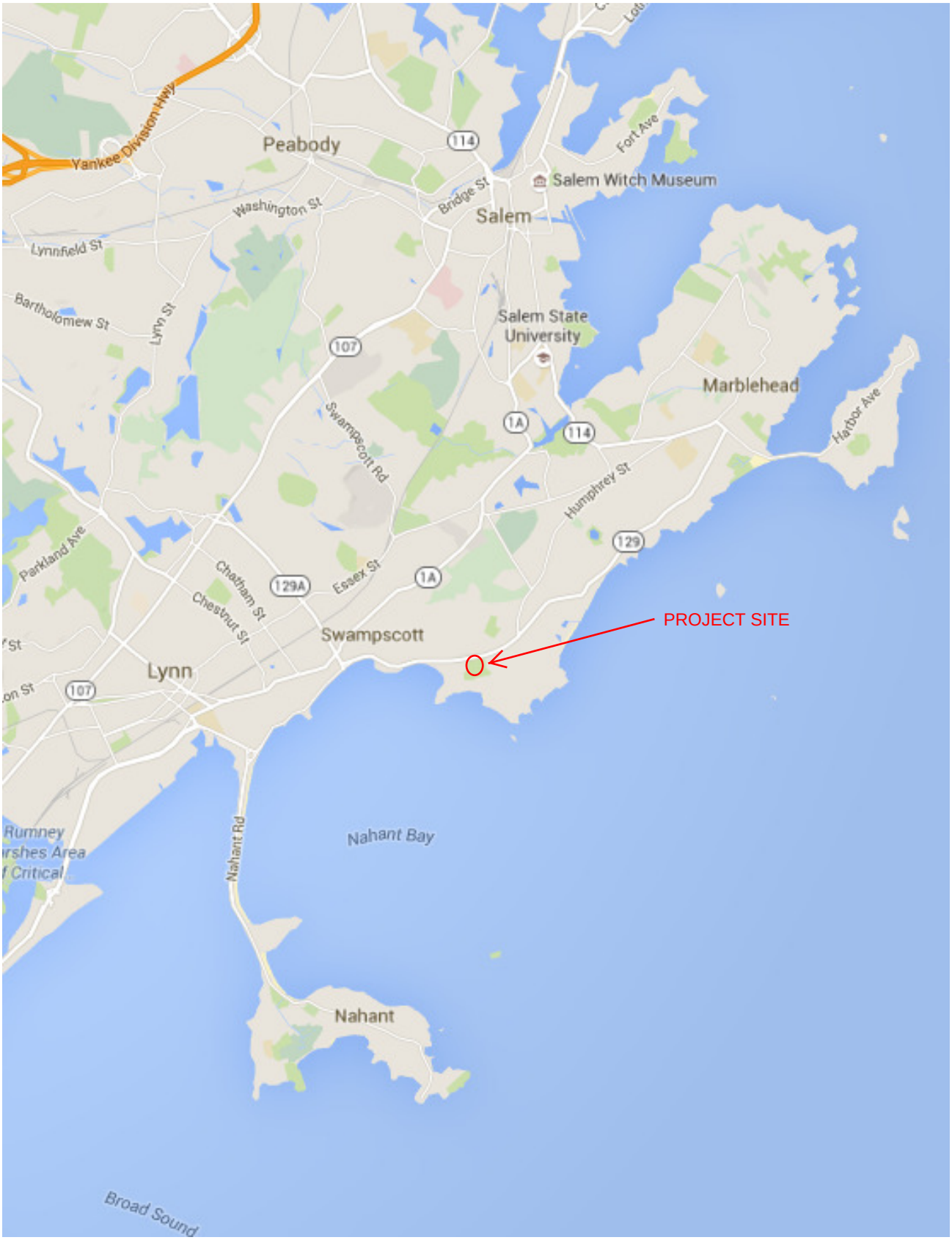


FIGURE 1–PROJECT LOCUS

BLOCKSIDGE FIELD
SWAMPSCOTT, MA
GSI PROJECT NO. 216190

LEGEND:

G-1 GEOPROBE I.D. AND APPROXIMATE LOCATION

(MW) GROUNDWATER MONITORING WELL

FIGURE 2–EXPLORATION LOCATION PLAN

BLOCKSIDGE FIELD
SWAMPSCOTT, MA
GSI PROJECT NO. 216190

APPENDIX A

LIMITATIONS

LIMITATIONS

Explorations

1. The analyses, recommendations and designs submitted in this report are based in part upon the data obtained from preliminary subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretation of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the individual test pit and/or boring logs.

3. Water level readings have been made in the test pits and/or test borings under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors differing from the time the measurements were made.

Review

4. It is recommended that this firm be given the opportunity to review final design drawings and specifications to evaluate the appropriate implementation of the recommendations provided herein.

5. In the event that any changes in the nature, design, or location of the proposed areas are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of the report modified or verified in writing by Geotechnical Services, Inc.

Construction

6. It is recommended that this firm be retained to provide geotechnical engineering services during the earthwork phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Use of Report

7. This report has been prepared for the exclusive use of Huntress Sports in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

8. This report has been prepared for this project by Geotechnical Services, Inc. This report was completed for preliminary design purposes and may be limited in its scope to complete an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to evaluation considerations only.

APPENDIX B

GEOPROBE LOGS

TEST BORING LOG

Boring No. G-1

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	37					Gray to Brown, f/c SAND and SILT, little to trace fine gravel **-FILL-**
5		G2	5-10	38				~6	
								~8	Brown, PEAT **-ORGANIC SOILS-**
10		G3	10-15	53					Gray to Brown, CLAY with occasional seams of silt and fine sand **-CLAY-**
15									Bottom of Exploration at 15-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	8:30			~2.3

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-1

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TEST BORING LOG

Boring No. G-2

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	35				0.8	Stone Dust (Track Surface)
									Gray/Brown, f/c SAND, some fine gravel, little silt
									-FILL-
5		G2	5-10	38				~7	
									Brown, PEAT
									-ORGANIC SOILS-
10		G3	10-15	31				~10	Dark gray, SILT, little organics
									-ORGANIC SOILS-
								~11.5	Gray, CLAY
									-CLAY-
15									Bottom of Exploration at 15-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	9:10			~2.2

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-2

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TEST BORING LOG

Boring No. G-3

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	46				0.8	Stone Dust (Track Surface)
									Gray/brown, f/c SAND, little silt, trace coal ash, coal pieces **-FILL-**
								~4	
5		G2	5-10	55					Gray/brown, mottled CLAY **-CLAY-**
10									Bottom of exploration at 10-ft.
15									
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	9:40			~2.5

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

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TEST BORING LOG

Boring No. G-4

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	44				~0.9	Topsoil
									Dark brown, f/c SAND, little silt, tr. coal ash
									-FILL-
5		G2	5-10	24				~6.5	
									Brown PEAT
									-ORGANIC SOILS-
10		G3	10-15	35				~10	Gray, SILT
									-CLAY-
								~11.5	Gray, CLAY
									-CLAY-
15									Bottom of Exploration at 15-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	11:15			~2.5

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-4

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TEST BORING LOG

Boring No. G-5

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	46					Topsoil **-TOPSOIL-**
								~2.1	Dark gray, f/c SAND, tr. silt, coal ash **-FILL-**
5		G2	5-10	24				~6.5	Brown, PEAT **-ORGANIC SOILS-**
10		G3	10-15	29				~14	Gray, SILT and CLAY **-CLAY-**
15									Bottom of Exploration at 15-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	10:50			~2.5

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-5

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TEST BORING LOG

Boring No. G-6

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	40				1.1	Topsoil
									Black to Brown, f/c SAND, little silt
									-FILL-
5		G2	5-10	19				~5	
									Brown PEAT
									-ORGANIC SOILS-
								~9.5	
10									Gray CLAY **-CLAY-**
									Bottom of exploration at 10-ft.
15									
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	10:30			~2.5

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-6

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TEST BORING LOG

Boring No. G-7

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	35				0.5	Topsoil
								1.1	Gray, f/m SAND
								2.1	Gray, f/c SAND and fine GRAVEL, little silt
									Gray/brown, SILT, little f/m sand **-FILL-**
5		G2	5-10	35				~6	
									Brown, PEAT **-ORGANIC SOILS-**
								~9	
10		G3	10-15	54					Gray to gray/brown, CLAY **-CLAY-**
15									Bottom of Exploration at 15-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	8:12			~2.3

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-7

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TEST BORING LOG

Boring No. G-8

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	41				~1	Stone Dust (Track Surface)
									Gray to dark brown, f/c SAND, little fine gravel, silt
									-FILL-
5		G2	5-10	29				~7	
									Dark brown/black, PEAT, wood fibers
									-ORGANIC SOILS-
10		G3	10-15	44					Dark br., SILT and PEAT
								~14	Gray, f/m SAND (Clay at tip)
15									**-CLAY-**
									Bottom of Exploration at 15-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	11:40			~2

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-8

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TEST BORING LOG

Boring No. G-9

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	31				0.5	Topsoil
									Gray/brown, f/c SAND, little fine gravel, silt
									-FILL-
5		G2	5-10	14				~5	
									Brown, PEAT
									-ORGANIC SOILS-
10		G3	10-15	8				~13	
									Gray, CLAY
									-CLAY-
15									Bottom of Exploration at 15-ft.
									1-in. I.D. PVC Slotted Screen Well installed in completed probe .
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	10:00			~1.8

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-9

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TEST BORING LOG

Boring No. G-10

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	41					1.5-in. Asphalt Pavement Gray, f/m SAND, tr. c-sand
								~1.8	Gray/br., f/c SAND, little silt **-FILL-**
5		G2	5-10	43				~7	
								~8	Black COAL ASH
10		G3	10-15	28					Brown, PEAT **-ORGANIC SOILS-**
								~12	Gray, fine SAND, Clay in tip **-CLAY-**
15									Bottom of Exploration at 15-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	12:30			~2

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-10

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TEST BORING LOG

Boring No. G-11

Page 1 of 1

Project	Blocksidge Field	Project No.	216190	Elevation	N/A
Location	Swampscott, MA	Inspector	G. Zoladz	Datum	N/A
Client	Huntress Sports	Project Manager	G. Zoladz	Start	6/30/2016
Contractor	NEBC	Checked By	-	Finish	6/30/2016
Driller	C. Downing	Drill Rig	Geoprobe	Model	-

Item:	Auger	Casing	Sampler	Core Barrel
Type	-	-	-	-
Inside Diameter (in.)	-	-	-	-
Hammer Weight (lb)	-	-	-	
Hammer Fall (in.)	-	-	-	

☐ Truck ☐ Skid
☑ Track ☐ ATV
☐ Bomb. ☑ Geoprobe
☐ Tripod ☐ Other

Hammer Type:
☐ Safety Hammer
☐ Doughnut
☐ Automatic

☐ Winch ☐ Cat Head ☐ Roller Bit ☐ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample Data No.	Depth (ft)	Rec. (in.)	SPT (Blows/ 6-in.)	Rock RQD (%)	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		G1	0-5	34				~.9	Gravel Base Coarse
									Gray to dark brown, silty f/m SAND, little fine gravel, c-sand **-FILL-**
5		G2	5-10	22				~5	Dark brown/black, PEAT **-ORGANIC SOILS-**
10		G3	10-15	18				~10	Gray silty fine SAND **-CLAY-**
15									Bottom of Exploration at 15-ft.
20									
25									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
30-Jun	0:20			~1.6

Sample Identification
O = Open Ended
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:

G-11

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APPENDIX C

PHOTOGRAPHS

Photo 1 G-1 (0 to 5-ft sample Interval)

Photo 2 G-1 (5 to 10-ft sample Interval)

Photo 3 G-1 (10 to 15-ft sample Interval)

Photo 4 G-2 (0 to 5-ft sample Interval)

Photo 5 G-2 (5 to 10-ft sample Interval)

Photo 6 G-2 (10 to 15-ft sample Interval)

Photo 7 G-3 (0 to 5-ft sample Interval)

Photo 8 G-3 (5 to 10-ft sample Interval)

Photo 9 G-4 (0 to 5-ft sample Interval)

Photo 10 G-4 (5 to 10-ft sample Interval)

Photo 11 G-4 (10 to 15-ft sample Interval)

Photo 12 G-5 (0 to 5-ft sample Interval)

Photo 13 G-5 (5 to 10-ft sample Interval)

Photo 14 G-6 (0 to 5-ft sample Interval)

Photo 15 G-6 (5 to 10-ft sample Interval)

Photo 16 G-7 (0 to 5-ft Sample Interval)

Photo 17 G-7 (5 to 10-ft Sample Interval)

Photo 18 G-7 (10 to 15-ft Sample Interval)

Photo 19 G-8 (0 to 5-ft Sample Interval)

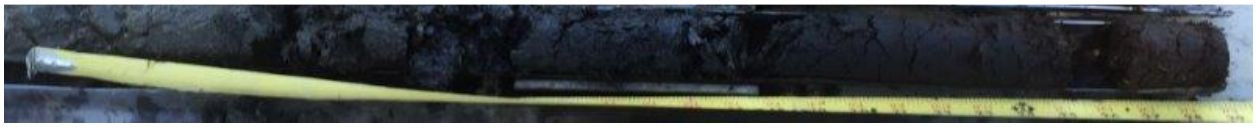


Photo 20 G-8 (5 to 10-ft Sample Interval)

Photo 21 G-8 (10 to 15-ft Sample Interval)

Photo 22 G-9 (0 to 5-ft Sample Interval)

Photo 23 G-9 (5 to 10-ft Sample Interval)

Photo 24 G-9 (10 to 15-ft Sample Interval)

Photo 25 G-10 (0 to 5-ft Sample Interval)

Photo 26 G-10 (5 to 10-ft Sample Interval)

Photo 27 G-10 (10 to 15-ft Sample Interval)

Photo 28 G-11 (0 to 5-ft Sample Interval)

Photo 29 G-11 (5 to 10-ft Sample Interval)

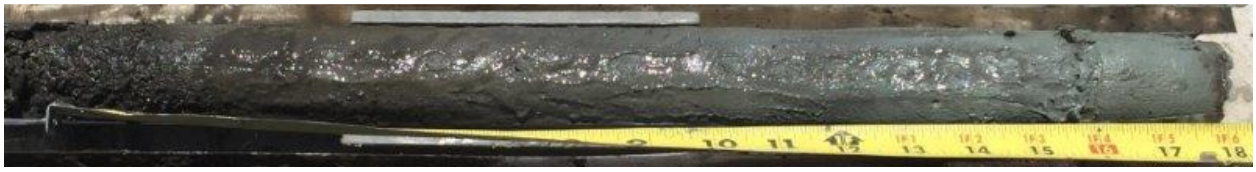


Photo 30 G-11 (10 to 15-ft Sample Interval)

October 28, 2016

Mr. Gino Cresta Jr.
Director of Public Works
Town of Swampscott
22 Monument Ave
Swampscott, MA 01907

Re: Results of Additional Soil Analyses
Blocksidge Field Turf Project
Swampscott, Massachusetts

Dear Mr. Cresta:

Cooperstown Environmental LLC (Cooperstown) is pleased to provide you with this revised summary report of our findings in support of planned renovations at the Blocksidge Athletic Field at 601 Humphrey Street in Swampscott, Massachusetts (the Site). This summary report includes the results of soil sampling and analyses as described in our proposal dated June 9, 2016 and our addendum dated September 27, 2016.

PROJECT OVERVIEW

We understand that Huntress Sports of Andover, Massachusetts (Huntress) is preparing plans and specifications for a proposed synthetic turf athletic field, grandstands, and a press box at the Blocksidge Athletic Field located in Phillips Park. The park is the location of previous environmental response actions conducted from 2006 through 2009 under the Massachusetts Department of Environmental Protection's (DEP's) Release Tracking Number (RTN) 3-26072.

As part of the DEP activities, two Activity and Use Limitations (AULs) were placed on the property due to 1) safety risks resulting from potential sharp objects (such as glass) that could be present in some of the site soils, and 2) potential health risks resulting from elevated concentrations of polyaromatic hydrocarbons (PAHs) in certain soils. The AULs required that a Licensed Site Professional (LSP) be involved in any future intrusive activities that are conducted at the park. Furthermore, the LSP must prepare a soil management plan and a health and safety plan prior to implementation of any activities disturbing soil or the excavation of soil.

In support of the planned field construction, Cooperstown was contracted by the Town of Swampscott (Town) to assist with the turf replacement project and maintain compliance with the terms of the AULs. In addition, because soil excavation and removal will be required throughout the project area, we conducted soil sampling and laboratory analyses for "disposal characterization" purposes of the soil expected to be removed.

The results of the soil characterization testing will be used for the preparation of a Release Abatement Measure (RAM) Plan to be submitted to DEP prior to the project. The RAM Plan will

address the handling, transport, and disposal of these materials as well as monitoring procedures. The sample results also will be used to help identify a suitable off-site facility (or facilities) that could accept any materials deemed to require off-site disposal.

SOIL INVESTIGATIONS – INITIAL

On June 22, 2016, Cooperstown mobilized to the Site and collected soil samples with a hand auger from ten separate locations within the proposed Limits of Work **(Figure 1)**. These samples were taken about 25 feet from the edge of the limit of work on both sides of the field corresponding to the 20-yard line, 50-yard line, 20-yard line, and back of each end zone. We collected one grab sample from each location (SS-1 through SS-10) to characterize the soil quality. Each sample location was designed to represent approximately 500 cubic yards (cy) of soil to be removed, based on a rectangular grid around each sample location and an expected depth of removal of 14 inches.

Typically, disposal facilities require characterization at the ratio of one sample per 500 cy of soil. The samples were submitted under standard chain-of-custody procedures to New England Testing Laboratories (NetLab) of North Providence, RI, and each sample was analyzed for: Resource Conservation and Recovery Act (RCRA) 8 metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH). In addition, we analyzed the samples for standard disposal characterization parameters including: pH, conductivity, flashpoint, and reactivity.

FINDINGS & RESULTS – ROUND 1

During the soil sampling across the limits of proposed construction, Cooperstown observed dark brown topsoil with no apparent staining, odors, glass, or other sharp objects noted from the surface to 14 inches below ground surface (bgs), the maximum depth of sampling. A summary of the analytical results from the ten soil samples are presented in **Table 1.** The full laboratory analytical reports are attached as **Appendix A**.

There were no VOCs or PCBs reported in any of the ten soil samples submitted for laboratory analysis. Detectable concentrations of metals were present in all samples, but these concentrations are below the DEP's strictest Reportable Concentrations (RCS-1) and consistent with naturally occurring levels. SVOCs (specifically PAHs) were detected in seven of the ten samples. Only one sample location (SS-5) had a PAH concentration above the RCS-1 concentration. This sample was collected in the end zone from an area that has been identified as having elevated PAH concentrations during previous investigations. As such, the result is consistent with the prior response actions and is not a new condition. Lastly, there were trace concentrations of petroleum hydrocarbons (measured as TPH) well below RCS-1 concentrations reported in all the samples.

SOIL INVESTIGATIONS – ROUND 2

On October 11, 2016, Cooperstown returned to the Site to collect confirmatory soil samples with a hand auger from thirteen separate locations within the proposed Limits of Work **(Figure 1)**. Nine samples were taken at the same locations as the Round 1 samples taken on June 22, 2016 (locations SS-1 through SS-4 and SS-6 through SS-10). At four locations surrounding sample location SS-5, new

samples were taken 20 feet in the Northwest, Northeast, Southwest, and Southeast directions (labeled SS-5A through SS-5D).

The samples were again submitted to NetLab for analyses. Samples SS-1 through SS-4 and SS-6 through SS-10 were analyzed for Extractable Petroleum Hydrocarbons (EPH). The samples SS-5A through SS-5D were analyzed for semi-volatile organic compounds (SVOCs) via EPA 8270.

FINDINGS & RESULTS

At location SS-5, the four new samples that delineate the initial slightly elevated sample result all showed contaminant levels below regulated thresholds. Therefore, this sampling was successful in minimizing the need for off-site landfill disposal of the soil at that location. Now, only about 75 cy of soil will require landfill disposal.

At the other nine locations, the initial testing found Total Petroleum Hydrocarbons (TPH) at 60 – 225 mg/kg. We resampled those nine locations and tested for EPH, a better test and more likely to accurately characterize petroleum levels in the topsoil. The EPH tests showed that three of the locations had no detected EPH. At the other six locations, C9 – C18 Aliphatics and C19 – C36 Aliphatics were all below detectable levels and levels of C11 – C22 Aromatics ranged from 19.2 – 72 mg/kg, all well below levels of concern. For comparison value the threshold that would require notification to DEP would be 1,000 mg/kg. The average level of EPH from these nine locations is 22 mg/kg, and the average of the six locations where detectable levels were found is 33 mg/kg.

IMPLICATIONS FOR SOIL HANDLING

Based on the results of our characterization, the soils from the end-zone area around SS-5 have a slightly elevated PAH concentration. This soil should be sent to an in-state landfill. Based on our second round of testing, which delineated the area of elevated PAHs, sample SS-5 represents 75 cy of soil.

The vast majority of the soils that will be removed from the field contain contaminant concentrations below DEP-regulated standards. These soils are eligible for any appropriate local re-use provided they are managed consistent with the Similar Soils Provision Guidance (WSC#-13-500) and the Massachusetts Contingency Plan (MCP) regulations, specifically 310 CMR 40.0032(3).

The Similar Soils guidance allows soils to be moved to another site if the concentrations in the soil being moved are not "significantly" higher than those at the receiving site. In our professional opinion, the soil characterization results presented above demonstrate that the levels of contaminants in the topsoil are at a level consistent with "background" in an urbanized area. The slight detections of C11 – C22 Aromatics likely resulted from atmospheric deposition from automotive exhaust or products of incomplete combustion. Such findings are exempt from the notification requirements of the MCP, even at far higher concentrations than were documented here.

Based on these findings, the soil that is to be removed from the field – with the sole exception of the 75 cy of soil around SS-5 – may be used by the Town elsewhere without restriction as it is not considered to contain levels of contaminants under the MCP regulations.

WORK STILL TO BE COMPLETED

We have initiated discussions with appropriate facilities that would be able to accept the in-state landfill soils. We are preparing drafts of a Bill of Lading, the LSP Opinion Letter, a soil profile, and other documentation that would be required by the receiving facility (i.e., a complete soil profile package).

In support of bidding and construction, we will prepare specifications that includes general requirements, site work, and special construction considerations for the materials identified on site that will be removed during the work. This specification will address handling, excavation, transport, and disposal requirements, as well as health and safety considerations. These specifications will be incorporated into the RAM Plan to be submitted to DEP, which will serve as the Soil Management Plan. Finally, we will prepare a Health and Safety Plan for the work.

Cooperstown appreciates the opportunity to assist the Town in this project at the Blocksidge Athletic field. We are available to provide any clarification as necessary.

Very sincerely yours,

Cooperstown Environmental LLC

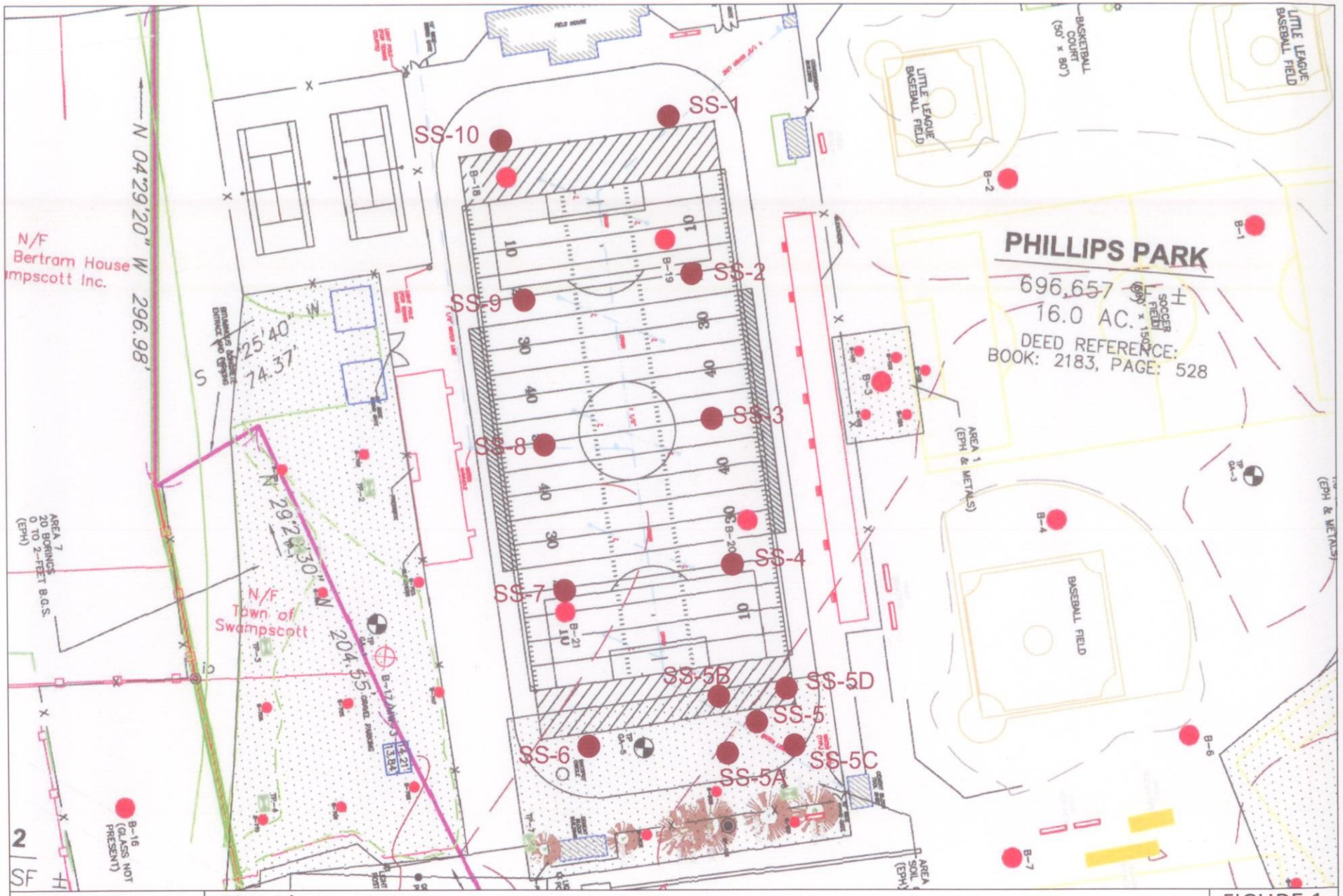
Jeanne Westervelt

Jeanne Westervelt PG, LSP
Technical Services Director

Cooperstown Environmental LLC

James T. Curtis

James T. Curtis, PE, LSP
President



COOPERSTOWN environmental
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Site Plan

601 Humphrey Street
Swampscott, Massachusetts

SOURCE: Green Seal Environmental, Inc.

FIGURE 1
N
SCALE: 1"=200'

Table 1 - Soil Sampling Results
Blocksidge Field, Swampscott

Compound Name	RCS-1	Lined Landfill	Unlined Landfill	Units	SS-1 6/22/2016		SS-2 6/22/2016		SS-3 6/22/2016		SS-4 6/22/2016		SS-5 6/22/2016		SS-5A 10/11/2016		SS-5B 10/11/2016		SS 10/11
					Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result
Total Metals																			
Arsenic	20	40	40	mg/kg	7.95	1.05	10.1	1.22	8.53	1.16	8.07	1.15	6.99	0.99	NA	NA	NA	NA	NA
Barium	1000	NS	NS	mg/kg	40.6	0.52	34.8	0.61	44.7	0.58	49.7	0.57	36.4	0.5	NA	NA	NA	NA	NA
Cadmium	70	80	30	mg/kg	ND	0.52	ND	0.61	ND	0.58	ND	0.57	ND	0.5	NA	NA	NA	NA	NA
Chromium	100	1000	1000	mg/kg	13.1	0.52	13.9	0.61	23.6	0.58	25.4	0.57	14.2	0.5	NA	NA	NA	NA	NA
Lead	200	2000	1000	mg/kg	74.5	0.52	75.5	0.61	52.7	0.58	67.8	0.57	92.7	0.5	NA	NA	NA	NA	NA
Mercury	20	10	10	mg/kg	0.154	0.075	0.464	0.084	0.333	0.08	0.604	0.08	0.688	0.071	NA	NA	NA	NA	NA
Selenium	400	NS	NS	mg/kg	ND	1.05	ND	1.22	ND	1.16	ND	1.15	ND	0.99	NA	NA	NA	NA	NA
Silver	100	NS	NS	mg/kg	ND	0.52	ND	0.61	ND	0.58	ND	0.57	ND	0.5	NA	NA	NA	NA	NA
Lead (After TCLP)	NS	5	5	mg/l															
Volatile Organic Compounds (VOCs)																			
1,1- Dichloropropene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	30	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethene	0.005	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,1-Dichloroethane	0.4	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,1-Dichloroethene	3	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	2	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,2-dibromo-3-chloropropane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	9	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,2-Dichloropropane	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	3	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	0.7	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
1,4-Dioxane	0.2	NS	NS	mg/kg	ND	21	ND	22	ND	22	ND	25	ND	22	NA	NA	NA	NA	NA
2,2-dichloropropane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
2-Butanone	4	NS	NS	mg/kg	ND	0.21	ND	0.22	ND	0.22	ND	0.25	ND	0.22	NA	NA	NA	NA	NA
2-chlorotoluene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
2-Hexanone	100	NS	NS	mg/kg	ND	0.21	ND	0.22	ND	0.22	ND	0.25	ND	0.22	NA	NA	NA	NA	NA
4-chlorotoluene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	0.4	NS	NS	mg/kg	ND	0.21	ND	0.22	ND	0.22	ND	0.25	ND	0.22	NA	NA	NA	NA	NA
Acetone	6	NS	NS	mg/kg	ND	0.21	ND	0.22	ND	0.22	ND	0.25	ND	0.22	NA	NA	NA	NA	NA
Benzene	2	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Bromobenzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Bromochloromethane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Bromodichloromethane	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Bromoform	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Bromomethane	0.5	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Carbon Disulfide	100	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Carbon Tetrachloride	5	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Chlorobenzene	1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Chloroethane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Chloroform	0.2	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Chloromethane	NS	NS	NS	mg/kg	ND	0.085	ND	0.089	ND	0.087	ND	0.099	ND	0.087	NA	NA	NA	NA	NA
cis 1,2-dichloroethene	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	0.01	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Dibromochloromethane	0.005	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Dibromomethane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Diethyl ether	100	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Diisopropyl Ether	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Ethyl Tert-butyl ether	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Ethylbenzene	40	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Ethylene Dibromide	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Hexachlorobutadiene	30	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Isopropylbenzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
m,p-xylene	300	NS	NS	mg/kg	ND	0.085	ND	0.089	ND	0.087	ND	0.099	ND	0.087	NA	NA	NA	NA	NA

Table 1 - Soil Sampling Results
Blocksidge Field, Swampscott

Compound Name	RCS-1	Lined Landfill	Unlined Landfill	Units	SS-1 6/22/2016		SS-2 6/22/2016		SS-3 6/22/2016		SS-4 6/22/2016		SS-5 6/22/2016		SS-5A 10/11/2016		SS-5B 10/11/2016		SS 10/11
					Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result
Methylene Chloride	0.1	NS	NS	mg/kg	ND	0.21	ND	0.22	ND	0.22	ND	0.25	ND	0.22	NA	NA	NA	NA	NA
Naphthalene	4	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
n-butyl Benzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
n-Propylbenzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
o-xylene	300	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
p-isopropyltoluene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
sec-butylbenzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Styrene	3	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Tert-amyl Methyl Ether	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
tert-butyl Alcohol	NS	NS	NS	mg/kg	ND	0.21	ND	0.22	ND	0.22	ND	0.25	ND	0.22	NA	NA	NA	NA	NA
tert-butyl Methyl Ether	0.1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
tert-butylbenzene	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Tetrachloroethene	1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Tetrahydrofuran	500	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Toluene	30	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
trans1,2-dichloroethene	1	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	0.01	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Trichloroethene	0.3	NS	NS	mg/kg	ND	0.085	ND	0.089	ND	0.087	ND	0.099	ND	0.087	NA	NA	NA	NA	NA
Trichlorofluoromethane	NS	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Vinyl Chloride	0.7	NS	NS	mg/kg	ND	0.042	ND	0.045	ND	0.043	ND	0.05	ND	0.043	NA	NA	NA	NA	NA
Total VOCs	NS	10	4	mg/kg	0		0		0		0		0						
Polychlorinated Biphenyls (PCBs)																			
Aroclor 1016	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Aroclor 1221	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Aroclor 1232	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Aroclor 1242	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Aroclor 1248	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Aroclor 1254	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Aroclor 1260	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Aroclor 1262	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Aroclor 1268	1	NS	NS	mg/kg	ND	0.182	ND	0.2	ND	0.404	ND	0.794	ND	0.177	NA	NA	NA	NA	NA
Total PCBs	NS	2	2	mg/kg	0		0		0		0		0						
Semivolatile Organic Compounds (SVOCs)																			
1,2,4-Trichlorobenzene	2	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
1,2-Dichlorobenzene	9	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
1,3-Dichlorobenzene	3	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
1,4-Dichlorobenzene	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
2,4,5-Trichlorophenol	4	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
2,4,6-Trichlorophenol	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
2,4-Dichlorophenol	0.7	NS	NS	mg/kg	ND	0.37	ND	0.41	ND	0.4	ND	0.4	ND	0.35	ND	0.16	ND	0.17	ND
2,4-Dimethylphenol	0.7	NS	NS	mg/kg	ND	0.74	ND	0.82	ND	0.8	ND	0.79	ND	0.69	ND	0.41	ND	0.43	ND
2,4-Dinitrophenol	3	NS	NS	mg/kg	ND	0.37	ND	0.41	ND	0.4	ND	0.4	ND	0.35	ND	0.82	ND	0.86	ND
2,4-Dinitrotoluene	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.41	ND	0.43	ND
2,6-Dinitrotoluene	100	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
2-Chloronaphthalene	1000	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
2-Chlorophenol	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
2-Methylnaphthalene	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	0.23	0.14	ND	0.16	ND	0.17	ND
2-Methylphenol	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
2-Nitroaniline	NS	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
2-Nitrophenol	100	NS	NS	mg/kg	ND	0.37	ND	0.41	ND	0.4	ND	0.4	ND	0.35	ND	0.16	ND	0.17	ND
3- & 4-Methylphenol	NS	NS	NS	mg/kg	ND	0.3	ND	0.33	ND	0.32	ND	0.32	ND	0.28	ND	0.41	ND	0.43	ND
3,3'-Dichlorobenzidine	3	NS	NS	mg/kg	ND	0.37	ND	0.41	ND	0.4	ND	0.4	ND	0.35	ND	0.33	ND	0.34	ND
3-Nitroaniline	NS	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.41	ND	0.43	ND
4,6-Dinitro-2-methylphenol	50	NS	NS	mg/kg	ND	0.37	ND	0.41	ND	0.4	ND	0.4	ND	0.35	ND	0.16	ND	0.17	ND
4-Bromophenyl phenyl ether	100	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.41	ND	0.43	ND
4-Chloro-3-methylphenol	1000	NS	NS	mg/kg	ND	0.37	ND	0.41	ND	0.4	ND	0.4	ND	0.35	ND	0.16	ND	0.17	ND
4-Chloroaniline	1	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.41	ND	0.43	ND
4-Chlorophenyl phenyl ether	1000	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
4-Nitroaniline	1000	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
4-Nitrophenol	100	NS	NS	mg/kg	ND	0.37	ND	0.41	ND	0.4	ND	0.4	ND	0.35	ND	0.16	ND	0.17	ND
Acenaphthene	4	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	0.58	0.14	ND	0.41	ND	0.43	ND
Acenaphthylene	1	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	0.16	0.14	ND	0.16	ND	0.17	ND
Aniline	1000	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND

Table 1 - Soil Sampling Results
Blocksidge Field, Swampscott

Compound Name	RCS-1	Lined Landfill	Unlined Landfill	Units	SS-1 6/22/2016		SS-2 6/22/2016		SS-3 6/22/2016		SS-4 6/22/2016		SS-5 6/22/2016		SS-5A 10/11/2016		SS-5B 10/11/2016		SS 10/11
					Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result
Anthracene	1000	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	1.6	0.14	ND	0.16	ND	0.17	ND
Benzo(a)anthracene	7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	2.7	0.14	ND	0.16	ND	0.17	ND
Benzo(a)pyrene	2	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	2.4	0.14	ND	0.16	ND	0.17	0.7
Benzo(b)fluoranthene	7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	3	0.14	ND	0.16	ND	0.17	0.81
Benzo(g,h,i)perylene	1000	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	1.4	0.14	ND	0.16	ND	0.17	0.64
Benzo(k)fluoranthene	70	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	1.1	0.14	ND	0.16	ND	0.17	0.62
Benzoic acid	1000	NS	NS	mg/kg	ND	1.1	ND	1.2	ND	1.2	ND	1.2	ND	1	ND	0.16	ND	0.17	0.69
bis(2-Chloroethoxy)methane	500	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	1.2	ND	1.3	ND
bis(2-Chloroethyl)ether	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
bis(2-chloroisopropyl)ether	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
bis(2-Ethylhexyl)phthalate	200	NS	NS	mg/kg	ND	0.22	ND	0.25	ND	0.24	ND	0.24	ND	0.21	ND	0.25	ND	0.26	ND
Butyl benzyl phthalate	100	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Chrysene	70	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	2.4	0.14	ND	0.16	ND	0.17	0.71
Dibenzo(a,h)anthracene	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	0.38	0.14	ND	0.16	ND	0.17	ND
Dibenzofuran	100	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	0.56	0.14	ND	0.16	ND	0.17	ND
Diethyl phthalate	10	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Dimethyl phthalate	0.7	NS	NS	mg/kg	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.16	ND	0.17	ND
Di-n-butylphthalate	50	NS	NS	mg/kg	ND	0.22	ND	0.25	ND	0.24	ND	0.24	ND	0.21	ND	0.25	ND	0.26	ND
Di-n-octyl phthalate	1000	NS	NS	mg/kg	ND	0.22	ND	0.25	ND	0.24	ND	0.24	ND	0.21	ND	0.25	ND	0.26	ND
Fluoranthene	1000	NS	NS	mg/kg	0.28	0.15	ND	0.16	0.29	0.16	0.25	0.16	4.3	0.14	0.2	0.16	ND	0.17	ND
Fluorene	1000	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	0.68	0.14	ND	0.16	ND	0.17	ND
Hexachlorobenzene	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Hexachlorobutadiene	30	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Hexachlorocyclopentadiene	50	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Hexachloroethane	0.7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Indeno(1,2,3-cd)pyrene	7	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	1.5	0.14	ND	0.16	ND	0.17	0.6
Isophorone	100	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Naphthalene	4	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	0.18	0.14	ND	0.16	ND	0.17	ND
Nitrobenzene	500	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
n-Nitrosodimethylamine	50	NS	NS	mg/kg	ND	0.22	ND	0.25	ND	0.24	ND	0.24	ND	0.21	ND	0.25	ND	0.26	ND
n-Nitroso-di-n-propylamine	50	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
n-Nitrosodiphenylamine	100	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Pentachlorophenol	3	NS	NS	mg/kg	ND	0.37	ND	0.41	ND	0.4	ND	0.4	ND	0.35	ND	0.41	ND	0.43	ND
Phenanthrene	10	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	4	0.14	ND	0.16	ND	0.17	0.28
Phenol	1	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Pyrene	1000	NS	NS	mg/kg	0.24	0.15	ND	0.16	0.23	0.16	0.21	0.16	3.8	0.14	0.2	0.16	ND	0.17	1.1
Pyridine	500	NS	NS	mg/kg	ND	0.15	ND	0.16	ND	0.16	ND	0.16	ND	0.14	ND	0.16	ND	0.17	ND
Total SVOCs	NS	100	100	mg/kg	0.52		0		0.52		0.46		30.97		0.4		0		6.15
MCP General Chemistry																			
Specific Conductance	NS	8000	4000	umhos/cm	12.8	0.1	37.8	0.1	18.4	0.1	14.6	0.1	15.2	0.1	NA	NA	NA	NA	NA
Solids, Total	NS	NS	NS	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	NS	NS	NS	SU	6.88	NA	7.69	NA	7.58	NA	7.26	NA	7.52	NA	NA	NA	NA	NA	NA
Cyanide, Reactive	100	NS	NS	mg/kg	ND	0.25	ND	0.25	ND	0.25	ND	0.25	ND	0.25	NA	NA	NA	NA	NA
Sulfide, Reactive	NS	NS	NS	mg/kg	ND	0.25	ND	0.25	ND	0.25	ND	0.25	ND	0.25	NA	NA	NA	NA	NA
Flashpoint	NS	NS	NS	°F	>200	NA	>200	NA	>200	NA	>200	NA	>200	NA	NA	NA	NA	NA	NA
Petroleum Hydrocarbon Quantitation																			
TPH	1000	5000	2500	mg/kg	188	29	60	32	106	31	128	32	225	27	NA	NA	NA	NA	NA
Extractable Petroleum Hydrocarbons (EPH)																			
C11-C22 Aromatic Hydrocarbons	1000	NS	NS	mg/kg	ND	16.4	ND	16.5	24.2	16	ND	16.2	NA	NA	NA	NA	NA	NA	NA
C19-C36 Aliphatic Hydrocarbons	3000	NS	NS	mg/kg	ND	16.4	ND	16.5	ND	16	ND	16.2	NA	NA	NA	NA	NA	NA	NA
C9-C18 Aliphatic Hydrocarbons	1000	NS	NS	mg/kg	ND	16.4	ND	16.5	ND	16	ND	16.2	NA	NA	NA	NA	NA	NA	NA

Notes

Bold values indicate an exceedance of the most stringent standard shown.

NS - No Standard

NA - Not Analyzed

ND - Not Detected

Samples SS-1 through SS-5 and S-6 through S-10 were analyzed for SVOCs on 6/22/16, and samples SS-5A through SS-5D were analyzed for SVOCs on 10/11/16

Table 1 - Soil Sampling Results
Blocksidge Field, Swampscott

Compound Name	RCS-1	Lined Landfill	Unlined Landfill	Units	SC /2016	SS-5D 10/11/2016		SS-6 6/22/2016		SS-7 6/22/2016		SS-8 6/22/2016		SS-9 6/22/2016		SS-10 6/22/2016	
					Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit
Total Metals																	
Arsenic	20	40	40	mg/kg	NA	NA	NA	3.71	1.09	5.13	1.11	6.98	1.26	7.04	1.19	9.11	0.98
Barium	1000	NS	NS	mg/kg	NA	NA	NA	51.8	0.54	38.6	0.56	54.8	0.63	48	0.6	59.3	0.49
Cadmium	70	80	30	mg/kg	NA	NA	NA	ND	0.54	ND	0.56	ND	0.63	ND	0.6	ND	0.49
Chromium	100	1000	1000	mg/kg	NA	NA	NA	16.6	0.54	12.1	0.56	34.5	0.63	20.5	0.6	23.4	0.49
Lead	200	2000	1000	mg/kg	NA	NA	NA	62.6	0.54	72.2	0.56	66.5	0.63	56.4	0.6	162	0.49
Mercury	20	10	10	mg/kg	NA	NA	NA	0.504	0.079	0.468	0.082	0.476	0.466	1.06	0.441	0.404	0.388
Selenium	400	NS	NS	mg/kg	NA	NA	NA	ND	1.09	ND	1.11	ND	1.26	ND	1.19	ND	0.98
Silver	100	NS	NS	mg/kg	NA	NA	NA	ND	0.54	ND	0.56	ND	0.63	ND	0.6	ND	0.49
Lead (After TCLP)	NS	5	5	mg/l													
Volatile Organic Compounds (VOCs)																	
1,1- Dichloropropene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,1,1,2-Tetrachloroethane	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,1,1-Trichloroethane	30	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,1,2,2-Tetrachloroethene	0.005	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,1,2-Trichloroethane	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,1-Dichloroethane	0.4	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,1-Dichloroethene	3	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,2,3-Trichlorobenzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,2,3-Trichloropropane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,2,4-Trichlorobenzene	2	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,2,4-Trimethylbenzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,2-dibromo-3-chloropropane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,2-Dichlorobenzene	9	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,2-Dichloroethane	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,2-Dichloropropane	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,3,5-Trimethylbenzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,3-Dichlorobenzene	3	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,3-Dichloropropane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,4-Dichlorobenzene	0.7	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
1,4-Dioxane	0.2	NS	NS	mg/kg	NA	NA	NA	ND	30	ND	21	ND	32	ND	21	ND	33
2,2-dichloropropane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
2-Butanone	4	NS	NS	mg/kg	NA	NA	NA	ND	0.3	ND	0.21	ND	0.32	ND	0.21	ND	0.33
2-chlorotoluene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
2-Hexanone	100	NS	NS	mg/kg	NA	NA	NA	ND	0.3	ND	0.21	ND	0.32	ND	0.21	ND	0.33
4-chlorotoluene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
4-Methyl-2-pentanone	0.4	NS	NS	mg/kg	NA	NA	NA	ND	0.3	ND	0.21	ND	0.32	ND	0.21	ND	0.33
Acetone	6	NS	NS	mg/kg	NA	NA	NA	ND	0.3	ND	0.21	ND	0.32	ND	0.21	ND	0.33
Benzene	2	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Bromobenzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Bromochloromethane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Bromodichloromethane	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Bromoform	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Bromomethane	0.5	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Carbon Disulfide	100	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Carbon Tetrachloride	5	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Chlorobenzene	1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Chloroethane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Chloroform	0.2	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Chloromethane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.12	ND	0.083	ND	0.13	ND	0.082	ND	0.13
cis 1,2-dichloroethene	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
cis-1,3-Dichloropropene	0.01	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Dibromochloromethane	0.005	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Dibromomethane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Dichlorodifluoromethane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Diethyl ether	100	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Diisopropyl Ether	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Ethyl Tert-butyl ether	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Ethylbenzene	40	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Ethylene Dibromide	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Hexachlorobutadiene	30	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Isopropylbenzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
m,p-xylene	300	NS	NS	mg/kg	NA	NA	NA	ND	0.12	ND	0.083	ND	0.13	ND	0.082	ND	0.13

Table 1 - Soil Sampling Results
Blocksidge Field, Swampscott

Compound Name	RCS-1	Lined Landfill	Unlined Landfill	Units	5C /2016	SS-5D 10/11/2016		SS-6 6/22/2016		SS-7 6/22/2016		SS-8 6/22/2016		SS-9 6/22/2016		SS-10 6/22/2016	
					Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit
Methylene Chloride	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.3	ND	0.21	ND	0.32	ND	0.21	ND	0.33
Naphthalene	4	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
n-butyl Benzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
n-Propylbenzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
o-xylene	300	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
p-isopropyltoluene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
sec-butylbenzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Styrene	3	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Tert-amyl Methyl Ether	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
tert-butyl Alcohol	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.3	ND	0.21	ND	0.32	ND	0.21	ND	0.33
tert-butyl Methyl Ether	0.1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
tert-butylbenzene	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Tetrachloroethene	1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Tetrahydrofuran	500	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Toluene	30	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
trans1,2-dichloroethene	1	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
trans-1,3-Dichloropropene	0.01	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Trichloroethene	0.3	NS	NS	mg/kg	NA	NA	NA	ND	0.12	ND	0.083	ND	0.13	ND	0.082	ND	0.13
Trichlorofluoromethane	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Vinyl Chloride	0.7	NS	NS	mg/kg	NA	NA	NA	ND	0.059	ND	0.042	ND	0.064	ND	0.041	ND	0.066
Total VOCs	NS	10	4	mg/kg				0		0		0		0		0	
Polychlorinated Biphenyls (PCBs)																	
Aroclor 1016	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Aroclor 1221	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Aroclor 1232	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Aroclor 1242	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Aroclor 1248	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Aroclor 1254	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Aroclor 1260	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Aroclor 1262	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Aroclor 1268	1	NS	NS	mg/kg	NA	NA	NA	ND	0.401	ND	0.199	ND	0.606	ND	0.204	ND	0.362
Total PCBs	NS	2	2	mg/kg				0		0		0		0		0	
Semivolatile Organic Compounds (SVOCs)																	
1,2,4-Trichlorobenzene	2	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
1,2-Dichlorobenzene	9	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
1,3-Dichlorobenzene	3	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
1,4-Dichlorobenzene	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2,4,5-Trichlorophenol	4	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2,4,6-Trichlorophenol	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2,4-Dichlorophenol	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.38	ND	0.41	ND	0.41	ND	0.42	ND	0.36
2,4-Dimethylphenol	0.7	NS	NS	mg/kg	0.4	ND	0.4	ND	0.76	ND	0.81	ND	0.82	ND	0.84	ND	0.72
2,4-Dinitrophenol	3	NS	NS	mg/kg	0.8	ND	0.81	ND	0.38	ND	0.41	ND	0.41	ND	0.42	ND	0.36
2,4-Dinitrotoluene	0.7	NS	NS	mg/kg	0.4	ND	0.4	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2,6-Dinitrotoluene	100	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2-Chloronaphthalene	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2-Chlorophenol	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2-Methylnaphthalene	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2-Methylphenol	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2-Nitroaniline	NS	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
2-Nitrophenol	100	NS	NS	mg/kg	0.16	ND	0.16	ND	0.38	ND	0.41	ND	0.41	ND	0.42	ND	0.36
3- & 4-Methylphenol	NS	NS	NS	mg/kg	0.4	ND	0.4	ND	0.3	ND	0.32	ND	0.33	ND	0.34	ND	0.29
3,3'-Dichlorobenzidine	3	NS	NS	mg/kg	0.32	ND	0.32	ND	0.38	ND	0.41	ND	0.41	ND	0.42	ND	0.36
3-Nitroaniline	NS	NS	NS	mg/kg	0.4	ND	0.4	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
4,6-Dinitro-2-methylphenol	50	NS	NS	mg/kg	0.16	ND	0.16	ND	0.38	ND	0.41	ND	0.41	ND	0.42	ND	0.36
4-Bromophenyl phenyl ether	100	NS	NS	mg/kg	0.4	ND	0.4	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
4-Chloro-3-methylphenol	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	0.38	ND	0.41	ND	0.41	ND	0.42	ND	0.36
4-Chloroaniline	1	NS	NS	mg/kg	0.4	ND	0.4	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
4-Chlorophenyl phenyl ether	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
4-Nitroaniline	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
4-Nitrophenol	100	NS	NS	mg/kg	0.16	ND	0.16	ND	0.38	ND	0.41	ND	0.41	ND	0.42	ND	0.36
Acenaphthene	4	NS	NS	mg/kg	0.4	ND	0.4	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Acenaphthylene	1	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Aniline	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14

Table 1 - Soil Sampling Results
Blocksidge Field, Swampscott

Compound Name	RCS-1	Lined Landfill	Unlined Landfill	Units	SC /2016	SS-5D 10/11/2016		SS-6 6/22/2016		SS-7 6/22/2016		SS-8 6/22/2016		SS-9 6/22/2016		SS-10 6/22/2016	
					Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit	Sample Result	Reporting Limit
Anthracene	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	0.18	0.14
Benzo(a)anthracene	7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	0.91	0.14
Benzo(a)pyrene	2	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	1.1	0.14
Benzo(b)fluoranthene	7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	1.4	0.14
Benzo(g,h,i)perylene	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	0.86	0.14
Benzo(k)fluoranthene	70	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	0.49	0.14
Benzoic acid	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	1.1	ND	1.2	ND	1.2	ND	1.3	ND	1.1
bis(2-Chloroethoxy)methane	500	NS	NS	mg/kg	1.2	ND	1.2	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
bis(2-Chloroethyl)ether	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
bis(2-chloroisopropyl)ether	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
bis(2-Ethylhexyl)phthalate	200	NS	NS	mg/kg	0.24	ND	0.24	ND	0.23	ND	0.24	ND	0.24	ND	0.25	ND	0.22
Butyl benzyl phthalate	100	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Chrysene	70	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	0.91	0.14
Dibenzo(a,h)anthracene	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	0.18	0.14
Dibenzofuran	100	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Diethyl phthalate	10	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Dimethyl phthalate	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.5
Di-n-butylphthalate	50	NS	NS	mg/kg	0.24	ND	0.24	ND	0.23	ND	0.24	ND	0.24	ND	0.25	ND	0.2
Di-n-octyl phthalate	1000	NS	NS	mg/kg	0.24	ND	0.24	ND	0.23	ND	0.24	ND	0.24	ND	0.25	ND	0.22
Fluoranthene	1000	NS	NS	mg/kg	0.16	0.17	0.16	0.15	0.15	ND	0.16	ND	0.16	0.22	0.17	1.7	0.14
Fluorene	1000	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Hexachlorobenzene	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Hexachlorobutadiene	30	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Hexachlorocyclopentadiene	50	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Hexachloroethane	0.7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Indeno(1,2,3-cd)pyrene	7	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	0.88	0.14
Isophorone	100	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Naphthalene	4	NS	NS	mg/kg	0.16	0.16	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Nitrobenzene	500	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
n-Nitrosodimethylamine	50	NS	NS	mg/kg	0.24	ND	0.24	ND	0.23	ND	0.24	ND	0.24	ND	0.25	ND	0.22
n-Nitroso-di-n-propylamine	50	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
n-Nitrosodiphenylamine	100	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Pentachlorophenol	3	NS	NS	mg/kg	0.4	ND	0.4	ND	0.38	ND	0.41	ND	0.41	ND	0.42	ND	0.36
Phenanthrene	10	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	0.59	0.14
Phenol	1	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Pyrene	1000	NS	NS	mg/kg	0.16	0.17	0.16	ND	0.15	ND	0.16	ND	0.16	0.19	0.17	1.5	0.14
Pyridine	500	NS	NS	mg/kg	0.16	ND	0.16	ND	0.15	ND	0.16	ND	0.16	ND	0.17	ND	0.14
Total SVOCs	NS	100	100	mg/kg		0.5		0.15		0		0		0.41		10.7	
MCP General Chemistry																	
Specific Conductance	NS	8000	4000	umhos/cm	NA	NA	NA	17.7	0.1	17.2	0.1	23.7	0.1	20.8	0.1	16.7	0.1
Solids, Total	NS	NS	NS	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	NS	NS	NS	SU	NA	NA	NA	7.17	NA	7.2	NA	7.23	NA	7.19	NA	6.87	NA
Cyanide, Reactive	100	NS	NS	mg/kg	NA	NA	NA	ND	0.75	ND	0.55	ND	0.25	ND	0.55	ND	0.55
Sulfide, Reactive	NS	NS	NS	mg/kg	NA	NA	NA	ND	0.75	ND	0.55	ND	0.25	ND	0.55	ND	0.55
Flashpoint	NS	NS	NS	°F	NA	NA	NA	>200	NA	>200	NA	>200	NA	>200	NA	>200	NA
Petroleum Hydrocarbon Quantitation																	
TPH	1000	5000	2500	mg/kg	NA	NA	NA	114	30	107	31	168	33	62	32	203	28
Extractable Petroleum Hydrocarbons (EPH)																	
C11-C22 Aromatic Hydrocarbons	1000	NS	NS	mg/kg	NA	NA	NA	72	17.2	29	19.9	19.2	16	19.2	16.7	37.1	17.7
C19-C36 Aliphatic Hydrocarbons	3000	NS	NS	mg/kg	NA	NA	NA	ND	17.2	ND	19.9	ND	16	ND	16.7	ND	17.7
C9-C18 Aliphatic Hydrocarbons	1000	NS	NS	mg/kg	NA	NA	NA	ND	17.2	ND	19.9	ND	16	ND	16.7	ND	17.7

Notes
Bold values indicate an exceedance of the most stringent standard shown.
NS - No Standard
NA - Not Analyzed
ND - Not Detected
Samples SS-1 through SS-5 and S-6 through S-10 were analyzed for SVOCs on 6/22/16, an

REMOVAL AND DISPOSAL OF CONTAMINATED SOILS
SECTION 026100

PART 1-GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, material, tools and equipment necessary for the transportation and disposal of contaminated soil. This Section also specifies the disposal of free-phase products, sludge, sediment and treatment residues, absorbent pads and booms, if any.

B. The Owner will be the generator and will sign all waste profiles, bills of lading and hazardous waste manifests.

C. LSP information is as follows:

James T. Curtis, P.E., LSP
LSP # - 1548
Cooperstown Environmental LLC
23 Main Street
Andover, MA 01810
Tel. – 978-470-4755
Fax – 978-470-4756

1.2 RELATED WORK

A. Excavation and Handling of Contaminated Material is included in Section 026113.

1.3 SUBMITTALS

A. Submit to the Engineer for review, as a single submittal, all pertinent information relating to the transport and disposal of materials specified herein. The information submitted shall include, as a minimum:

1. Transporter Information:

a. Name and address of common carrier transporters to be used on project.

b. Name and address of licensed hazardous waste transporters to be used on project. Provide current licenses and permits to operate in all states affected by transport. Provide current EPA transporter license.

2. Facility Information

a. General Information

i. Facility Name
ii. Facility Address

iii. Name of Contact Person
iv. Title of Contact Person
v. Telephone Number of Contact Person
vi. Permit Number

b. Submit a complete list of the disposal facility's permitted allowable contaminant levels and physical characteristic requirements for contaminated material, and list any required regulatory approvals for individual waste streams.

1.4 REGULATORY REQUIREMENTS

A. The Town of Swampscott site health and safety protocols and all other applicable Federal, State and local laws, codes and ordinances which govern or regulate hazardous wastes shall apply to the work of this Section.

B. Massachusetts Department of Environmental Protection

1. Massachusetts Contingency Plan, 310 CMR 40.0000

2. Massachusetts Hazardous Waste Regulations, 310 CMR 30.000

3. Interim Remediation Waste Management Policy for Contaminated Soils, Policy # WSC-94-001.

4. Reuse and Disposal of Contaminated Soils at Massachusetts Landfills, Policy # COMM-97-001.

1.5 DEFINITIONS

A. The disposal/recycling facility shall be a facility that is approved or permitted under applicable state or Federal regulations to accept the type of soil specified in this Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 DISPOSAL FACILITY APPROVALS

A. Subcontract with an approved facility that is permitted to and will accept the type of soil specified in this Contract for disposal. The selected facilities shall be established, fully operational, and in compliance with all applicable state and local regulations.

3.2 BILLS OF LADING AND/OR MANIFESTS

A. Engineer will prepare all Bill of Lading documentation.

B. The Town of Swampscott, Massachusetts will be designated as Generator and will sign all waste profiles, manifests, and bills of lading. Allow a minimum of 72 hours prior to

said need for Owner's signature.

C. At completion of work, submit original bill of lading forms BWSC-112 and hazardous waste manifest copies.

3.3 TRANSPORT

A. Do not transport material off site until all facility approvals and Bills of Lading documentation have been completed.

B. Transport material from site to the landfill or processing facility in accordance with all DOT, EPA and Massachusetts DEP or other States' regulations.

C. The Hauler shall be licensed in all states along the transport route.

D. The Contractor shall be responsible for ensuring that free liquid does not develop during transport. Should any free liquid develop during transport, the Contractor shall be required to dispose of the liquid at no additional cost to the Town of Swampscott.

3.4 DISPOSAL

A. Disposal of impacted material at approved disposal facilities shall be in accordance with all Federal, State, and local regulations.

B. Provide to the Engineer copies of all weight slips, both tare and gross, for every load weighed and disposed of at the approved facility. The slips shall be tracked by the original Manifest Document Number or Bill of Lading that was assigned by the Engineer at the site. The Owner shall only make payments upon receipt of these weight slips.

C. All excavated soil shall be removed from the site within 30 days of excavation.

END OF SECTION

EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL
SECTION 026113

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals necessary to excavate, stockpile, and dewater, all impacted and potentially impacted soil within the limits shown on the Drawings and specified herein.

B. The Engineer will provide the services of a Licensed Site Professional (LSP) as required at the project site.

1.2 RELATED WORK

A. Health and Safety Requirements are included in Section 13740.
B. Removal and Disposal of Contaminated Soils is included in Section 026100.
C. Earthwork is included in Section 02200.

1.3 REGULATORY REQUIREMENTS

A. Comply with the Town of Swampscott's site health and safety protocols, the requirements governing Hazardous Material Health and Safety, and all other applicable Federal, State, and local laws, codes and ordinances which govern or regulate hazardous wastes shall apply to the work of this Section.

B. Massachusetts Department of Environmental Protection (MADEP)

1. Massachusetts Contingency Plan, 310 CMR 40.0000
2. Interim Remediation Waste Management Policy for Contaminated Soils, Policy # WSC-94-001.
3. Reuse and Disposal of Contaminated Soils at Massachusetts Landfills, Policy # COMM-97-001.

1.4 DEFINITIONS

A. Impacted Material: Soil and material containing concentrations of oil and/or hazardous material equal to or greater than the MCP RCS-1 reportable concentration(s) established by 310 CMR 40.0300 (Notification of Releases and Threats of Release of Oil and Hazardous Material Identification and Listing of Oil and Hazardous Material); and 40.1600 (Massachusetts Oil and Hazardous Material List).

B. Impacted Groundwater: Groundwater indicated by analytical results to contain any contaminant concentrations equal to or greater than MCP Method 1 RCGW-1 standards established by 310 CMR 40.1600.

C. Decontamination Water: Water generated by the Contractor in decontaminating procedures of,

personnel, debris, or excavation equipment within impacted areas.

PART 2 - PRODUCTS

A. NOT USED.

PART 3 - EXECUTION

3.1 GENERAL

A. Perform this work in accordance with the Health and Safety Plan developed under Section 13740.
B. The Contractor will immediately notify the Engineer of visible stains or petroleum odor of any excavated material.

3.2 EXCAVATED SOIL MANAGEMENT

A. Two soil groups of excavated materials have been defined for this project: non-reportable (Type I) and reportable (Type II). Each group contains subgroups based on soil characteristics and detected concentrations of contaminants resulting in a total of seven soil types.

Disposal of Type II soils is typically more regulated than Type I soils. Type I soils are subject to 310 CMR 40.0032 (3) (MCP "anti-degradation provisions") as follows:

> "(3) Soils containing oil or waste oil... or one or more hazardous materials at concentrations less than a release notification threshold, that are not a hazardous waste, may be transported from a disposal site without notice to or approval from the Department (DEP) ... provided that such soils; (a) are not disposed or reused at locations where the concentrations of oil or hazardous materials in the soil would be in excess of a release notification threshold at the receiving site ... (b) are not disposed or reused at locations where existing concentrations of oil and/or hazardous materials at the receiving facility are significantly lower that the levels of those oil and/or hazardous materials present in the soil being disposed or reused."

In general, the soil disposal "hierarchy" does not preclude disposal of lower-tiered soils at the higher-tiered locations (e.g, Type II-1 soils may be disposed at a Type II-2 facility) should this result in a more efficient or cost effective disposal plan. A summary of the seven soil types are presented below.

1. Type I-1: No Detectable Contaminants - Naturally Deposited Soils
   Type I-1 soils are classified as naturally-deposited soils with no detectable concentrations of target compounds above laboratory detection limits. Since detectable concentrations of metals are nearly universally detected in soils due to natural occurrence, metals were not considered within this definition so long as detectable concentrations of metals were below the MCP RCS-1 Reportable Concentrations. In general, reuse of Type I-1 soils at other locations will be unrestricted but could potentially be subject to the MCP "anti-degradation provisions" based on the apparent naturally-occurring metals concentrations in the soil relative to the receiving location.

2. Type I-2: Non-reportable Naturally Deposited Soils
   Type I-2 soils are classified as naturally-deposited soils with no detectable concentrations of target compounds exceeding the MCP S-1 reportable concentrations. Reuse/disposal of Type I-2 soils will be more often subject to MCP "anti-degradation provisions" than Type I-1 soils since detectable levels of contaminants were detected in these soils.

3. Type I-3: Non-reportable Urban Fill Soils
   Type I-3 soils are classified as urban fill soils with no detectable concentrations of contaminants exceeding the MCP RCS-1 reportable concentrations. Similar to Type I-2 soils, reuse/disposal of Type I-3 soils will likely be subject to MCP "anti-degradation provisions" since detectable levels of contaminants were detected in these soils. In addition, Type I-3 soils may also contain varying amounts of solid waste, ABC material, and construction debris associated with urban fill that may need to be segregated and disposed as solid waste.

4. Type II-1: In-State Unlined Landfill
   Type II-1 soils are considered to be suitable for reuse as daily cover at an unlined landfill in Massachusetts. The criteria for the classification of the Type II-1 soils is an exceedance of one or more MCP RCS-1 reportable concentrations and ceiling limits established in DEP's policy for the *Reuse and Disposal of Contaminated Soil at Massachusetts Landfills* (DEP Policy # COMM-97- 001). Type ll-1 soils that are comprised of urban fill may also contain varying amounts of solid waste, asphalt, brick and concrete (ABC) material, and construction debris associated with urban fill that may need to be segregated and disposed as solid waste.

   Facilities that can accept Type II-1 soils include most in-state unlined landfills. These materials can also be accepted at in-state lined landfills.

5. Type II-2: In-State Lined Landfill
   Type II-2 soils are considered to be suitable for reuse as daily cover at a lined landfill in Massachusetts. The criteria for the classification of the Type II-2 soils is established in DEP's policy for the *Reuse and Disposal of Contaminated Soil at Massachusetts Landfills* (DEP Policy # COMM-97-001). Type II-2 soils that are comprised of urban fill may also contain varying amounts of solid waste, ABC material, and construction debris associated with urban fill that may need to be segregated and disposed as solid waste.

   Facilities that can accept Type II-2 soils include most in-state lined landfills.

6. Type II-3: In-State/Regional Recycling or Regional Disposal
   Type II-3 soils are considered to be suitable either for recycling at an in-state or regional asphalt batching, thermal processing, or cold mix emulsion facility, or disposal at a regional landfill facility. In general, these soils do not meet the requirements for disposal at a Massachusetts landfill as a result of elevated contaminant concentrations and are not classified as a RCRA hazardous waste. Type II-3 soils that are comprised of urban fill may also contain varying amounts of solid waste, ABC material, and construction debris associated with urban fill that may need to be segregated and disposed as solid waste.

   Many recycling facilities require a testing frequency for total petroleum hydrocarbons (TPH) of one sample per 100 cubic yards (other parameters typically remain one sample per 500 cubic yards). Therefore, temporary stockpiling and additional sampling and analysis of Type II-3 soils may be required prior to transporting Type II-3 soils off-site for recycling.

7. Type II-4: Treatment and Regional Disposal
   Type II-4 soils are considered to be suitable for on-site treatment following by regional recycling or disposal. In general, before treatment, these soils exhibited TCLP concentrations exceeding their regulatory thresholds. Stabilization technologies, such as phosphate fixatives or pozzolanic material, bind the lead (and other metals) within the soil matrix and render them environmentally unavailable. Type II-4 soils require on-site treatment and stockpiling while awaiting test results to demonstrate successful treatment.

   Following successful treatment (TCLP concentrations reduced to below the limits specified in 310 CMR 30.000), the treated Type II-4 soils may not be disposed at a Type II-1 (unlined landfill), but may be disposed at a Type II-2 (lined landfill) or Type II-3 facility.

B. Stockpile soils

   1. The stockpiled soil shall be placed on 20 mil polyethylene sheeting and covered with 6 mil polyethylene sheeting.

   2. The polyethylene sheeting shall be bermed around the edges to prevent any infiltration of stormwater or exfiltration of leachate.

   3. The base of the temporary stockpile shall be sloped to create leachate collection points. Collect and dispose of all leachate generated from the stockpiles.

3.3 CONTROL OF DUST AND VAPORS DURING EXCAVATION ACTIVITIES

A. The Contractor shall perform the following measures to minimize the emission of dust and vapors during impacted material excavation and handling activities:

   1. The exposed surface area of impacted materials shall be minimized during excavation activities. The working face exposed in impacted soil shall be the minimum size required to continue with the excavation. Additional exposed working surface areas shall be covered with materials (tarps, plastic sheeting, clean soils, etc.) to minimize dust and vapor emissions. Tarp and plastic sheeting shall be secured in place (weighted) to prevent blowing.

   2. The Contractor shall apply water to soil surfaces during excavation as required to prevent dust generation and dispersion. Keep excavation area damp without creating nuisance conditions such as water ponding.

   3. The Contractor shall cover impacted soil in stockpiles immediately after stockpiling is complete. The impacted soil shall be covered with a tarp and securely tied at both ends. No stockpiles shall remain uncovered for longer than 15 minutes.

END OF SECTION

03 30 00
PORTLAND CEMENT CONCRETE PAVING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

1. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

2. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

3. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

1. Perform all work required to complete the work of the Section, as indicated. Such work includes, but is not limited to, the following:

    1. Concrete pavements, retaining walls, forms, footings and pads.

1.03 RELATED WORK UNDER OTHER SECTIONS

1. Bituminous Concrete Paving 32 12 16

1.04 REFERENCES

1. Work shall conform to codes and standards of the following:

    1. Massachusetts Highway Department Standard Specifications for Highways and Bridges (MHD Specifications).
    2. American Concrete Institute (ACI):

        301 Specifications for Structural Concrete for Buildings
        305R Hot Weather Concreting
        306R Cold Weather Concreting
        316R Recommendations for Construction of Concrete Pavements and Concrete Bases.

    3. American Society for Testing and Materials (ASTM):

        A 185 Welded Steel Wire Fabric for Concrete Reinforcement
        C 33 Concrete Aggregates
        C 94 Ready-Mixed Concrete
        C 143 Slump of Portland Cement Concrete
        C 150 Portland Cement
        C 171 Sheet Materials for Curing Concrete
        C 231 Air Content of Freshly Mixed Concrete by the Pressure Method
        C 260 Air Entraining Admixtures for Concrete
        C 309 Liquid Membrane-Forming Compounds for Curing Concrete
        C 494 Chemical Admixtures for Concrete
        D 226 Asphalt-Saturated Organic Roofing Felt for Use in Membrane Waterproofing

and Built-Up Roofing
D 1557 Moisture - Density Relations of Soils and Soil Aggregate Mixtures Using 10 lb. (4.54-kg) Rammer and 18-in. (457 mm) Drop
D 1752 Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

4. Americans with Disabilities Act (ADA): Appendix to Part 1191 Accessibility Guidelines for Buildings and Facilities

1.05 QUALITY ASSURANCE

1. Unless otherwise specified, work and materials for construction of the Portland cement concrete paving shall conform to ACI 316R.
2. Paving work, base course etc., shall be done only after excavation and construction work which might injure them have been completed. Damage caused during construction shall be repaired before acceptance.
3. Existing paving areas shall, if damaged or removed during course of this project, be repaired or replaced under this section of the specification. Workmanship and materials for such repair and replacement, except as otherwise noted, shall match as closely as possible those employed in existing work.
4. Pavement, base, or subbase shall not be placed on a muddy or frozen subgrade.
5. Contractor shall pay for testing of every load of concrete or day's pour (whichever is less). Testing includes slump test and 7, 14 and 28 day compression tests. Submit test results to Landscape Architect and Owner.

1.06 SUBMITTALS

1. Submit manufacturer's product data for the following:
   1. Preformed joint filler.

2. Submit samples of the following:
   1. For cement concrete paving show expansion joints, tooling and finish. Minimum 6' x 6' sample panel.
   2. Preformed joint filler.
   3. For colored cement concrete paving provide samples of three color choices. Minimum 6' x 6' sample panels.

PART 2 - PRODUCTS

2.01 AGGREGATE BASE COURSE

1. Material for aggregate base course shall be a graded, granular, free-draining material, consisting of either durable stone and coarse sand or of blast furnace slag, practically free from loam and clay, and which can be readily compacted to form a stable foundation.

   1. Material shall conform to MHD Specifications Section M1.03.0 type b, with less than 8% by weight passing the No. 200 sieve.

2.02 FIBROUS REINFORCEMENT

All cement concrete shall contain a fibrous reinforcement of 100% virgin polypropylene fibrillated fibers of multi-design gradation as manufactured by Fibermesh, Synthetic Industries, 4019 Industry Drive, Chattanooga, Tennessee 37416 or an equal product approved by the Landscape Architect.

2.03 PORTLAND CEMENT CONCRETE

1. Portland cement concrete for pavements and slabs shall be air-entrained type with a maximum water-cement ratio of 5.0 conforming to ACI 316R. Minimum compressive strengths at 28 days shall be as follows: Flexural strength with third point loading - 650 psi; compressive strength - 4000 psi.

    1. Concrete shall be air-entrained type, conforming to ASTM C 94. Air content by volume shall be 6% ± 1%, and shall be tested in accordance with ASTM C 231.
    2. Concrete slump shall be no less than 2 in. nor greater than 4 in., determined in accordance with ASTM C 143.
    3. Cement shall be Portland cement, conforming to ASTM C 150, Type I or II. Only one color of cement, all of the same manufacturer, shall be used for the work. Type III cement shall be used only with the prior approval of the Landscape Architect.
    4. Fine and coarse aggregates shall conform to ASTM C 33.
    5. Concrete shall contain a water reducing agent to minimize cement and water content of the concrete mix at the specified slump. Water reducing agent shall conform to ASTM C 494.
    6. No calcium chloride or admixtures containing calcium chloride shall be added to the concrete. No admixtures other than those specified shall be used in the concrete without the specific written permission of the Landscape Architect in each case.

2.04 CURING MATERIALS

1. Curing shall be by moist curing or by use of curing compound.
2. Curing paper shall be nonstaining, fiber reinforced laminated kraft bituminous product conforming to ASTM C 171. Four mil polyethylene sheeting may be substituted for curing paper.
3. Curing compound shall be a resin-base, white pigmented compound conforming to ASTM C 309, Type 2.

2.05 EXPANSION JOINTS

4. Unless otherwise indicated on the Drawings, expansion joints shall be located 30 ft. o.c., maximum.

5. Expansion joint filler shall be preformed, nonbituminous type joint filler conforming to ASTM D 1752, Type II, similar to Sealtight Cork Expansion Joint Filler, manufactured by W.R. Meadows, Inc., Elgin, IL 60120, or approved equal.

    1. Premolded filler shall be one piece for the full depth and width of the joint leaving a sealant recess as indicated.
    2. Use of multiple pieces of lesser dimensions to make up required depth and width of joint will not be permitted.
    3. Except as otherwise noted on the Drawings, joint filler shall be 1/2 in. thick.

2.06 CONTROL JOINTS

1. Control joints indicated to be tooled shall be made by scoring concrete slab after finishing of slab, with scoring tool which will cut into slab at least 1 in., but in no case less than 25% of slab depth.

2.07 CONSTRUCTION JOINTS

1. Transverse construction joints shall be placed whenever placing of concrete is suspended for more than 30 minutes.

1. Butt joint with dowels or thickened edge joint shall be used if construction joints occurs at location of control joint.
2. Keyed joints with tiebars shall be used if the joint occurs at any other location.

2.08 BOND BREAKER

1. Bond breaker shall be asphalt felt conforming to ASTM D 226, Type I or 6 mil polyethylene sheeting.

PART 3 – EXECUTION

3.01 PREPARATION OF SUBGRADE

1. Areas to be paved will be compacted and brought to subgrade elevation under Section 31 00 00, EARTHWORK before work of this section is performed. Final fine grading, filling, and compaction of areas to receive paving, as required to form a firm, uniform, accurate, and unyielding subgrade at required elevations and to required lines, shall be done under this Section.

2. Existing subgrade material which will not readily compact as required shall be removed and replaced with satisfactory materials. Additional materials needed to bring subgrade to required line and grade and to replace unsuitable material removed shall be material conforming to this Section.

3. Subgrade of areas to be paved shall be recompacted as required to bring top 8 in. of material immediately below gravel base course to a compaction at optimum moisture of at least 95% of maximum density, as determined by ASTM D 1557. Subgrade compaction shall extend for a distance of at least 1 ft. beyond pavement edge.

4. Excavation required in pavement subgrade shall be completed before fine grading and final compaction of subgrade are performed. Where excavation must be performed in completed subgrade, subbase, base, or pavement, subsequent backfill and compaction shall be performed as directed by the Landscape Architect as specified in Section 02200, EARTHWORK. Completed subgrade after filling such areas shall be uniformly and properly graded.

5. Areas being graded or compacted shall be kept shaped and drained during construction. Ruts greater than or equal to 2 in. deep in subgrade, shall be graded out, reshaped as required, and recompacted before placing pavement.

6. Materials shall not be stored or stockpiled on subgrade.

7. Disposal of debris and other material excavated under this section, and material unsuitable for or in excess of requirements for completing work of this section shall be disposed of off-site.

8. Prepared subgrade will be inspected by the Landscape Architect. Subgrade shall be approved by the Landscape Architect before installation of gravel base course. Disturbance to subgrade caused by inspection procedures shall be repaired under this section of the specification.

3.02 AGGREGATE BASE COURSE

1. Aggregate base course for paving and the spreading, grading, and compaction methods employed shall conform to standard requirements for usual base course of this type for first class road

work, and the following: MHD Specifications Section 405, "Gravel Base Course".

2. Width of base course shall be greater than or equal to the width of pavement surface, if continuous lateral support is provided during rolling, and shall extend at least 2 x base thickness beyond edge of the course above, if not so supported.

3. Aggregate material shall be applied in lifts less than or equal to 6 in. thick, compacted measure. Each lift shall be separately compacted to specified density, using a 6 ton steel wheel roller or vibratory roller equivalent to a 6 ton static roller, or an approved equivalent.

    1. Material shall be placed adjacent to wall, manhole, catch basin, and other structures only after they have been set to required grade and level.
    2. Rolling shall begin at sides and progress to center of crowned areas, and shall begin on low side and progress toward high side of sloped areas. Rolling shall continue until material does not creep or wave ahead of roller wheels.
    3. Surface irregularities which exceed 1/2 in. as measured by means of a 10 ft. long straightedge, shall be replaced and properly recompacted.

4. Base course shall be compacted at optimum moisture content to not less than 95% of maximum density as determined by ASTM D 1557.

5. Subgrade and base course shall be kept clean and uncontaminated. Less select materials shall not be permitted to become mixed with gravel. Materials spilled outside pavement lines shall be removed and area repaired.

6. Portions of subgrade or of construction above which become contaminated, softened, or dislodged by passing of traffic, or otherwise injured, shall be cleaned, replaced, or otherwise repaired to conform to the requirements of this specification before proceeding with next operation.

3.03 STEEL REINFORCEMENT

1. Before being placed in position, reinforcing for reinforced concrete shall be thoroughly cleaned of loose mill and rust scale, dirt, ice, and other foreign material which may reduce the bond between the concrete and reinforcing. Where there is delay in placing concrete after reinforcement is in place, bars shall be reinspected and cleaned when necessary.

2. Unless otherwise indicated on the Drawings, reinforcing shall extend within 2 in. of formwork and expansion joints. Reinforcing shall continue through control joints. Adjacent sheets of fabric reinforcing shall lap 6 in.

3. After forms have been coated with form release agent, but before concrete is placed, reinforcing steel shall be securely wired in the exact position called for, and shall be maintained in that position until concrete is placed and compacted. Chair bars and supports shall be provided in a number and arrangement satisfactory to the Landscape Architect.

3.04 PORTLAND CEMENT CONCRETE PAVING

1. Paving mix, equipment, methods of mixing and placing, and precautions to be observed as to weather, condition of base etc., shall meet the requirements of ACI 316R. Pavement shall be constructed in accordance with the Drawings.

2. The Landscape Architect shall be notified of concrete placement sufficiently in advance of start of operation to allow his representative to complete preliminary inspection of the work, including subgrade, forms, and reinforcing steel, if used.

3. Normal concrete placement procedures shall be followed. Concrete shall arrive at the jobsite so that no additional water will be required to produce the desired slump. When conditions develop that required addition of water to produce the desired slump, permission of the Landscape Architect must be obtained. The concrete shall be transported from the mixer to its place of deposit by a method that will prevent segregation or loss of material.

4. Work shall not be performed during rainy weather or when temperature is less than 40°F. (4.4°C).

5. Adjacent work, etc., shall be protected from stain and damage during entire operation. Damaged and stained areas shall be replaced or repaired to equal their original conditions.

6. Existing concrete, earth, and other water-permeable material against which new concrete is to be placed shall thoroughly damp when concrete is placed. There shall be no free water on surface.

7. Concrete which has set or partially set before placing shall not be employed. Retempering of concrete will not be permitted.
8. Concrete shall be thoroughly spaded and tamped to secure a solid and homogeneous mass, thoroughly worked around reinforcement and into corners of forms.

1. When joining fresh concrete to concrete which has attained full set, latter shall be cleaned of foreign matter, and mortar scum and laitance shall be removed by chipping and washing. Clean, roughened base surface shall be saturated with water, but shall have no free water on surface. A coat of 1:1 cement-sand grout, approximately 1/8 in. thick, shall be well scrubbed into thoroughly dampened concrete base. New concrete shall be placed immediately, before grout has dried or set.

3.05 FINISHING

1. Concrete flatwork surfaces shall be screeded off and finished true to line and grade, and free of hollows and bumps. Surface shall be dense, smooth, and at exact level and slope required.

    1. Finished concrete surface for subbases shall be woodfloated to a slightly rough surface. Surface shall not deviate more than 1/4 in. in 10 ft.
    2. Finished concrete surface for concrete walks and pads shall be wood-floated and steel troweled to a smooth surface. Surface shall not deviate more than 1/8 in. in 10 ft.

2. Unless otherwise indicated, horizontal surfaces of concrete surfaces which will be exposed shall be given a light broomed finish, with direction of grooves in concrete surface perpendicular to length of concrete band, slab, or pad. After concrete has set sufficiently to prevent coarse aggregate from being torn from surface, but before it has completely set, brooms shall be drawn across it to produce a pattern of small parallel grooves. Broomed surface shall be uniform, with no smooth, unduly rough or porous spots, or other irregularities. Coarse aggregate shall not be dislodged by brooming operation.

3. Immediately following finishing operations, arrises at edges and both sides of expansion joints shall be rounded to a 1/4 in. radius. Control joints to be tooled shall be scored into slab surface

with scoring tool. Adjacent edges of control joint shall at same time be finished to a 1/4 in. radius.

4. Where finishing is performed before end of curing period, concrete shall not be permitted to dry out, and shall be kept continuously moist from time of placing until end of curing period, or until curing membrane is applied.

5. No parging or surface coats will be accepted to disguise honeycombing or other defects in the exposed surface or the concrete.

3.06 CURING

1. It is essential that concrete be kept continuously damp from time of placement until end of specified curing period. It is equally essential that water not be added to surface during floating and troweling operations, and not earlier than 24 hours after concrete placement. Between finishing operations surface shall be protected from rapid drying by a covering of waterproofing paper. Surface shall be damp when the covering is placed over it, and shall be kept damp by means of a fog spray of water, applied as often as necessary to prevent drying, but not sooner than 24 hours after placing concrete. None of the water so applied shall be troweled or floated into surface.

2. Concrete surfaces shall be cured by completely covering with curing paper or application of a curing compound.

    1. Concrete cured using waterproof paper shall be completely covered with paper with seams lapped and sealed with tape. Concrete surface shall not be allowed to become moistened between 24 and 36 hours after placing concrete. During curing period surface shall be checked frequently, and sprayed with water as often as necessary to prevent drying, but not earlier than 24 hours after placing concrete.
    2. If concrete is cured with a curing compound, compound shall be applied at a rate of 200 sq. ft. per gallon, in two applications perpendicular to each other.
    3. Curing period shall be seven days minimum.

3.07 EXPANSION JOINTS

1. Expansion joints shall be 1/2 in. wide and shall be as located on the Drawings. Expansion joint shall be formed in the concrete to required width with preformed joint filler in place. Joint filler shall extend the full depth of the slab. Joint filler shall extend the full length of the expansion joint.

    1. For concrete pavements and pads, depth of joint filler shall be as required to form a 1-1/4 in. deep sealant and backer rod recess below finished concrete surface.

3.08 CONTROL JOINTS

1. Unless otherwise indicated, control joints to be tooled shall be scored into the concrete slab every 10 ft. o.c. maximum. Joint shall be made after concrete is finished and when the surface is stiff enough to support the weight of workmen without damage to the slab, but before slab has achieved its final set.

3.09 COLD WEATHER CONCRETING

1. Materials for concrete shall be heated when concrete is mixed, placed, or cured when the mean daily temperature is below 40°F. or is excepted to fall to below 40°F. within 72 hours, and the

concrete after placing shall be protected by covering, heat, or both.

2. Details of handling and protecting of concrete during freezing weather shall be subject to the approval and direction of the Landscape Architect. Procedures shall be in accordance with provisions of ACI 306R.

3.10 HOT WEATHER CONCRETING

1. Concrete just placed shall be protected from the direct rays of the sun and the forms and reinforcement just prior to placing shall be sprinkled with cold water. Every effort shall be made to minimize delays which will result in excessive mixing of the concrete after arrival on the job.

2. During periods of excessively hot weather (95°F, or above), ingredients in the concrete shall be cooled insofar as possible and cold mxing water shall be used to maintain the temperature of the concrete at permissible levels all in accordance with the provisions of ACI 305. Any concrete with a temperature above 95°F, when ready for placement will not be acceptable, and will be rejected.

3. Temperature records shall be maintained throughout the period of hot weather giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. Records shall include checks on temperature of concrete as delivered and after placing in forms. Data should be correlated with the progress of the work so that conditions surrounding the construction of any part of the structure can be ascertained.

3.11 PROTECTION OF CONCRETE SURFACES

1. Concrete surfaces shall be protected from traffic or damage until surfaces have hardened sufficiently. If necessary 1/2 in. thick plywood sheets shall be used to protect the exposed surface.

END OF SECTION

SECTION 11 68 33
SITE ATHLETIC EQUIPMENT

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

1. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

2. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

3. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

4. Perform all work required to complete the work of the Section, as indicated. Such work includes, but is not limited to, the following:

    1. Multi-purpose Field
        a. Scoreboard
        b. Removable Football Goal Posts & Soccer Goals
        c. Sports Netting System
        d. Corner Soccer Flags
        e. Turf ComBox – Electrical Handhole

1.03 RELATED WORK UNDER OTHER SECTIONS

5. Site Preparation
6. Earthwork
7. Chain Link Fence

1.04 REFERENCES

8. American Society for Testing and Materials (ASTM)

9. Massachusetts Highway Department - Standard Specifications for Highways and Bridges (MHD Specifications).

10. Consumer Products Safety Commission (CPSC) Handbook for Public Playground Safety.

11. NCAA Men's and Women's Track & Field / Cross Country Rules.

1.05 QUALITY ASSURANCE

12. Source: For each type of product required for the work of this Section, provide products of one manufacturer and source for consistency.

13. Codes and Standards: Install playfield equipment and structures in compliance with applicable requirements of governing authorities having jurisdiction.

14. Qualifications of Workers: Use adequate numbers of skilled workers who are trained in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

15. The work of this Section shall be completely coordinated with the work of other Sections. Verify dimensions and work of other trades which adjoin materials of this Section before installing items specified.

1.06 SUBMITTALS

16. Shop Drawings: Supply shop drawings at an approved scale for location, installation and erection of each item under this Section.

17. Product Data: Provide manufacturer's product data showing installation and limitations in use of each site item. Supply Certificates of Compliance for all materials required for fabrication and installation.

18. Material Selection and Samples: Submit samples showing the complete range of colors, textures and finishes available for all components required for construction.

PART 2 - PRODUCTS

2.01 SCOREBOARDS

1. Provide and install equipment for fully useable Multi-Sport Scoreboard, as follows:
    1. Scoreboard: Daktronics, Inc. Model No: MS-2918 Multi-Sport Scoreboard. Provide & Install One (1). Color Black. Supply and install wireless control system for the scoreboard. Approved products include the All Sport 5000 as manufactured by Daktronics (800) 325-8766, or approved equal. Product list for the equipment compatible with the scoreboard includes:
    Two (2) Daktronics 16 Column Driver
    One (1) AllSport 5010R-5 Radio Control Console
    One (1) AllSport Carrying Case
    One (1) AllSport Rechargeable Battery Kit
    One (1) Scoreboard Radio Receiver Kit
    One (1) Scoreboard Border Stripe
    One (1) “Team Name” in place of “Home”
    One (1) Center Panel – Logo/Sponsor Ad Copy
    One (1) Set of Soccer Captions
    One (1) Set of Football Captions
    One (1) 12V Horn
    Two (2) 24” x 16’ Sponsor/ID Panels – ad copy included

Scope of work includes one (1) training session with the Owner to familiarize them with the operation of all new systems. See attachment for additional information.

2. Acceptable manufacturers whose products may be incorporated in the work shall include:
   a. Daktronics, Inc. (888) 325-8463, or approved equal.

2.02 REMOVABLE FOOTBALL GOAL POSTS & SOCCER GOAL

A. General: Installation/materials of football goal posts shall meet the requirements of the NFHS Rules and regulations.

B. A total of two removable football goal posts and two soccer goals are required. Coordinate installation and location with Landscape Architect in the field.

C. Products shall be equal to the following:

HS FOOTBALL/SOCCER GOAL SYSTEM: Model No. SG4980HS (6'-0" Offset)
Access Frame Insert Kit with Integral Soccer Clamping System: Model No. SG2SGP
Goal Post Pads, provide two (2) in total. Color: Blue with white "SWAMPSCOTT" lettering.

D. Acceptable manufacturers whose products may be incorporated in the work shall include: Sportsfield Specialties, Inc. – (888) 975-3343, or approved equal.

2.03 SPORTS NETTING SYSTEM
Approved products include the Stormguard 12' Ball Safety Netting System (TFBSS412P-SG) WITH 1 ¾" #36 nylon mesh net, as manufactured by Sportsfield Specialties (888) 975-3343. Netting system to include all required straight powder coated poles, ground sleeves, pullies, cables & stainless steel assembly hardware. Color to be black.

2.04 CORNER SOCCER FLAGS
Contractor shall furnish and deliver to the Owner two (2) sets of four (4) soccer corner flags model 6B1104 universal corner flag, as manufactured by KwikGoal, ltd, 140 Pacific Drive, Quakertown, PA 18951 tel (800)531-4252

2.05 TURF COMBOX - ELECTRICAL HANDHOLE
Approved products include the 3500 series ComBox with infill retainer system as manufactured by Sportsfield Specialties (888) 975-3343. Or approved equal.

PART 3 - EXECUTION

3.01 SCOREBOARD
Install as per Manufacturer's recommendations.

3.02 REMOVABLE FOOTBALL GOAL POSTS & SOCCER GOAL
Install as per Manufacturer's recommendations.

3.03 SPORTS NETTING SYSTEM
Install as per Manufacturer's recommendations.

3.04 CORNER SOCCER FLAGS
Install as per Manufacturer's recommendations.

3.05 COMBOX
Install as per Manufacturer's recommendations.

END OF SECTION

SECTION 16000
SOUND SYSTEM

PART 1 GENERAL INFORMATION

1.01 Scope of Work

1. Furnish and install local sound system at pressbox for local pickup, amplification and reproduction of local microphone by Owner.

2. Provide and install all necessary equipment for complete and operational system including, but not limited to control, outlet boxes, conduit, wiring, cable, and speakers as specified herein and as shown on the drawings.

3. Catalog numbers specified herein are to constitute type, product, quantity, materials and desired operating features. Equal products that meet this specification will be considered.

4. Provide following quantity of equipment and accessories to provide a fully operational Custom Full Range Sound System:

Location A - Rack Gear

1. ROLLS -RM64
   Four Zone Mixer

2. QSC-PLD4.5-xx
   8000W Amplifier using FAST channel combining technology. 4 channels, 1200 watts/ch at 8Ohm, 2000 watts/ch at 4Ohm, 1600 watts/ch at 2Ohm.

3. AT-ATW-3141BC
   3000 Series Wireless System includes: ATW-R3100b receiver and ATW-T341b handheld cardioid dynamic microphone/transmitter (TV 25-30)

4. AT-ATW-3131BC
   3000 Series Wireless System includes: ATW-R3100b receiver and ATW-T310b UniPak transmitter with AT831cW lavalier microphone (TV 25-30)

5. AT-ATW-RMS1
   Remote mute switch with HRS-type input and output connectors for use with Audio-Technica wireless

6. GATOR-GRW2009508
   Gator Rackworks Hinged Wall Mounted Rack; 9U, 21" Deep; Steel Front Door

7. GATOR-GRW-DRW2
   Gator Rackworks Rack Drawer; 14.2" Deep; Lockable; 2U

8. CBI-NL4FX
   (4) 4 Pole Female Cable Mount

9. JUICEG-JG8.0
   19" rackmount PDU with 8 outlets. Seven inch deep chassis. Outlets rotated for wall warts. Inexpensive features for primary requirements. Spike and AC noise suppression.

10. CBI-MLN-3
    22ga Mic Wire - Very Flexible and Durable - Neutrik XLR's 100% Strain Relief - 3 foot

11. CBI-NC3MX
    Male XLR, Nickel, Soft Boot, Ind Bagged

12. CBI-NYS352
    (4) Male RCA, Nickel, Rubber Boot

13. RDL-TX-A2
    Audio Converter – Balanced to Unbalanced - Terminals, dual-RCA

Location B & C (3speakers per pole, Home Bleacher Near, Home Bleacher Center & Field)

14. COMM-R.5-96MAX
    (6) FULL-RANGE 2-WAY 12" GREY 90 X 60 HIGH BROADBAND OUTPUT

15. COMM-PMB-1RR
    (6) POLE MOUNT BRACKET, SINGLE LOUDSPEAKER

16. COMM-BAND100FT
    POLE MOUNT BRACKET BANDING, 100FEET (30.5M)

Location D - Wall Plate

17. RDL-DS-J3
    Mic/Line Input Assembly - XLR, RCA, Terminal block - Stainless

Cabling for D to A

18. WP-AQC290GY1000
    1P 22G SLD SHLD W-BLOCK

Cabling for A to B & A to C

19. WP-AQ227BK1000
    1P 12G STRD UNSHLD W-BLOCK

5. Approved Manufacturer / Supplier:

Acceptable manufacturers whose products may be incorporated in the work shall include: Pro Accoustics, Inc. - 113 Salado Plaza Dr. #7 Salado , TX 76571 - Phone (214) 960-1589, or approved equal. (Use Estimate Number 200Q43689 for Blocksidge Field - Dated January 12, 2017 for reference.)

1.02 Related Work / Related Section

** Grandstand Seating

1.03 Submittals

1. In addition to the requirements of Part 1 of this specification, furnish the following:
   - Product and cable specification data sheets
   - Equipment assembly details indicating all mounting arrangements and hardware required.
   - Complete wiring diagrams indicating
     i. All equipment
     ii. Components
     iii. Interconnecting wiring
     iv. Block Diagrams
   - Grounding details and requirements.
   - Power connections, including source and branch circuit data.
   - FCC registration number and certificate shall be provided.

2. Operating & Maintenance Manuals: Submit complete end user manual including the following:
   - Component operating manual including technical data sheets.
     i. Control Settings
     ii. Amplifier Loads
   - Information for reordering replacement parts, including equipment parts list, tools and instruments for testing and maintenance purposes.
   - Wiring Diagrams / Details
     i. System functional block diagrams
     ii. System Schematic Diagrams
     iii. System wiring list
     iv. Identify terminals to facilitate installation, operation and maintenance.
     v. Indicate terminals to facilitate installation, operating and maintenance.
     vi. Indicating and distinguish between field and factory wiring.
   - System operating instructions: provide clear and concise description or operation which gives, in detail, information required to properly operate equipment and system.
   - Update to include any information necessitated by construction. Complete “as installed” wiring and schematic diagrams shall be included which show items of equipment and their interconnecting wiring.
   - Component Service Manual: Including information for testing, repair, troubleshooting, assembly, disassembly, and required /recommended maintenance intervals.

3. Submit field test reports as required herein.

1.04 Training

1. Furnish training and utilize specified manuals and record documentation. Training shall be furnished at project site and coordinated with Owner.
2. Training shall include two four hour sessions encompassing instructions required for system operation. Provide operators manuals and user guides with training. Provide follow-up training for eight hours after initial training up request of Owner.
3. Training shall utilize equipment at project site. Coordinate use, time and availability of equipment with owner.
4. Demonstrate adjustment, operation and maintenance of system including each component and control.

1.05 Substitutions

1. No substitutions will be allowed to this specification without prior consent of the Owner.

1.06 Quality Assurance

1. Manufacturer: Company specializing in sound system installation and maintenance with a minimum of 5 years experience.
2. Authorized distributor for equipment supplied with full manufacturer's warranty privileges.
3. Maintains fully equipped service organization capable of providing full maintenance and service of installed system within 24 hours. This facility shall be available for inspection by Owner.

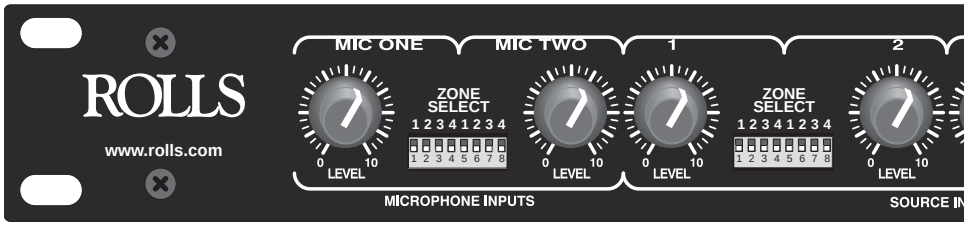
1.07 Wiring

1. Wiring for system shall be in conformance with local, state and national electrical/building codes.
2. Provide complete wiring and conduit between all equipment.

1.08 Cleaning

A. Clean all surfaces according to manufacturer's recommendations.
B. Remove all packaging and construction debris.

END OF SECTION



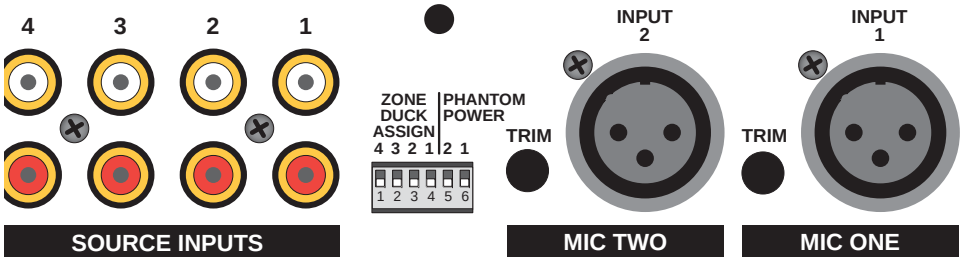
SETTING THE REAR PANEL DIP SWITCHES

Zone Duck Assign

Switches 1 - 4 engage the Ducking function to the indicated zone.

First - in order for the ducking to operate properly in the assigned zone, the microphones and sources must be assigned to that zone.

Select which zone you wish to have the ducking function by moving that Zone Duck Assign switch to the DOWN position. BOTH Mic 1 and Mic 2, if assigned to the selected zone and have the Zone Duck Assign switch down, will duck the sources assigned to that zone. For example; shown above - Mic 1 is selected on the front panel to Zones 1 - 4, and Mic 2 is selected only to Zone 1. Shown below, Zone 4 has no ducking assigned, while Zones 1 - 3 have ducking assigned. Therefore, Mic 1 and Mic 2 will duck whatever Source material is present at Zone 1, Mic 1 will additionally duck material at Zones 2 and 3, but not Zone 4. Mic 2, since it is not selected to Zones 2 - 4, it will have no effect on those zones.



Phantom Power

Switch 5 applies Phantom Power to Mic 2, Switch 6 applies Phantom Power to Mic 1. The Phantom Power is on when the switch is DOWN.

ROLLS

ROLLS CORPORATION
SALT LAKE CITY, UTAH
06-10

ROLLS

RM64

FOUR ZONE MIXER

Setup Guide

FEATURES:

- Two Microphone and Four RCA Source Inputs
- Four XLR Balanced Zone Outputs
- 12 VDC Phantom Power available for each Mic Input
- Remote Volume control jacks for each Zone Output
- Switchable Ducking for the Mic Inputs

SPECIFICATIONS

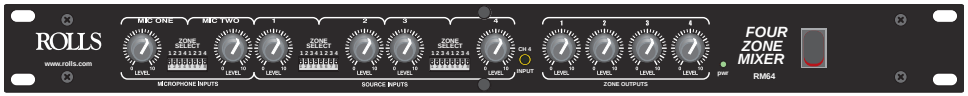
Input Impedance:		10K Ohms balanced 50K Ohms unbalanced RCA
Output Impedance:		50 Ohms Balanced XLR
Max Input Level:	Mic:	+10 dB
	Source:	+22 dB
Phantom Power:		+12 Volts DC, 5mA max.
Input Connectors:		XLR and RCA
Outputs:		4 ea. XLR
Max Gain:		60 dB mic 30 dB line
S/N Ratio:		>75 dB
THD		< .3%
IMD (SMPTE)		< .3%
CMRR		90 dB
Frequency Response:		20Hz to 20kHz +/- 0 dB
Power		120 VAC 50-60 Hz, 15 W
Weight:		7 lbs (3KG)
Size:		19" x 1.75" x 6.5" (48cm x 4.5cm x 17cm)

Thank your for your purchase of the Rolls RM64 Four Zone Mixer. The RM64 combines two paging microphones with up to four line level source inputs. Each input is switch selected to output to any combination of four zone outputs. The outputs are all balanced XLR connectors, and a 1/4" Remote Volume jack provides each zone with the means for external volume control. The Microphone inputs feature automatic ducking for easy paging.
The RM64 is the ideal solution for banquet rooms, offices, restaurant/night clubs, etc.
NOTE: This unit is intended for professional installation. Certain assumptions have been made that the installer has the required knowledge to properly install, setup and operate the RM64.

INSPECTION/WARRANTY

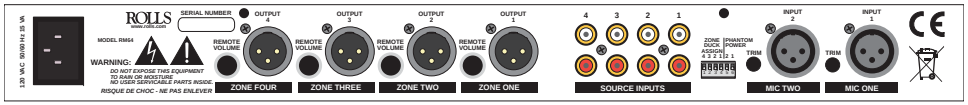
1. Unpack and inspect the RM64 box and package.
If obvious physical damage is noticed, contact the carrier immediately to make a damage claim. We suggest saving the shipping carton and packing materials for safely transporting the unit in the future.
2. Please visit our website at www.rolls.com for Warranty Information and Registration.

FRONT PANEL



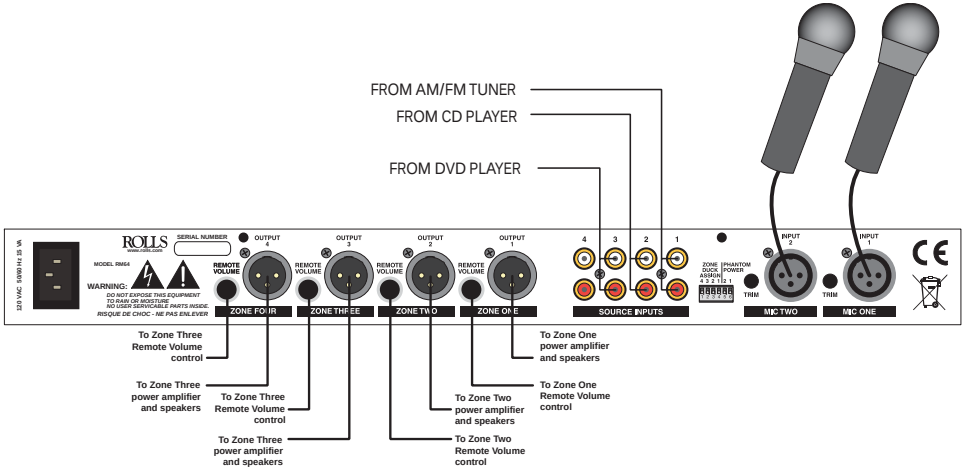
MIC INPUTS 1, 2: These LEVEL controls adjust the volume of the indicated Microphone channel.
SOURCE INPUTS 1 - 4: These LEVEL controls adjust the volume of the indicated Source channel.
ZONE SELECT: DIP switches for assigning the indicated Mic or Source channel to the Zone Outputs. The four switches closest to the channel LEVEL control assign that channel to the zones.
ZONE OUTPUTS: These LEVEL controls adjust the output volume of the indicated ZONE.
CH 4 INPUT: 3.5mm (1/8" stereo) line level input for channel 4.
pwr LED: When lit, indicates the RM64 is on.
Power switch: Turns the RM64 on and off.

REAR PANEL



ZONE OUTPUTS 1 - 4: Line level (+4 dB ref.) balanced male XLR jacks for connection to the zone amplifiers.
REMOTE VOLUME: These four 1/4" TRS jacks connect to a remote volume potentiometer.
SOURCE INPUTS 1 - 4: RCA input jacks for connection to CD Players, Tuners etc.
ZONE DUCK ASSIGN/PHANTOM POWER SWITCHES: This set of DIP switches, from left to right;the first four assign which zone will have the source signal(s) ducked by the Microphone Inputs, the last two apply phantom power to the indicated microphone channel.
MIC INPUT 1 - 2: Balanced female XLR jacks for connection to dynamic or condenser type microphones.
TRIM 1 - 2: Adjusts the input sensitivity for the indicated Mic Input.

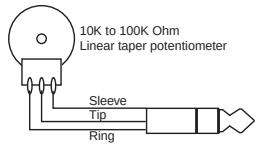
CONNECTION INFORMATION

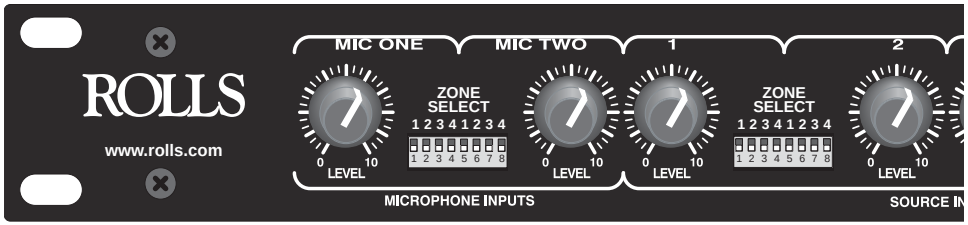


Referring to the diagram above, connect microphones to the MIC INPUTs and apply phantom power where needed by moving the corresponding Phantom Power switch to the DOWN position. Connect sources such as cassette players, CD players, AM/FM tuners, etc. to the RCA Source Inputs. Note which input each device is connected to as that input corresponds to its front panel Level control. Connect the XLR outputs to their respective zone amplifiers and speakers. The balanced signals are configured pin 2 hot, pin 3 neutral, and pin 1 ground. For ground lifting, it will be necessary to remove the connection to pin 1.

REMOTE VOLUME INFORMATION

For Remote Volume operation, a Tip-Ring-Sleeve plug will need to be wired to a 10 - 100 K Ohm potentiometer (NEITHER INCLUDED) as shown here.





SETTING THE FRONT PANEL DIP SWITCHES

Each input is assigned to a Zone via the four DIP switches nearest that Input Level control. The zone is assigned when the switch is in the DOWN position. For example, the switch settings above send Mic 1 to all four Zones; 1, 2, 3, and 4. Mic 2 is sent to Zone 1 only. Source 1 is sent to Zone 1, and Source 2 is sent to Zones 2, 3, and 4.

3000 Series

audio-technica

Frequency-agile True Diversity UHF Wireless Microphone Systems

Features

- **Automatic frequency scanning**
- **High sensitivity dual IF receiving design for dropout free performance**
- **High-efficiency compander for flawless audio**
- **Three compatible frequency bands with 996 - 1001 selectable UHF frequencies per band**
- **25 kHz frequency spacing makes it easier to find a clear, open frequency in crowded RF environments**
- **Nine pre-coordinated frequency scan groups simplify selection of usable frequencies in a multi-channel wireless system**
- **Receiver internal function menu with soft-touch controls**
- **Digital Tone Lock™ squelch**
- **Adjustable receiver squelch**
- **Transmitter battery life gauge on the front panel**
- **Operator alert indicators**
- **True Diversity receiver with silent, automatic switching**
- **AC or 12–18V DC operation**
- **Rear panel or front panel antenna mount options**
- **Antenna power available for powered antennas & other in-line RF devices**
- **Balanced and unbalanced outputs**
- **Output level control on the rear panel**
- **Ground lift switch on balanced output**
- **Receiver mounts in a single rack space (1 or 2 units)**
- **All transmitters offer rugged construction, programmable features, dual RF power output, backlit LCDs, and dual-color power/mute LED**

Description

The 3000 Series frequency-agile True Diversity UHF wireless systems set a new standard for audio and RF performance. Allowing large operating areas and very superb noise specifications brings its performance to a standard that provides the audio quality and reliability necessary for the high quality sound systems of today. High sensitivity dual IF design using True Diversity operation with silent automatic switching provides dropout-free performance. All 3000 Series components feature soft-touch controls for quick easy access to a large range of functions and a backlit LCD information display in each unit provides convenient visual indication of unit setting and operation.

The ATW-R3100b receiver features automatic frequency scanning that eliminates the need for searching for clear channels by automatically selecting the most appropriate frequency for the area in which the wireless is operating. 25 kHz frequency spacing enables the system to easily find an open frequency in crowded RF environments, while nine pre-coordinated frequency scan groups simplify selection of usable frequencies in a multi-channel wireless system. The flexibility in programming both the receiver and transmitters allows the customizing ability for this wireless system to meet virtually any application. Advanced digital Tone Lock™ squelch provides enhanced rejection of interference. In addition, the Tone Lock signal from the transmitter also conveys information on the transmitter's battery condition and mute status back to the receiver for display. The receiver's front panel display provides continuous indication of RF signal strength along with the audio modulation level of the received signal.

Designed to operate from AC or 12–18V DC, the receiver incorporates rear-panel connections for balanced XLR and unbalanced 1/4" outputs with adjustable gain along with detachable BNC 1/4" wave antennas. Switchable 12V DC antenna power is available on the BNC-type connectors for powered antenna accessories. The receiver is half-width for a standard 1U 19" rack-mount and includes rack-mount adapters.

All transmitters operate using two standard AA batteries and feature high- and low-level RF output settings. The low-level setting allows two additional hours of battery life while retaining a strong RF signal link. Each transmitter's backlit LCD display presents a great deal of setup and operating information clearly and conveniently including battery fuel remaining, mute and operating frequency. A flashing "Lo-Batt" alert visually signals the battery life is almost depleted. A dual-color power/mute indicator LED provides visual indication of transmitter status.

Programmable power/mute locks limit the functioning of the transmitter's power/mute button as desired for particular users and applications. To match the audio input level to the transmitter, audio input gain settings may be selected through the function menu. Each handheld transmitter includes a heavy-duty Quiet-Flex™ stand clamp.

The ATW-T310b UniPak® body-pack transmitter features a safety cover to protect the soft-touch controls from being accidently activated and a recessed input connector to increase the life of the microphone cable. Inputs are available on the transmitter for low impedance microphone, and high impedance musical instrument or line input. The transmitter supplies 5V DC bias to power condenser microphones. The locking 4-pin HRS-type audio input connector is recessed to protect the connection from damage. A dual-color status LED illuminates green when power is on, and red when the transmitter is muted. Constructed of high-impact materials, the body-pack transmitter features a field replaceable whip antenna, a backlit LCD display, and a secure, locking battery compartment door.

The ATW-T341b dynamic handheld transmitter features the Artist Elite® AE4100 cardioid capsule created for live sound venues. The element includes internal shock mounts for low handling noise. An integral two-stage pop filter within the rugged steel headcase protects against "p" pops and other breath plosives. Transmitter setup functions are menu-driven via soft-touch controls. To prevent accidental changes, the controls are covered by the transmitter's handle case when not being used. A dual-color status LED illuminates green when power is on, and red when the transmitter is muted. The transmitter housing is made of metal with an integral antenna and a backlit LCD display.

The ATW-T371b condenser handheld transmitter features the Artist Series ATM710 cardioid condenser capsule created for vocal applications. The element includes internal shock mounts for low handling noise. An integral two-stage pop filter within the rugged steel headcase protects against "p" pops and other breath plosives. All transmitter setup functions are menu-driven via soft-touch controls. To prevent accidental changes, the controls are covered by the transmitter's handle case when not being used. A dual-color status LED illuminates green when power is on, and red when the transmitter is muted. The transmitter housing is made of metal with an integral antenna and a backlit LCD display.

The ATW-T1802b plug-on transmitter is designed to convert a dynamic or condenser microphone to wireless operation. The transmitter features a 3-pin XLF-type connector with locking ring for secure attachment. Integral

12V DC phantom power will allow the transmitter to power condenser microphones. All transmitter setup functions are menu-driven via soft-touch controls. To prevent accidental changes, the controls are covered by a sliding door when not being used. A dual-color status LED illuminates green when power is on, and red when the transmitter is muted. The transmitter housing is made of metal with an integral antenna and a backlit LCD display.

Architect's and Engineer's Specifications

The frequency-agile FM wireless microphone system shall consist of a receiver and the appropriate transmitter. Operating in the UHF bands of 482.000–507.000 MHz, 541.500–566.375 MHz , or 655.500–680.375 MHz, the system shall be capable of operating on any of 996 – 1001 PLL-synthesized frequencies per band. The frequency-agile FM wireless receiver shall be all-metal and shall provide an automatic scanning function to select appropriate local usable channels for proper wireless system operation. All configuration functions of the receiver shall be controlled by soft-touch controls on the receiver front panel. It shall be a True Diversity receiver with two independent internal receiver sections, automatically selecting the highest quality signal for the receiver's output. The system will be equipped with an advanced Tone Lock™ digital identification system to ensure that only the desired wireless microphone transmitter allows the receiver to be un-muted. The receiver shall have shall have an alert LED on the front panel that indicates transmitter low battery warning, signal loss and input overload. The receiver shall continuously monitor and display the battery life indicator of the wireless transmitter, the RF signal strength and the diversity selection of internal dual tuner sections (A&B). The receiver shall have a rear panel selector to lift the ground connection from pin 1 of the XLR-type output connector to prevent ground loops. The receiver shall be able to be powered by 120V AC 60 Hz or 12–18V DC at 500 mA. Antennas shall be located on the rear of the receiver and shall incorporate standard BNC-type connectors to allow them to be detached from the receiver to facilitate the receiver being used with external antennas or antenna distribution devices. Switchable 12V DC power shall be provided on the BNC-type connectors. An accessory bracket should allow for the antennas to be located at the front of the receiver. The receiver can be rack-mounted singly or in pairs in a single rack space. The receiver's design shall provide totally silent audio output mute when the wireless transmitter is turned off or signal is lost. The wireless receiver and the supplied metal rack-mounting brackets shall be industrial black.

The frequency-agile FM wireless body-pack transmitter shall have microphone and line level inputs. It shall provide DC voltage to power microphones requiring DC bias. The body-pack transmitter shall be a part of a wireless microphone system operating in the bands of 482.000–507.000 MHz, 541.500–566.375 MHz , or 655.500–680.375 MHz. The body-pack transmitter shall have a reversible clip allowing for up or down cable entry. The transmitter shall have a recessed 4-pin locking input connector and a viewable fuel gauge to indicate the remaining battery life. 996-1001 frequencies shall be available and be selected with the soft-touch controls under the safety panel. The device shall have a dual-color LED to indicate power/mute status. There shall be an adjustment to allow input gain changes with a range of 18 dB. The transmitter shall include Tone Lock™ to identify the wireless transmitter to the wireless receiver. This transmitter shall utilize two RF output power levels and shall operate on two AA batteries. The transmitter battery compartment shall be locking. All adjustments shall be via soft-touch controls and shall remain as set even if the transmitter loses power or the batteries are removed. A backlit LCD display shall be provided to show transmitter setup parameters or frequency. The transmitter shall have a removable and field replaceable antenna.

The frequency-agile FM wireless handheld transmitter utilizing a dynamic cardioid element shall be a part of a wireless microphone system operating in the bands of 482.000–507.000 MHz, 541.500–566.375 MHz, or 655.500–680.375 MHz. The capsule shall incorporate internal shock mounting and have a two-stage integral pop filter. It shall be capable of transmitting on any of 996-1001 frequencies per band. It shall have a metal housing with a plastic antenna end cap. The transmitter shall transmit a digital Tone Lock™ signal that allows the receiver to un-mute. A dual-color LED indicator shall illuminate green when the transmitter is turned on and shall illuminate red when the transmitter is muted. A backlit LCD display shall be provided to show transmitter setup parameters or frequency. The microphone shall have an audio input level adjustment range of 18 dB. All adjustments shall be via soft-touch controls and shall remain as set even if the transmitter loses power or the batteries are removed. The transmitter shall operate on two AA batteries and contain a Hi/Lo RF power selector. A battery fuel gauge shall be incorporated to indicate the status of the internal batteries. The transmitter shall be supplied with a heavy-duty stand clamp.

The frequency-agile FM wireless handheld transmitter utilizing a high quality condenser cardioid element shall be a part of a wireless microphone system operating in the bands of 482.000–507.000 MHz, 541.500–566.375 MHz , or 655.500–680.375 MHz. The capsule shall incorporate internal shock mounting and have a two-stage integral pop filter. It shall be capable of transmitting on any of 996-1001 frequencies per band. It shall have a metal housing with a plastic antenna end cap. The transmitter shall transmit a digital Tone Lock™ signal that allows the receiver to un-mute. A dual-color LED indicator shall illuminate green when the transmitter is turned on and shall illuminate red when the transmitter is muted. A backlit LCD display shall be provided to show transmitter setup parameters or frequency. The microphone shall have an audio input level adjustment range of 18 dB. All adjustments shall be via soft-touch controls and shall remain as set even if the transmitter loses power or the batteries are removed. The transmitter shall operate on two AA batteries and contain a Hi/Lo RF power selector. A battery fuel gauge shall be incorporated to indicate the status of the internal batteries. The transmitter shall be supplied with a heavy-duty stand clamp.

The frequency-agile FM wireless plug-on transmitter with locking 3-pin XLR-type connector shall be a part of a wireless microphone system operating in the bands of 541.500–566.375 MHz or 655.500–680.375 MHz. It shall be designed to convert a dynamic or condenser microphone to wireless operation. It shall be capable of transmitting on any of 996 frequencies (adjustable in 25 kHz steps) per band and shall be compatible with Audio-Technica 3000 Series and 1800 Series receivers. The transmitter shall transmit a digital Tone Lock™ signal that allows the receiver to un-mute. A dual-color LED indicator shall illuminate green when the transmitter is turned on and red when the transmitter is muted. The transmitter shall have an audio input level adjustment range of 24 dB. All adjustments shall be via soft-touch controls and shall remain as set even if the transmitter loses power or the batteries are removed. A sliding door shall cover the setup controls when not in use. The transmitter shall operate on two AA batteries and contain a Hi/Lo RF power selector. The transmitter shall be equipped with a backlit LCD screen used to show operating frequency and programming status. A battery fuel gauge shall be incorporated into the display to indicate the status of the internal batteries. The transmitter shall provide 12V DC to power condenser microphones. The transmitter housing shall be metal with integral antenna and captive battery door.

The wireless system shall be an Audio-Technica
(note to specifier: choose one):

ATW-3110b – Basic Body-pack System
ATW-3131b – Body-pack System with Lavalier Microphone
ATW-3141b – Dynamic Handheld System
ATW-3171b – Condenser Handheld System
ATW-3192b – Body-pack System with Miniature Headworn Condenser Microphone (black)
ATW-3192b-TH – Body-pack System with Miniature Headworn Condenser Microphone (beige)

3000 Series

Specifications

Overall system	
UHF operating frequencies	Band C: 541.500–566.375 MHz (996 frequencies, 25 kHz increments) Band D: 655.500–680.375 MHz (996 frequencies, 25 kHz increments) Band I: 482.000–507.000 MHz (1001 frequencies, 25 kHz increments)
Minimum frequency step	25 kHz
Modulation mode	FM
Maximum deviation	±35 kHz
Dynamic range	>110 dB (A-weighted), typical
Total harmonic distortion	<1% (at 1 kHz, ±17.5 kHz deviation)
Operating range	100 m (300') typical (open range environment with no interfering signals)
Operating temperature range	–5° C (23° F) to +45° C (113° F) (battery and LCD performance may be reduced at very low temperatures)
Frequency response	70 Hz to 15 kHz (+1 dB, -3 dB)

ATW-R3100b receiver	
Receiving system	True Diversity
Image rejection	60 dB nominal, 55 dB minimum
RF sensitivity	24 dBuV at 60 dB S/N ratio (50 ohms termination)
Maximum output level	Balanced: +9 dBV; Unbalanced: +7 dBV
Output connector(s)	Unbalanced: 6.3 mm (1/4") Balanced: XLR-type
Antenna input	BNC-type, 50 ohms Bias voltage 12V DC, 60 mA, each
Power requirements	12-18V DC, 500 mA
Dimensions	210.0 mm (8.27") W x 164.4 mm (6.47") D x 44.0 mm (1.73") H (not including BNC connectors or feet)
Net weight	1.1 kg (38.8 oz)
Accessories included	Two flexible UHF antennas (country dependent); AC adapter; rack-mount adapters

ATW-T310b UniPak® transmitter	
RF power output	High: 30 mW; Low: 10 mW (switchable)
Spurious emissions	Following federal and national regulations
Input connection	Four-pin locking connector  Pin 1: GND, Pin 2: INST INPUT, Pin 3: MIC INPUT, Pin 4: DC BIAS +5V
Batteries	Two 1.5V AA, not included
Battery life	High: 6 hours (alkaline), Low: 8 hours (alkaline), (depending on battery type and use pattern)
Dimensions	66.0 mm (2.60") W x 24.0 mm (0.94") D x 87.0 mm (3.43") H
Net weight	81 g (2.9 oz), without batteries

ATW-T341b, ATW-T371b handheld transmitters	
RF power output	High: 30 mW; Low: 10 mW (switchable), at 50 ohms
Spurious emissions	Following federal and national regulations
Microphone element	ATW-T341b: Dynamic cardioid ATW-T371b: Condenser cardioid
Batteries	Two 1.5V AA, not included
Battery life	High: 6 hours (alkaline), Low: 8 hours (alkaline), (depending on battery type and use pattern)
Dimensions	ATW-T341b: 237.0 mm (9.33") long, 48.0 mm (1.89") diameter ATW-T371b: 240.0 mm (9.45") long, 50.0 mm (1.97") diameter
Net weight	ATW-T341b: 284 g (10.0 oz) ATW-T371b: 277 g (9.8 oz) (without batteries)
Accessory included	AT8456a Quiet-Flex™ stand clamp

ATW-T1802 plug-on transmitter	
RF power output	High: 30 mW; Low: 10 mW, nominal
Spurious emissions	Under federal regulations
Dynamic range	>105 dB, A-weighted
Input connections	3-pin locking XLRF-type
Microphone power	Provides power to condenser microphones rated to operate on 12V phantom power or less
Batteries	Two 1.5V AA alkaline (not included)
Current consumption	High: 180 mA; Low: 160 mA, typical
Battery life	Approximately 6 hours (High); 8 hours (Low), depending on battery type and use pattern
Dimensions	40.0 mm (1.57") x 111.0 mm (4.37") x 40.0 mm (1.57")
Net weight	199 g (7.0 oz) (without batteries)

In the interest of standards development, A.T.U.S. offers full details on its test methods to other industry professionals on request.

Specifications are subject to change without notice.

audio-technica

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ATW-R3100b

audio-technica

Frequency-agile True Diversity UHF Receiver

3000 series wireless systems

Features

- **Automatic frequency scanning**
- **High sensitivity dual IF receiving design for dropout-free performance**
- **High-efficiency compander for flawless audio**
- **Three compatible frequency bands with 996 - 1001 selectable UHF frequencies per band**
- **25 kHz frequency spacing makes it easier to find a clear, open frequency in crowded RF environments**
- **Nine pre-coordinated frequency scan groups simplify selection of usable frequencies in a multi-channel wireless system**
- **Receiver internal function menu with soft-touch controls**
- **Digital Tone Lock™ squelch**
- **Adjustable receiver squelch**
- **Transmitter battery-life fuel gauge on the front panel**
- **Operator alert indicators**
- **True diversity receiver with silent, automatic switching**
- **AC or 12–18V DC operation**
- **Rear panel antenna mount options**
- **Antenna power available for powered antennas & other in-line RF devices**
- **Balanced and unbalanced outputs**
- **Output level control on the rear panel**
- **Ground lift switch on balanced output**
- **Receiver mounts in a single rack space (1 or 2 units)**

Description

The ATW-R3100b frequency-agile true diversity UHF wireless receiver sets a new standard for audio and RF performance. With a large operating range and superb noise specifications, the 3000 Series provides the audio quality and reliability necessary for the high quality sound systems of today.

Automatic frequency scanning eliminates the need for searching for clear channels and automatically selects the most appropriate frequency for the area in which the wireless is operating. 25 kHz frequency spacing enables the system to easily find an open frequency in crowded RF environments, while nine pre-coordinated frequency scan groups simplify selection of usable frequencies in a multi-channel wireless system. The flexibility in programming both the receiver and transmitter allows the customizing ability for this wireless system to meet virtually any application. Features not often found in other receivers include high-pass filter, meter hold function, adjustable squelch, selectable power/mute on transmitters, lock functions for operational safety, and control of input sensitivity.

Designed to operate from AC or 12–18V DC, the receiver incorporates rear-panel connections for balanced XLR and unbalanced ¼" outputs with adjustable gain along detachable BNC ¼" wave antennas are also included. Switchable 12V DC antenna power is available on the BNC-type connectors for powered antenna accessories. The receiver is half-width for a standard 1U 19" rack-mount and includes rack-mount adapters.

Architect's and Engineer's Specifications

The frequency-agile FM wireless receiver shall be part of a wireless microphone system operating in the bands of 482.000–507.000 MHz, 541.500–566.375 MHz , or 655.500–680.375 MHz. It shall be capable of operating on any of 996-1001 PLL-synthesized frequencies per band. The all-metal receiver shall provide an automatic scanning function to select appropriate local usable channels for proper wireless system operation. All configuration functions of the receiver shall be controlled by soft-touch controls on the receiver front panel. It shall be a True Diversity receiver with two independent internal receiver sections, automatically selecting the highest quality signal for the receiver's output. The system will be equipped with an advanced Tone Lock™ digital identification system to ensure that only the desired wireless microphone transmitter allows the receiver to be un-muted. The receiver shall have an alert LED on the front panel that indicates transmitter low battery warning, signal loss and input overload. The receiver shall continuously monitor and display the battery life indicator of the wireless transmitter, the RF signal strength and the diversity selection of internal dual tuner sections (A&B). The receiver shall have a rear panel selector to lift the ground connection from pin 1 of the XLR-type output connector to prevent ground loops. The receiver shall be able to be powered by 120V AC 60 Hz or 12–18V DC at 500 mA. Antennas shall be located on the rear of the receiver and shall incorporate standard BNC-type connectors to allow them to be detached from the receiver to facilitate the receiver being used with external antennas or antenna distribution devices. Switchable 12V DC power shall be provided on the BNC-type connectors. An accessory bracket should allow for the antennas to be located at the front of the receiver. The receiver can be rack-mounted singly or in pairs in a single rack space. The receiver's design shall provide totally silent audio output mute when the wireless transmitter is turned off or signal is lost. The wireless receiver and the supplied metal rack-mounting brackets shall be industrial black.

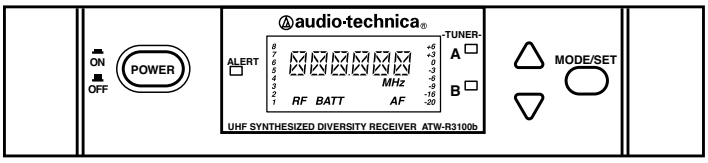
The FM wireless receiver shall be an Audio-Technica ATW-R3100b or equivalent.

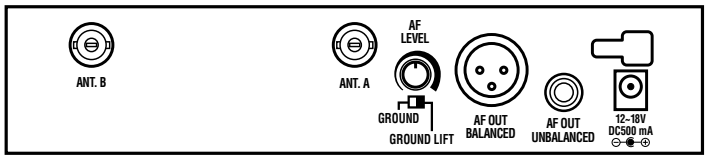
Specifications

	Overall system
UHF operating frequencies	Band C: 541.500–566.375 MHz (996 frequencies, 25 kHz increments) Band D: 655.500–680.375 MHz (996 frequencies, 25 kHz increments) Band I: 482.000–507.000 MHz (1001 frequencies, 25 kHz increments)
Minimum frequency step	25 kHz
Modulation mode	FM
Maximum Deviation	±35 kHz
Dynamic Range	>110 dB (A-weighted), typical
Total harmonic distortion	<1% (at 1 kHz, ±17.5 kHz deviation)
Operating range	100 m (300') typical (open range environment with no interfering signals)
Operating temperature range	–5° C (23° F) to +45° C (113° F) (battery and LCD performance may be reduced at very low temperatures)
Frequency response	70 Hz to 15 kHz (+1 dB, -3 dB)

	ATW-R3100b receiver
Receiving system	True Diversity
Image rejection	60 dB nominal, 55 dB minimum
RF sensitivity	24 dBuV at 60 dB S/N ratio (50 ohms termination)
Maximum output level	Balanced: +9 dBV; Unbalanced: +7 dBV
Output connector(s)	Unbalanced: 6.3 mm (1/4") Balanced: XLR-type
Antenna input	BNC-type, 50 ohms Bias voltage 12V DC, 60 mA, each
Power requirements	12-18V DC, 500 mA
Dimensions	210.0 mm (8.27") W x 164.4 mm (6.47") D x 44.0 mm (1.73") H (not including BNC connectors or feet)
Net weight	1.1 kg (38.8 oz)
Accessories included	Two flexible UHF antennas (country dependent); AC adapter; rack-mount adapters

front





back

audio-technica

Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, Ohio 44224
Audio-Technica Limited, Old Lane, Leeds LS11 8AG England

ATW-RMS1

Remote Mute Switch

Features

- **Rugged metal case**
- **Heavy-duty pushbutton**
- **Audio muting with no audible clicks**
- **HRS-type input and output connectors**
- **Stainless steel belt clip**

Description

The ATW-RMS1 remote momentary mute switch allows a wireless user to mute their Audio-Technica wireless microphone quickly and easily during a presentation.

The ATW-RMS1 mute switch is ideal for sporting event referees, ministers, public speakers and other performers who need the ability to remotely mute a wireless microphone. It is designed to be installed between a wireless microphone using a 4-pin HRS-type connector and its associated UniPak® body-pack wireless transmitter.

The ATW-RMS1 features a toggle switch with positive “on” – “off” function. It is supplied with a permanently attached 22" cable terminated with an HRS-type connector that attaches to the input jack on a UniPak® transmitter. Its all-metal construction and heavy-duty switch are built to withstand rugged use. A durable belt clip is provided for ease of wear.

Architect’s and Engineer’s Specifications

The remote mute switch shall enable a wireless microphone user to mute their microphone remotely from the transmitter. It shall be designed to connect between a wireless microphone (lavalier or headworn style) and its associated body-pack transmitter. The remote mute switch shall incorporate a large rugged toggle-type switch that can be found easily when the device is worn under clothing, costumes, or vestments. When toggled, this switch shall activate an internal electronic mute circuit that will mute the attached microphone quickly and silently with no pops or clicks heard in the audio. The unit shall be housed in ruggedly constructed metal enclosure with an attached durable belt clip. A 22" (minimum) cable shall be permanently attached to the box for connection to the associated wireless transmitter along with an HRS-type connector for attaching a microphone. The unit shall be finished in a low reflective black paint.

The Audio-Technica ATW-RMS1 is specified.

audio-technica

Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, Ohio 44224
Audio-Technica Limited, Old Lane, Leeds LS11 8AG England

0001-0083-00

RDL®
Radio Design Labs

SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

ACCESSORIES

Models **D SERIES-J1, D SERIES-J2, D SERIES-J3**

AUDIO INPUT PANELS

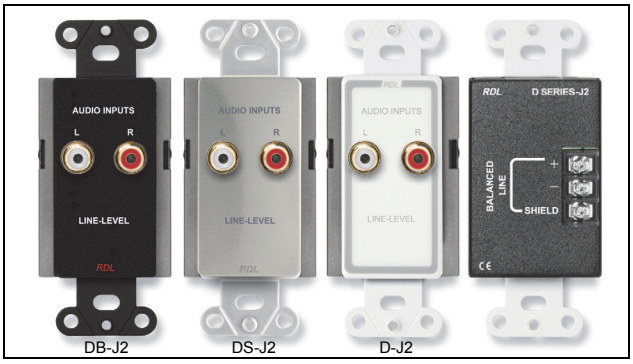
The D SERIES-J1, -J2 and -J3 are audio input accessories from Radio Design Labs offered in Decora® plates. The D SERIES panels are finished in RDL's grey/white, black or in stainless steel. These input panels are intended for installations demanding the ultimate in professional styling combined with durability, longevity and value. The D SERIES-J1, -J2 and -J3 fit directly into RDL back boxes (WB-1U, WB-2U) to fit cabinets, US or international walls. The back of each panel assembly is finished with a metal enclosure clearly labeled for easy installation.

D SERIES-J1

- **Wall Mounted Microphone Input**
- **XLR Input Connector with Gold Contacts**
- **Barrier Block Wiring Connections**
- **Ground-Lift Terminals on Barrier Block**

The D SERIES-J1 is a complete microphone input panel assembly. Connections to the female front-panel XLR jack are made on a rear barrier block. Four terminals are provided: **CASE GROUND**, **SHIELD** (XLR pin 1), **+** (XLR pin 2) and **-** (XLR pin 3). The installer may install a jumper between the pin 1 connection and **CASE GROUND** if desired. The back of the -J1 is finished with a metal enclosure clearly labeled for easy installation.

D SERIES-J2



- **Wall Mounted Line-Level Audio Input Panel**
- **Gold Plated Phono Jacks**
- **Hum Cancellation on Unbalanced Line Inputs**
- **Transformer Isolation for Unbalanced Line Inputs**
- **Balanced Output for Unbalanced Line Inputs**

The D SERIES-J2 is a complete unbalanced line-level audio input panel assembly. The front panel features two phono jacks, intended for mono or stereo consumer level sources. **LEFT** and **RIGHT** are combined and balanced through audio transformers configured to reject induced hum. The line-level output is provided on the rear-panel barrier block for connection to 10 kΩ or higher input impedance line level module or equipment inputs.

D SERIES-J3

- **Wall Mounted Line-Level Audio Input Panel**
- **XLR Microphone Input with Gold Contacts**
- **Gold Plated Phono Jack Line Inputs**
- **Hum Cancellation on Unbalanced Line Inputs**
- **Transformer Isolation for Unbalanced Line Inputs**
- **Balanced Output for Unbalanced Line Inputs**

The D SERIES-J3 is a complete audio input panel assembly. The front panel features a female XLR jack and two phono jacks. The XLR is connected directly to the rear-panel barrier block. The phono inputs are identical to the -J2.

RDL®
Radio Design Labs

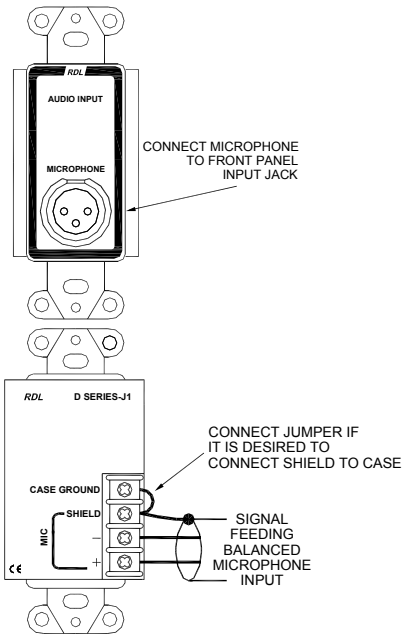
SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

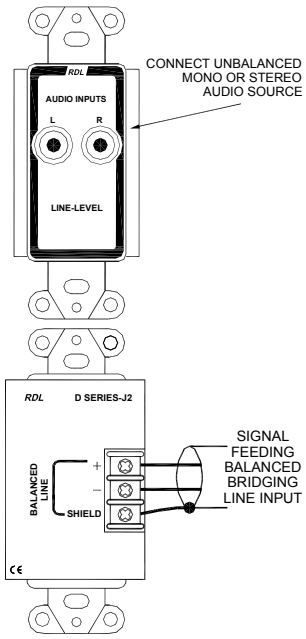
ACCESSORIES

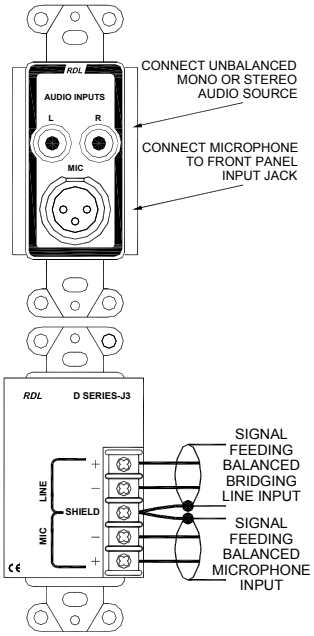
Models **D-SERIES-J1, D SERIES-J2, D SERIES-J3**
AUDIO INPUT PANELS

Installation/Operation

CE **EN55103-1 E1-E5; EN55103-2 E1-E4**
Typical Performance reflects product at publication time exclusive of EMC data, if any, supplied with product. Specifications are subject to change without notice.







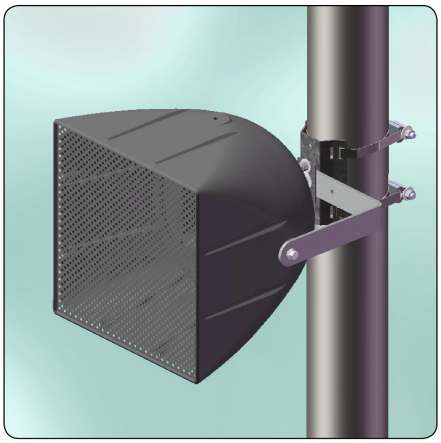
TYPICAL PERFORMANCE

D SERIES-J1	
Input connector:	XLR female gold contacts
Output connector:	Full size barrier block
Output connections (4):	**CASE GROUND**, **SHIELD** (XLR pin 1), **+** (XLR pin 2), **-** (XLR pin 3)
D SERIES-J2	
Input connectors:	Phono jacks with gold contacts (2)
Output connector:	Full size barrier block
Output connections:	**+**, **-, SHIELD**
Frequency response:	30 Hz to 20 kHz (±1 dB line level)
D SERIES-J3	
Input connectors:	XLR female with gold contacts (1), Phono jacks with gold contacts (2)
Output connector:	Full size barrier block
Output connections:	
Line:	**+**, **-, SHIELD**
Mic:	**SHIELD** (XLR Pin 1), **+** (XLR Pin 2), **-** (XLR Pin 3)
Frequency response:	30 Hz to 20 kHz (±1 dB line level)
Power Requirement:	Passive (all models)

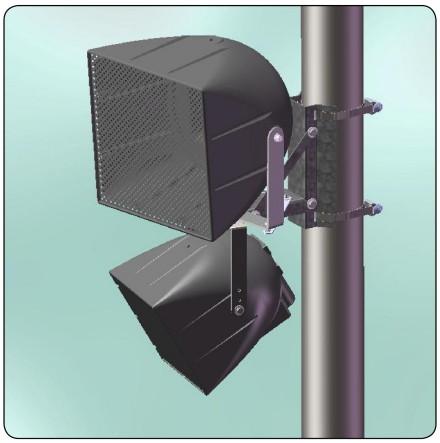
Overall Dimensions D SERIES:	Height:	4.13 in	10.49 cm
	Width:	1.7 in	4.32 cm
	Depth	1.75 in	4.45 cm:

Radio Design Labs Technical Support Centers
U.S.A. (800) 933-1780, (928) 778-3554; Fax: (928) 778-3506
Europe [NH Amsterdam] (++31) 20-6238 983; Fax: (++31) 20-6225-287

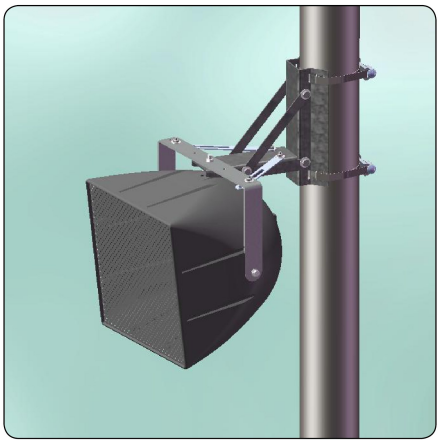
PMB Series
Pole Mount Bracket Kits



PMB-1RR Pole Mount Bracket



PMB-2RR Pole Mount Bracket



PMB-2RR Pole Mount Bracket

Community offers the **PMB Series** Pole Mount Bracket Kits for mounting small R-Series and small WET Series loudspeakers to poles and columns. These brackets were designed for use with R.25 and R.5 loudspeakers, but can also be used with Community's R.15, R.35, RMG-200A, W2-218, W2-228, and W2-2W8 loudspeaker models. The **PMB-1RR** bracket is intended for use with a single loudspeaker with vertical downtilt capability, while the **PMB-2RR** bracket can be used to mount up to two loudspeakers in a "top-bottom" configuration with left-to-right panning and vertical downtilt.

The bolt-together mounting kit assembly attaches to a pole or column 6 inches (152 mm) or greater in diameter by using clamps and ¾-inch stainless steel banding. Clamps and assembly hardware are included in the mounting kits, with banding sold separately. A U-shaped mounting yoke is already included with the small R-Series and WET Series loudspeakers.

For each PMB-1RR and PMB-2RR Pole Mount Bracket attached to a pole or column, two stainless steel bands must be used. Community offers part number **PMB-BAND** for use with the PMB Series mounting kits, which includes 92 inches (2337 mm) of banding, or enough to provide two bands for a 10.75-inch or smaller diameter pole. Therefore, for poles between 6 inches and 10.75 inches in diameter, use one PMB-BAND per bracket. For poles between 10.75 inches (273 mm) and 25.25 inches (641 mm) in diameter, use two PMB-BAND per bracket*. For installations with multiple pole mount requirements or with poles greater than 25.25 inches (641 mm) in diameter, Community also offers part number **BAND100FT** which includes 100 feet (30.5 m) of stainless steel banding.

In pole mount installations, mounted objects should be secured to the mounting structure with safety cables. When using either the PMB-1RR or PMB-2RR bracket, an additional PMB-1RR bracket can also be mounted above the loudspeaker and bracket assembly, to be utilized as a safety cable attachment point. The PMB-1RR and PMB-2RR brackets include safety cable clips for R.25 and R.5 loudspeakers when used for this purpose. The R.15 and R.35 models have an integrated loop for safety cable mounting purposes. Cable clips for RMG-200A and small WET loudspeakers must be devised by the installer. Safety hardware, cabling, shackles and fittings must also be installer-supplied to meet the needs of the installation.

All parts in the PMB mounting kits are constructed of weather-resistant stainless steel, aluminum or steel with a hot-dipped galvanized finish. The PMB-1RR and PMB-2RR Pole Mount Bracket Kits are suitable for outdoor use and non-corrosive atmosphere indoor applications.

SPECIFICATIONS:

Material (Pole Bracket and Clamp Bolt): Hot-dipped galvanized steel

Material (Fasteners): Stainless steel

Material (Clamp): Aluminum

PMB-1RR Working Load: 50 lbs (22.7 kg)

PMB-2RR Working Load: 100 lbs (45.4 kg)

Design Factor: 10:1 ratio (static vertical load)

Part No.	Description
PMB-1RR	Pole mount bracket, single loudspeaker, vertical downtilt to 90 degrees
PMB-2RR	Pole mount bracket, single or dual loudspeakers, vertical downtilt and left-to-right panning (see reverse side for downtilt and panning angles)
PMB-BAND	Stainless steel banding, 92 inches (2337 mm)
BAND100FT	Stainless steel banding, 100 feet (30.5 m)

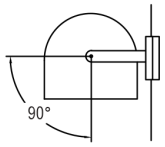
**When measuring the diameter of the pole, be sure to measure at the position where the pole mount bracket will be attached. Many poles taper with height.*

Community Professional Loudspeakers, 333 East Fifth Street, Chester, PA 19013-4511 USA
(610) 876-3400 · Fax (610) 874-0190 · info@communitypro.com · www.communitypro.com

PMB Series
Pole Mount Bracket Kits

PMB-1RR

SIDE VIEW
Vertical downtilt capability of all loudspeakers is 90°

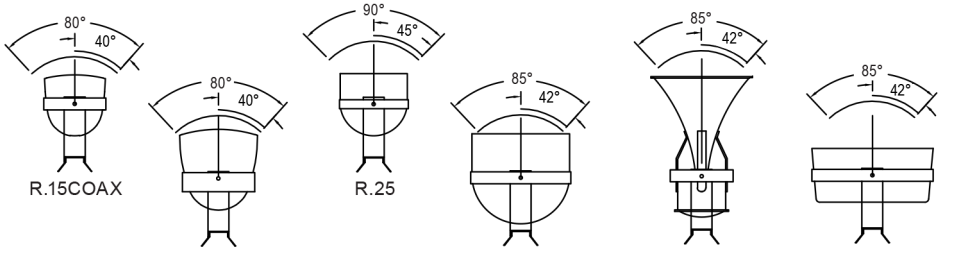


R.15, R.35, R.25, R.5, RMG-200A, W2-218, W2-228, W2-2W8

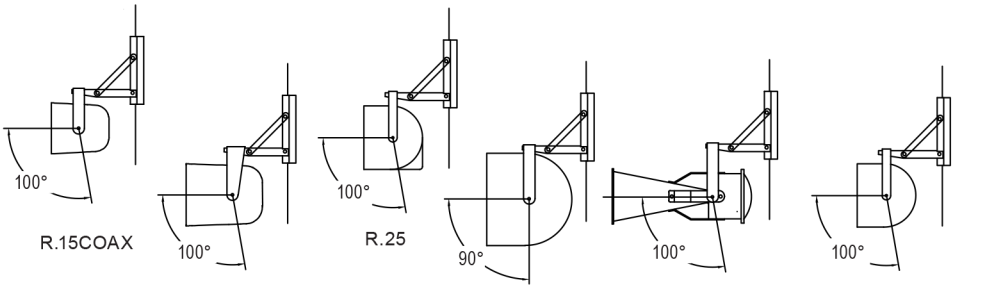
LOUDSPEAKER DOWNTILT AND PAN CLEARANCE

PMB-2RR

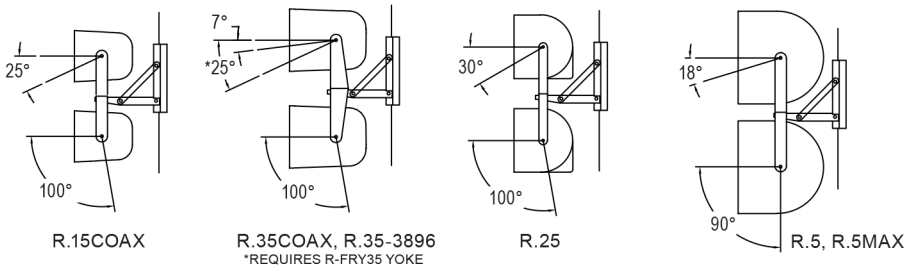
TOP VIEW
Left-to-right panning capability of single loudspeaker

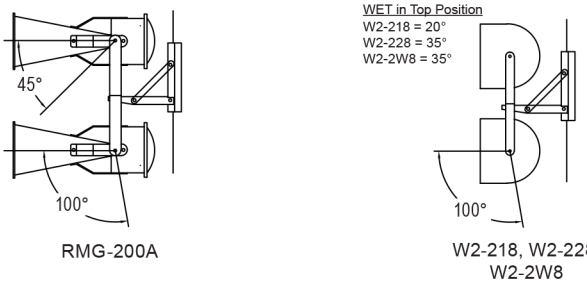


SIDE VIEW
Downward tilt capability of single loudspeaker



SIDE VIEW
Downward tilt capability of dual loudspeakers





IMPORTANT NOTE: When two loudspeakers are mounted on a PMB-2RR in top-bottom configuration and are panned to the left and/or right at different pan angles, the vertical downtilt of the top loudspeaker may be limited by interference from the position of the U-shaped mounting yoke of the lower loudspeaker.

Installation of loudspeakers should be performed only by trained and qualified personnel. It is strongly recommended that a licensed professional structural engineer approve the mounting design.

PLD Series

PLD4.2 | PLD4.3 | PLD4.5 Multi-Channel System Processing Amplifiers

Features

• Total power up to 8,000 watts.

• Flexible Amplifier Summing Technology™ (FAST) drives most any loudspeaker system or configuration by distributing total amplifier power across one, two, three or all four channels.

• Four channels of full function onboard loudspeaker DSP with Crossover and Parametric EQ Filters, Limiting and Alignment Delay eliminate the need for outboard loudspeaker processors.

• Powerful Intrinsic Correction™ processing maximizes the sonic performance of QSC loudspeakers.

• 20 Factory Preset configurations that can be modified and stored in the 50 User Presets.

• PowerLight universal switchmode power supply with PFC for highest effiency, improved audio performance, and low weight.

• Four Input XLR connectors, and six NL-4 Output connectors.

• Integrated front panel with channel Select and Mute buttons, Input and Output LED Metering, 400x240 LCD, intuitive navigation buttons, LED power button and indicator, and cast aluminum handles.

• Preset Wizard simplifies amplifier configuration providing loudspeaker selection from a list of the top selling passive speakers.

The QSC PLD Series represents a revolutionary advancement in amplifier technology and innovation. Designed specifically for the needs of portable and production sound system users, PLD provides efficient, robust and extraordinarily high fidelity power to drive multiple channels and configurations of loudspeakers while simultaneously deploying sophisticated digital processing – all with minimal operator complexity. The PLD Series consists of three powerful, lightweight, four-channel amplifiers, each with onboard, advanced DSP and the capability to configure and combine channels in various ways to drive a wide range of loudspeaker systems. These amplifiers not only make your system perform better today, but also provide a wide and flexible range of options for future system growth.

Flexible Amplifier Summing Technology™ (FAST)

PLD amplifiers feature Flexible Amplifier Summing Technology™ (FAST) that actively distributes the total amplifier power in various combinations across one, two, three, or all four outputs. This flexibility allows PLD Series amplifiers to drive (for example) four full-range loudspeakers or subwoofers; a high-power subwoofer and a bi-amplified speaker; a single high-power full-range loudspeaker and subwoofer combo; or multiple power-hungry subwoofers from a single, very high output mono-block.

Advanced Amplifier Technology

The PLD Series amplifiers use QSC fourth generation class-D power amp design in combination with a custom power stage utilizing a new, purpose-built output device. These innovative MOSFET devices provide high voltage operation without needing a full bridge output and offer superior audio quality due to co-location of the semiconductors. Additionally PLD amps benefit from the famed and road-proven PowerLight power supply, further enhanced with Power Factor Correction (PFC) that aligns the current waveform with the AC mains voltage waveform. PFC enables PLD Series amps to draw current from the wall in a more efficient and controlled manner resulting in incredible power from a single standard AC breaker. Additionally, the PLD Series amps offer multi-stage sleep modes, saving energy when possible without ever sacrificing performance. The result is an exceptionally powerful and flexible platform that offers low weight and outstanding efficiency.

System Processing

PLD Series is more than just an amplifier; it is also a capable and sophisticated loudspeaker processor. The close integration of processing and amplification allows the DSP to monitor and better respond to amplifier behavior, making dynamics processing far more accurate and effective than that typically achieved with separate components. This synergistic approach employs both RMS and Peak Limiters that allow the combination of amplifier and loudspeaker to produce more output without being pushed to distortion or destruction.
In addition to the dynamics processing, the onboard DSP offers four channels of crossover filters, parametric EQ, and alignment delay - everything needed to optimize a loudspeaker system. PLD amplifiers also offer Intrinsic Correction™, a combination of IIR and FIR Filtering and loudspeaker processing methodology first developed for our WideLine line array loudspeakers. Intrinsic Correction compensates for the non-linearities in loudspeaker array and horn design and results in notably superior performance from your QSC loudspeakers.

Preset Wizardry

The on-board processing is managed and stored as presets, with 20 factory presets for the most common loudspeaker applications. For greater customization, the built-in Preset Wizard streamlines amplifier setup and provides loudspeaker selection from a list of top selling passive loudspeakers.

Space Efficient

With four channels of amplification plus drive rack signal processing in just 2RU, the PLD Series replaces equipment taking up as much as three times the rack-space.
Simple to Use
With a dedicated front panel UI complete with LED meters and indicators, a 400x240 TFT color display, a rotary encoder and ergonomic navigation buttons, PLD amplifiers provide an intuitive interface for the user to control the system. The simplicity of the PLD amps is further illustrated by the fact that a complete system can be set up in mere minutes.

PLD Details

		PLD4.2	PLD4.3	PLD4.5
		Peak	Peak	Peak
4 Independent Channels A, B, C, D	8Ω	500 W	900 W	1200 W
	4Ω	700 W	1400 W	2000 W
	2Ω	625 W	1200 W	1600 W
2 Channels BTL Bridged A+B or C+D Doubles Voltage	8Ω	**1200 W**	**2400 W**	**4000 W**
	4Ω	**1500 W**	NR*	NR*
	2Ω	NR*	NR*	NR*
2 Channels Parallel AB or CD Doubles Current	8Ω	500 W	1300 W	1250 W
	4Ω	950 W	**2000 W**	**2400 W**
	2Ω	**1200 W**	**2500 W**	**4000 W**
1 Channel 3CH Parallel ABC Triples Current	8Ω	500 W	1400 W	1400 W
	4Ω	950 W	2400 W	2500 W
	2Ω	1800 W	3500 W	4500 W
1 Channel Bridged/Parallel AB+CD Doubles Current and Voltage	8Ω	**1600 W**	**3500 W**	**4500 W**
	4Ω	**2500 W**	**5000 W**	**7500 W**
	2Ω	NR*	NR*	NR*
1 Channel 4CH Parallel ABCD Quadruples Current	8Ω	500 W	1400 W	1600 W
	4Ω	1000 W	3000 W	3000 W
	2Ω	**1700 W**	**5000 W**	**5300 W**

BOLD = Optimal configuration for the load and channel count

PLD Details

	PLD4.2	PLD4.3	PLD4.5
Typical Distortion			
8Ω	0.01 - 0.03%	0.01 - 0.03%	0.01 - 0.03%
4Ω	0.03 - 0.06%	0.03 - 0.06%	0.03 - 0.06%
Maximum Distortion			
4Ω - 8Ω	1.0%	1.0%	1.0%
Frequency response (8Ω)	20 Hz - 15 kHz +/- 0.2 dB 20 Hz - 20 kHz +0.2 dB / -0.7 dB	20 Hz - 15 kHz +/- 0.2 dB 20 Hz - 20 kHz +0.2 dB / -0.7 dB	20 Hz - 15 kHz +/- 0.2 dB 20 Hz - 20 kHz +0.2 dB / -0.7 dB
Noise			
Unweighted Output Unmuted	-101 dB	-101 dB	-101 dB
Weighted Output Muted	-109 dB	-109 dB	-109 dB
Gain (1.2V setting)	34.0 dB	38.4 dB	38.4 dB
Damping factor	>150	>150	>150
Input impedance	>10k, balanced or unbalanced	>10k, balanced or unbalanced	>10k, balanced or unbalanced
Maximum input level			
(3.9V setting)	12.28V (+24 dBu)	12.28V (+24 dBu)	12.28V (+24 dBu)
(1.2V setting)	3.88V (+14 dBu)	3.88V (+14 dBu)	3.88V (+14 dBu)
Controls and indicators (front)	Power • Channel MUTE Buttons • Channel SELECT Buttons • Channel Input Signal and CLIP LED Indicators • Channel Output and LIMIT LED Meters • HOME, ENTER, EXIT, GAIN Navigation Buttons • Control Knob		
Controls and indicators (rear)	AC Power Disconnect	AC Power Disconnect	AC Power Disconnect
Input connectors	Female XLR	Female XLR	Female XLR
Output connectors	NL4	NL4	NL4
Amplifier and load protection	Short circuit, open circuit, thermal, RF protection. On/Off muting, DC fault shutdown, active inrush limiting, input current limiting		
AC Power Input	Universal Power Supply 100 - 240 VAC, 50 - 60 Hz		
Dimensions (HWD)	3.5" x 19" x 12" (89mm x 482mm x 305mm)	3.5" x 19" x 16" (89mm x 482mm x 406mm)	3.5" x 19" x 16" (89mm x 482mm x 406mm)
Weight, Net / Shipping	18.5 lb (8.4 kg) / 22 lb (10.0 kg)	21.0 lb (9.5 kg) / 25 lb (11.3 kg)	22.0 lb (10.0 kg) / 26 lb (11.8 kg)
Agency approvals	UL, CE, RoHS/WEEE compliant, FCC Class A (conducted and radiated emissions)		
Carton contents	Locking IEC Cable, Quick Start Guide, USB Cable		

Burst Power - 20 ms 1 kHz sine burst, all channels driven

Continuous Power - EIA 1 kHz 1% THD, all channels driven

Specifications subject to change without notice.

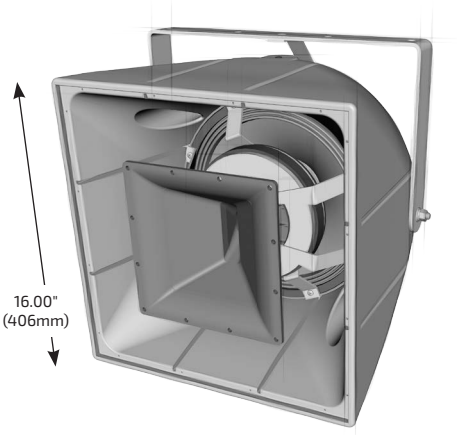
1675 MacArthur Boulevard • Costa Mesa, CA 92626 • Ph: 800/854-4079 or 714/957-7100 • Fax: 714/754-6174

please recycle

R SERIES
Premium Music

R.5-96MAX

HIGH OUTPUT FULL-RANGE 90° x 60°
WEATHER-RESISTANT LOUDSPEAKER



Light Grey, Black and White (standard) shown with grille off

APPLICATIONS

MAIN PA ELEMENT *(Small to Large Size Venues)*
Arenas · Stadiums · Racetracks · Theme Parks
Amusement Parks · Outdoor Entertainment Centers
Convention Centers · Fairgrounds · Air Shows
Rodeos · Multipurpose Outdoor and Indoor Venues
Portable Sound Systems

DESCRIPTION

The R.5-66MAX is a two-way, full-range loudspeaker system designed to provide high quality voice and music reproduction in applications requiring extreme weather resistance. It is designed to withstand long-term exposure to tough, environmental conditions and to provide high output performance.

The R.5-96MAX has a 1.4-inch (36 mm) exit HF compression driver and a 12-inch (305 mm) cone 600W neodymium LF driver. The HF assembly is coaxially mounted with the LF driver allowing 90° x 60° coverage with low distortion. The system has been designed to provide a flat response with slightly rising HF.

The R.5-96MAX can act as both a musical entertainment loudspeaker and a voice PA loudspeaker simultaneously. Each system is backed by Community's five-year product warranty and fifteen-year enclosure warranty.

FEATURES

- Low distortion, high quality musicality, excellent speech intelligibility in a compact enclosure
- High sensitivity, high output (130 dB max)
- Weather-resistant, rotomolded UV resistant enclosure
- Weather-resistant grille and drivers, and moisture-sealed crossover
- Five-year product warranty / Fifteen-year enclosure warranty

TECHNICAL SPECIFICATIONS[1]			
Operating Mode	Passive with DSP		
Operating Environment	Indoor / Continuous outdoor direct exposure		
Operating Range[2]	85 Hz to 21.8 kHz		
Nominal Beamwidth (H x V)	90° x 60°		
Transducers	LF 1 x 12" (305mm) inherently weather-resistant cone with 3" voice coil, neodymium motor and aluminum demodulation ring HF 1 x 1.4" exit compression, 2.87" voice coil, copper shorting ring, titanium diaphragm with mylar surround		
Continuous Power Handling[3] @ Nominal Impedance	Passive*	69V	600W @ 8 ohms (2400W peak)
Nominal Sensitivity[4]	Passive	@ 1W 102 dB	@ 2.83V 102 dB
Nominal Maximum SPL[5] (Whole Space)	Passive	Peak 136 dB	Continuous 130 dB
Equalized Sensitivity[6]	System	@ 1W 102 dB	@ 2.83V 102 dB
Equalized Maximum SPL[7]	System	Peak 136 dB	Continuous 130 dB
Recommended Amplifiers	Passive	600W - 1200W @ 8 ohms, (69V - 98V)	
PHYSICAL			
Input Connection	12' (3.6m) SJOW #16 cable		
Mounting Points	(5) 3/8"-16 threaded rigging points, Steel zinc-rich epoxy dual-layer powder-coated bracket; Aluminum aiming strap to secure angle		
Environmental	IP55 per IEC 60529, conforms with MIL-STD-810G		
Dimensions H x W x D	16.00" x 16.00" x 16.19" (406 x 406 x 411 mm)		
Weight	47 lbs (21.3 kg) loudspeaker and yoke		
Finish	Refer to the Technical Drawing (page 4)		
OPTIONS			
Accessories	Pole Mount Bracket: PMB-1RR or PMB-2RR External 400W Transformer (70V/100V): 70V - 400W / 200W / 100W; 100V - 400W / 200W		
Configure-to-Order (CTO)	Custom color: Exterior grade paint finish, customer defined RAL# Custom cable length and gauge		

Community strives to improve its products on a continual basis. Specifications are therefore subject to change without notice.

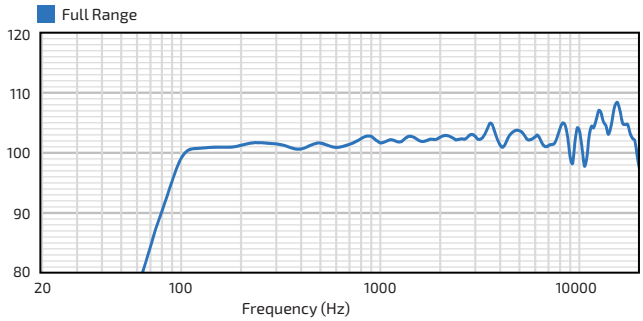
R SERIES Premium Music

R.5-96MAX

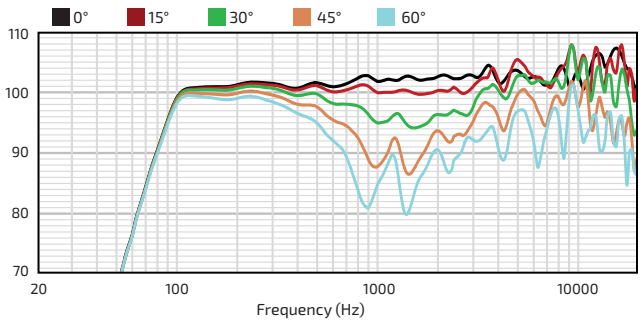
HIGH OUTPUT FULL-RANGE 90° x 60°
WEATHER-RESISTANT LOUDSPEAKER

Community®

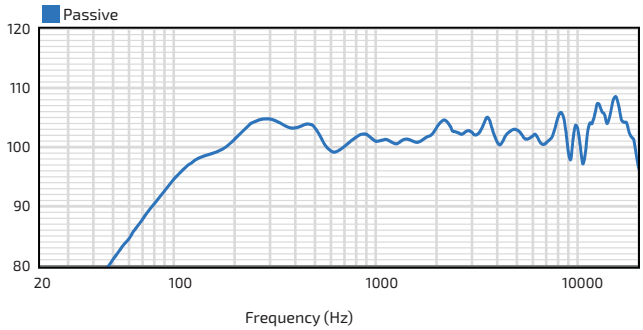
AXIAL PROCESSED RESPONSE (dB)[8]



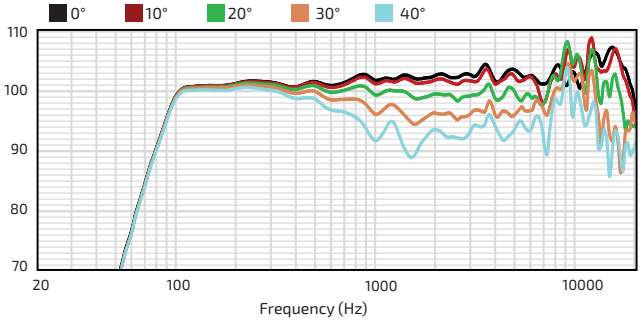
HORIZONTAL OFF-AXIS RESPONSE (dB)[10]



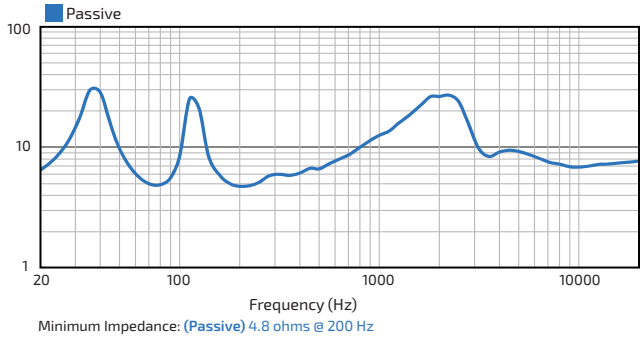
AXIAL SENSITIVITY (dB SPL)[9]



VERTICAL OFF-AXIS UP RESPONSE (dB)[10]

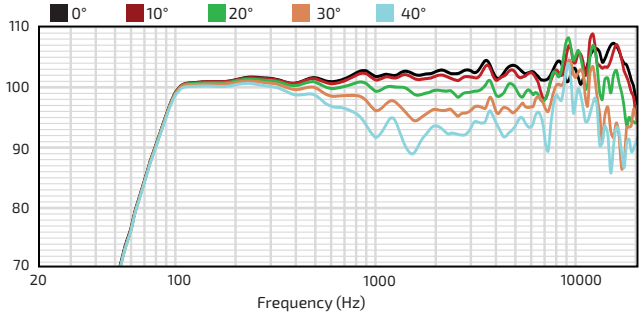


IMPEDANCE (Ohms)

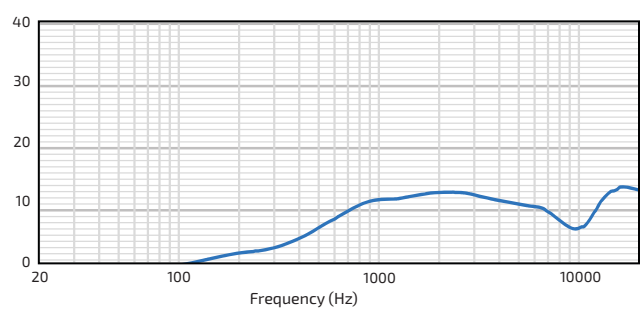


Minimum Impedance: **(Passive)** 4.8 ohms @ 200 Hz

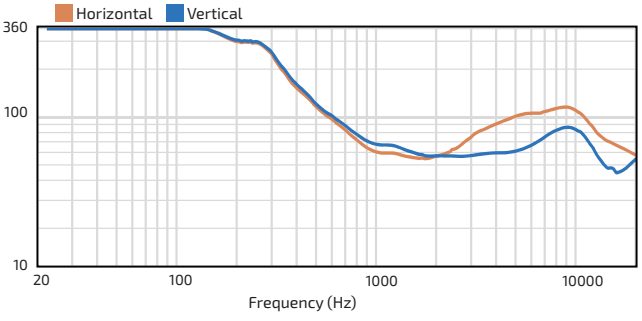
VERTICAL OFF-AXIS DOWN RESPONSE (dB)[10]



DIRECTIVITY INDEX (dB)[11]



BEAMWIDTH (Degrees)[12]



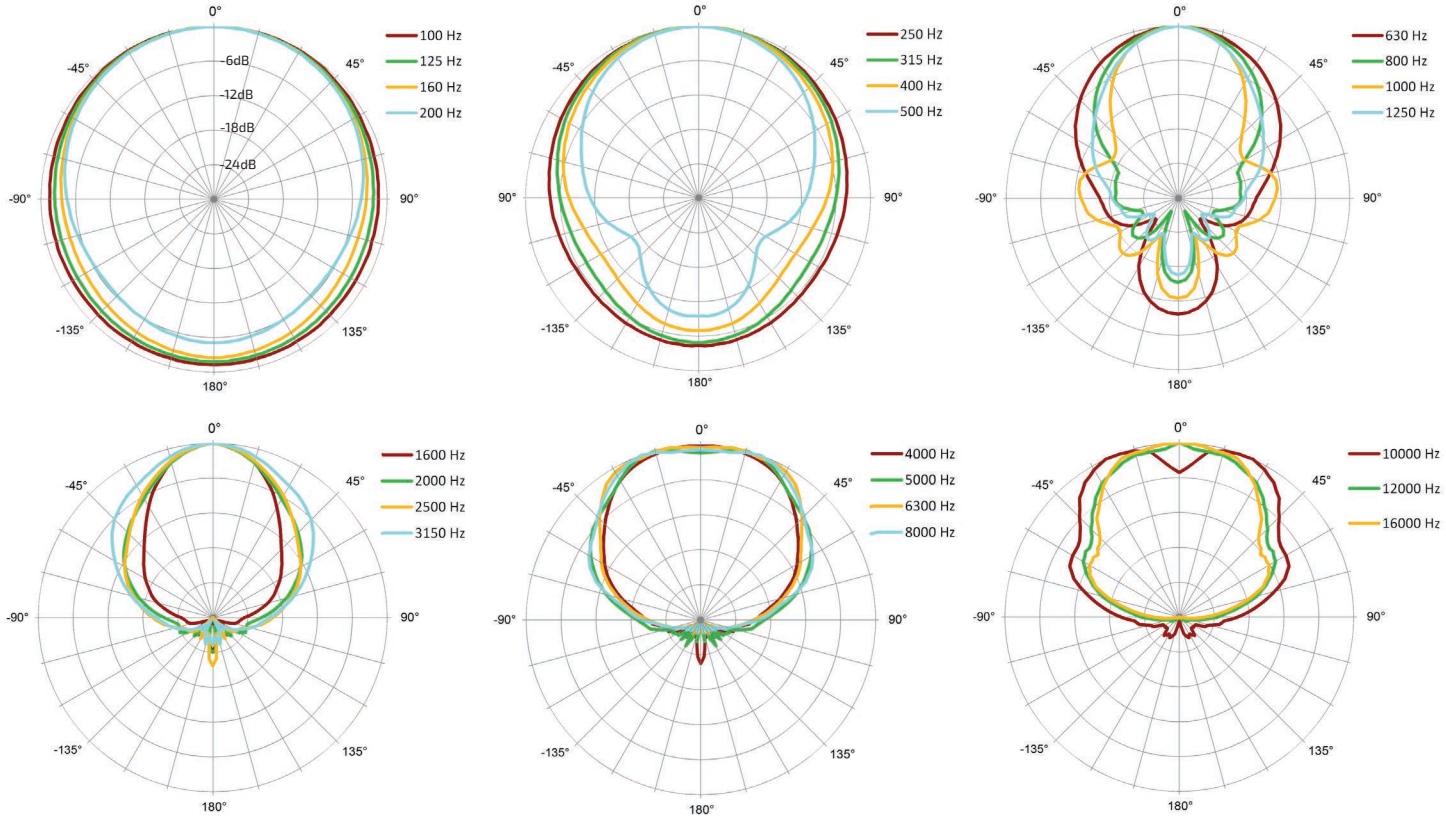
R SERIES Premium Music

R.5-96MAX

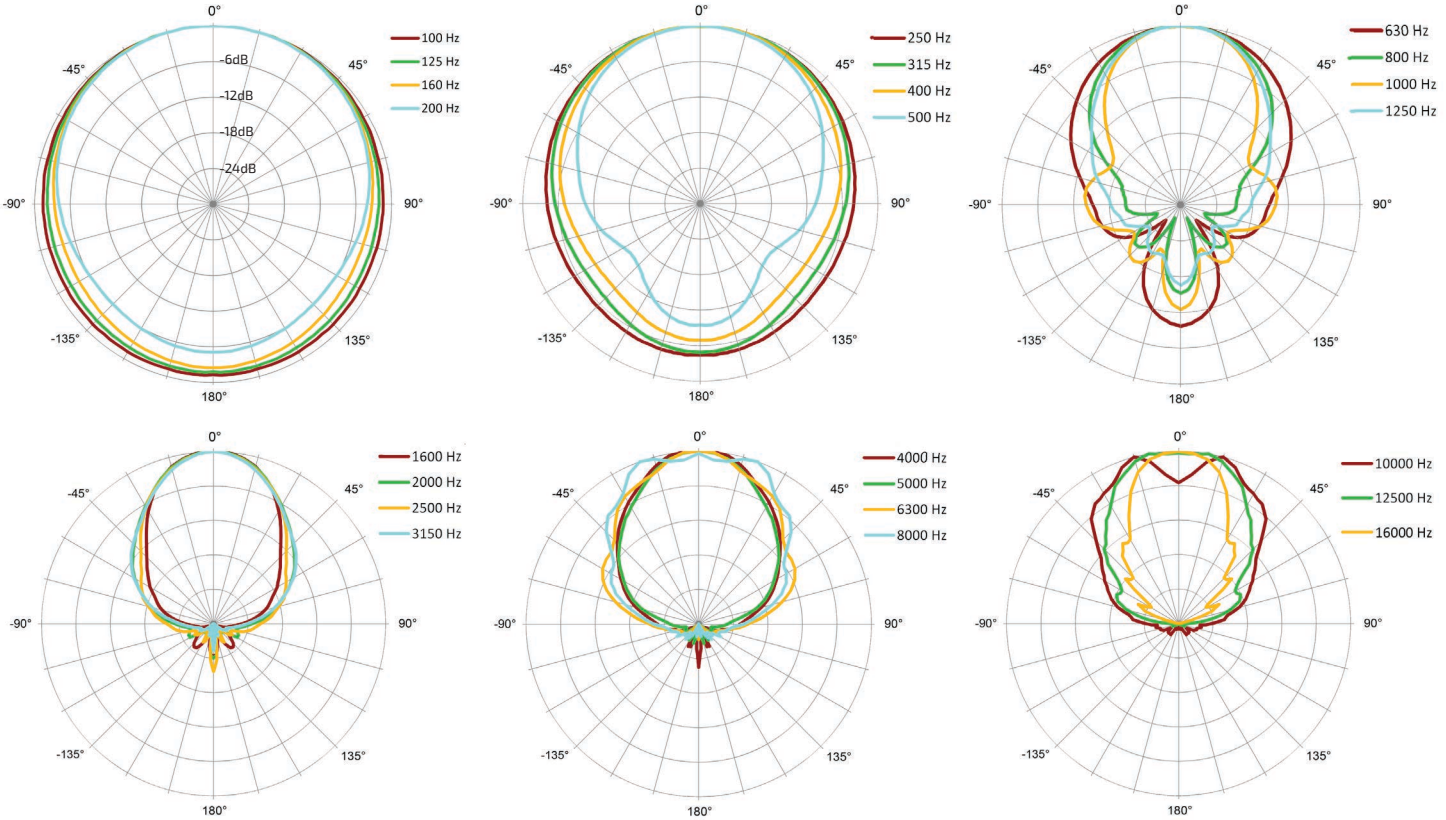
HIGH OUTPUT FULL-RANGE 90° x 60°
WEATHER-RESISTANT LOUDSPEAKER

Community®

HORIZONTAL POLAR DATA *(30dB Scale, 6dB per major division)*



VERTICAL POLAR DATA *(30dB Scale, 6dB per major division)*



R SERIES Premium Music

R.5-96MAX

HIGH OUTPUT FULL-RANGE 90° x 60°
WEATHER-RESISTANT LOUDSPEAKER

Community®

TECHNICAL DRAWING / DIMENSIONS / FINISH

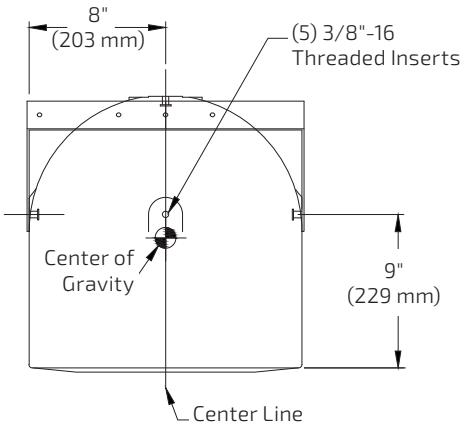
H x W x D
16.00" x 16.00" x 16.19"
(406 x 406 x 411 mm)

Unit Weight
47 lbs (21.3 kg) loudspeaker and yoke

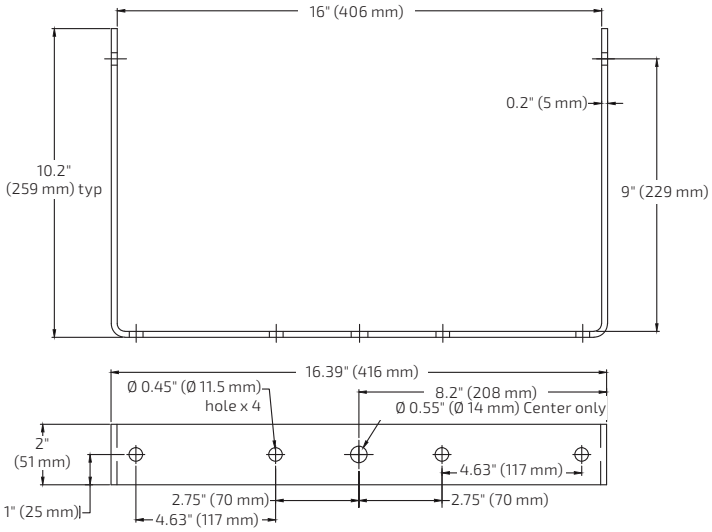
Shipping Weight
51 lbs (23.1 kg)

Grille:
3-layer Weather-Stop™ with polyester mesh, foam, zinc-rich epoxy dual-layer powder-coated perforated steel color-matched to enclosure

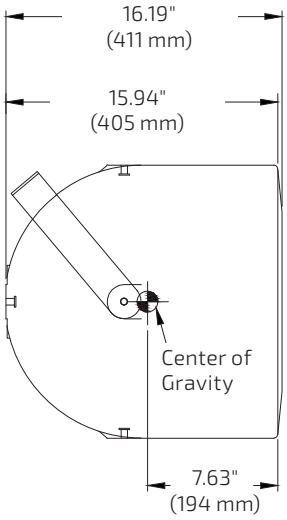
Enclosure / Finish
Rotomolded LLDPE plastic, in Black, White or Light Grey (RAL# 9004, 9003, and 7038)



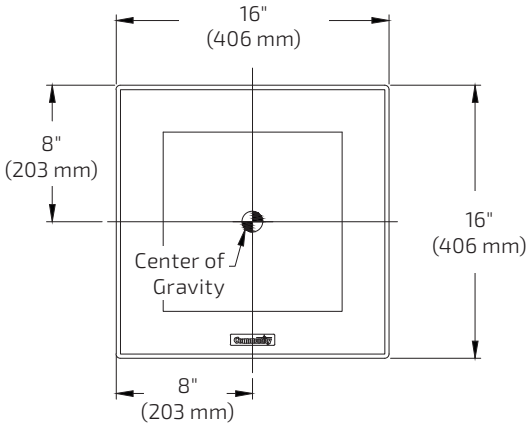
Top



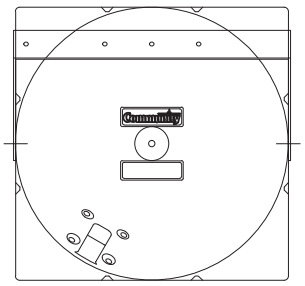
Yoke Dimensions



Sides



Front



Rear

ARCHITECTURAL SPECIFICATIONS

The loudspeaker system shall be a two-way, full-range design with one 12-inch (305 mm) high-output LF driver and one 1.4-inch (36 mm) exit HF driver coaxially mounted to a 90° x 60° molded ABS horn. Drivers shall be connected to an integral crossover with a crossover frequency of 900 Hz. The input connection shall be one 12' (3.6 m) SJOW #16-gauge cable with stripped ends. The loudspeaker enclosure shall be matte finish rotomolded linear low density polyethylene providing weather and UV resistance with a 1 mm perforated stainless steel grille backed by water-resistant treated polyester mesh and open cell foam. The steel grille shall be powder-coated with a proprietary zinc-rich epoxy dual-layer powder-coating process color-matched to the enclosure. The enclosure shall incorporate five 3/8"-16 rigging points for multiple mounting options. The system shall have an IEC 60529 IP rating of IP55W with a minimum 5-degree downward aiming angle. The system shall have a operating range of 85 Hz to 21.8 kHz (-10 dB), an input capability of 69V, and a sensitivity of 102 dB at 1W/1m with a nominal impedance of 8 ohms. The nominal dispersion shall be 90°H x 60°V. The loudspeaker shall be 16 in. (406 mm) H x 16 in. (406 mm) W x 16.19 in. (411 mm) D and weigh 44 lbs (20 kg). A steel yoke that is powder-coated with the same proprietary process, and color-matched, shall be included with the system.

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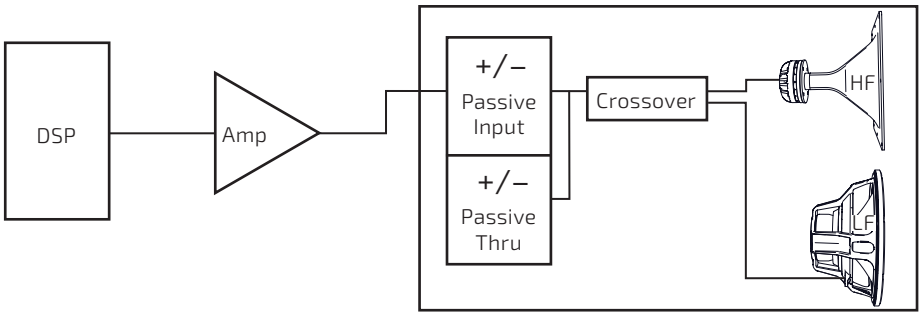
R SERIES

Premium Music

R.5-96MAX

HIGH OUTPUT FULL-RANGE 90° x 60°
WEATHER-RESISTANT LOUDSPEAKER

CONNECTION DIAGRAM



Two-way single amp

NOTES

1. *PERFORMANCE SPECIFICATIONS All measurements are taken indoor using a time-windowed and processed signal to eliminate room effects, approximating an anechoic environment, a distance of 6.0 m. All acoustic specifications are rounded to the nearest whole number. An external DSP with settings provided by Community Professional Loudspeakers is required to achieve the specified performance; further performance gains can be realized using Community's dSPEC226 loudspeaker processor with FIR power response optimization.*
2. *OPERATING RANGE The frequency range in which the on-axis processed response remains within 10dB of the average SPL.*
3. *CONTINUOUS POWER HANDLING Maximum continuous input voltage (and the equivalent power rating, in watts, at the stated nominal impedance) that the system can withstand, without damage, for a period of 2 hours using an EIA-426-B defined spectrum; with recommended signal processing and protection filters.*
4. *NOMINAL SENSITIVITY Averaged SPL over the operating range with an input voltage that would produce 1 Watt at the nominal impedance and the averaged SPL over the operating range with a fixed input voltage of 2.83V, respectively; swept sine wave axial measurements with no external processing applied in whole space, except where indicated.*
5. *NOMINAL MAXIMUM SPL Calculated based on nominal / peak power handling, respectively, and nominal sensitivity; exclusive of power compression.*
6. *EQUALIZED SENSITIVITY The respective SPL levels produced when an EIA-426-B signal is applied to the equalized loudspeaker system at a level which produces a total power of 1 Watt, in sum, to the loudspeaker subsections and also at a level which produces a total voltage, in sum, of 2.83V to the loudspeaker subsections, respectively; each referenced to a distance of 1 meter.*
7. *EQUALIZED MAXIMUM SPL The SPL produced when an EIA-426-B signal is applied to the equalized loudspeaker system, at a level which drives at least one subsection to its rated continuous input voltage limit, referenced to a distance of 1 meter. The peak SPL represents the 2:1 (6dB) crest factor of the EIA-426-B test signal.*
8. *AXIAL PROCESSED RESPONSE The on-axis variation in acoustic output level with frequency of the complete loudspeaker system with recommended signal processing applied. 1/6 octave Gaussian smoothing applied.*
9. *AXIAL SENSITIVITY The on-axis variation in acoustic output level with frequency for a 1 Watt swept sine wave, referenced to 1 meter with no signal processing. 1/6 octave Gaussian smoothing applied.*
10. *HORIZONTAL / VERTICAL OFF-AXIS RESPONSES The loudspeaker's magnitude response at various angles off-axis, with recommended signal processing applied in the operating mode which utilizes the largest number of individually amplified pass bands. 1/6 octave Gaussian smoothing applied.*
11. *DIRECTIVITY INDEX The ratio of the on-axis SPL squared to the mean squared SPL at the same distance for all points within the measurement sphere for each given frequency; expressed in dB. 1/6 octave Gaussian smoothing applied.*
12. *BEAMWIDTH The angle between the -6dB points in the polar response of the loudspeaker when driven in the operating mode which utilizes the largest number of individually amplified pass bands. 1/6 octave Gaussian smoothing applied.*

Data presented on this spec sheet represents a selection of the basic performance specifications for the model. These specifications are intended to allow the user to perform a fair, straightforward evaluation and comparison with other loudspeaker spec sheets. For a detailed analysis of this loudspeaker's performance please download the GLL file and/or the CLF file from our website: communitypro.com

Community Professional Loudspeakers
333 East Fifth Street, Chester, PA 19013-4511 USA
Phone (610) 876-3400 • Fax (610) 874-0190
www.communitypro.com • info@communitypro.com

CAUTION: Installation of loudspeakers should only be performed by trained and qualified personnel. It is strongly recommended that a licensed and certified professional structural engineer approve the mounting design.

Technical Data Sheet
Aquaseal ® Fire-Alarm Cables

WEST PENN WIRE

2833 West Chestnut Street
Washington, PA 15301
Toll Free: (800) 245-4964
Fax: (724) 222-6420
www.westpenn-wpw.com

PART NUMBER: **AQ227**

DESCRIPTION: 12/2 Stranded bare copper conductors, overall unshielded with Aquaseal tape and overall jacket.

NEC RATING: FPL – PLTC, CL3 NEC Article 760 And 725

APPROVALS: (UL) Listed – Direct Burial

APPLICATION: Materials suitable for outdoor use, and indoor trays, allows a variety of uses for (Low voltage industrial process control circuits, Power-Limited circuits, Power-Limited fire alarm circuits, Power-Limited tray cable PLTC)

Construction Parameters:

Conductor	12 AWG Bare Copper
Stranding	19x25
Insulation Material	PVC with Nylon
Insulation Thickness	PVC 0.015" Nom. Nylon .005" Nom.
Number of Conductors	2 (1 Pair)
Shield	None
Drain	None
Water-Blocking Tape	2 Ply water swellable tape
Jacket Material	Sunlight/ Moisture Resistant PVC
Jacket Thickness	0.040" Nom.
Overall Cable Diameter	0.340" Nom.
Approximate Cable Weight	78 Lbs/1M' Nom.
Flame Rating	UL 1685 Vertical Tray

Electrical & Environmental Properties:

Temperature Rating	-20deg C to 90deg C
Operating Voltage	300 V RMS
Max.Capacitance Between Conductors @ 1 KHz	36 pf/ft Nom.
DC Resistance per Conductor @ 20deg C	1.7 Ohms/1M' Nom.
Insulation Colors	Black, Red
Jacket Color	Black
RoHS Compliant	--
TIA455-82B Water Infiltration Test Compliant	Yes
UL 444 & 13 Compliant	Yes

Mechanical Properties:

Max. Recommended Pull Tension	146 lbs.
Min. Bend Radius (Install)	3.4"

Specification Issue Date: 7/06

Standard Lengths are 1000ft.
The Jacket is sequentially footmarked.
The information presented here is, to the best of our knowledge, is true and accurate. However, since conditions of use are beyond our control, all recommendations or suggestions are presented without guarantee or responsibility on our part. We disclaim all liability in connection with the use of information contained herein or otherwise.

Technical Data Sheet
Aquaseal® Communication Cables

WEST PENN WIRE

2833 West Chestnut Street
Washington, PA 15301
Toll Free: (800) 245-4964
Fax: (724) 222-6420
www.westpenn-wpw.com

PART NUMBER:	**AQC290**
DESCRIPTION:	22/2 Solid Bare copper conductors, shielded with an Aquaseal tape and overall jacket.
NEC RATING:	CM or CL3, NEC Article 800 and 725
APPROVALS:	(UL) Listed, (ETL)us Listed
APPLICATION:	Materials suitable for outdoor use, and indoor trays, allows a variety of uses for (Intercom, Security, Sound, Audio, Background music)

Construction Parameters:

Conductor	22 AWG Bare Copper
Stranding	Solid
Insulation Material	PVC
Insulation Thickness	0.010" Nom.
Number of Conductors	2 (1 Pair)
Shield	100% Aluminum Polyester Foil
Drain	Stranded Tinned Copper
Water-Blocking Tape	2 ply water swellable tape
Jacket Material	Sunlight/Moisture Resistance PVC
Jacket Thickness	0.025" Nom.
Overall Cable Diameter	0.200" Nom.
Approximate Cable Weight	20 Lbs/1M' Nom.
Flame Rating	UL 1685 Vertical Tray

Electrical & Environmental Properties:

Temperature Rating	-20deg C to 60deg C
Operating Voltage	300 V RMS
Max.Capacitance Between Conductors @ 1 KHz	54 pf/ft Nom.
Capacitance Between Conductors to Shield @ 1 KHz	97 pf/ft Nom.
DC Resistance per Conductor @ 20deg C	17.5 Ohms/1M' Nom.
Insulation Colors	Black, Red
Jacket Color	Gray
RoHS Compliant	--
TIA455-82B Water Infiltration Test Compliant	Yes
UL 444 & 13 Compliant	Yes

Mechanical Properties:

Max. Recommended Pull Tension	33 lbs.
Min. Bend Radius (Install)	2”

Specification Issue Date: 7/06

Standard Lengths are 1000ft.
The Jacket is sequentially footmarked.
The information presented here is, to the best of our knowledge, is true and accurate. However, since conditions of use are beyond our control, all recommendations or suggestions are presented without guarantee or responsibility on our part. We disclaim all liability in connection with the use of information contained herein or otherwise.

31 00 00
EARTHWORK

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

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

2. Examine all other Sections of the Specifications for requirements that affect work of this Section, whether or not such work is specifically mentioned in this Section.

3. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all under the Contract.

1.02 WORK INCLUDED

A. Perform all earthwork required to complete the Work. Such work includes, but is not limited to, the following:

1. Site excavation and filling as required to produce new contours required, including grading work for drainage, pavements, walks, structures and associated facilities.

2. Regrading and removal of existing site improvements, including paving materials, curbs, fencing, fence posts and footings, unless otherwise shown to be retained on the record drawings.

a. Relocate (raise or lower) existing utility covers as required.

b. Utilities and structures to be abandoned shall be removed to a depth of three (3) feet below grade minimum.

c. Protect all utilities, trees, buildings and structures to remain.

d. Notify "Dig Safe" before excavating.

3. Perform special excavation as required to accommodate paving, walks, structures, ramps, runways, landing pits and pads as necessary and/or as shown to complete the Work.

4. Provide required erosion, sedimentation and environmental controls necessitated by site, governing codes and as shown.

5. Do all rough grading, final grading, shaping, and compaction for required site work. Also, complete all landscaping, seeding and sodding, and site structures shown and/or required for the completion of the work.

6. Excavate and grade for all new pavements and athletic facilities and all other items noted or required for the completion of the work. Take all excavations to suitable bearing strata. All excavations shall be checked and approved by the Landscape Architect prior to backfill and compaction.

7. Backfill all excavations with suitable excavated material as defined herein. Provide any and all additional fill material as may be required at no additional cost to the Owner.

8. With the exception of excess loam which shall remain the property of the owner, dispose of all surplus excavated and unsuitable materials off the project site in legal and licensed disposal facilities.

9. Provide all required protection, enclosures and other temporary construction required by conditions, ordinances, etc., including all fences, barricades, guard rails, street plates, warning lights and other items as necessary and required by (life) safety codes.

10. Perform all required pumping, dewatering, etc., necessary to maintain excavated spaces free of accumulated water.

11. Provide all shoring, bracing, sheetpiling and similar protective construction as required to insure safe/secure operations.

12. Provide all other items of excavation, filling and related work reasonably inferred by the Drawings to make the work of this Section complete.

1.03 RELATED WORK

A. Site Preparation, Section 31 10 00
B. Paving, Section 32 12 16
C. Storm Drainage, 33 40 00
D. Lawns, Section 32 92 00

1.04 REFERENCES

A. The following standards and definitions are applicable to the work of this Section to the extent referenced herein:

1. MDPW Specifications: The Commonwealth of Massachusetts, Department of Public Works, Standard Specifications for Highways and Bridges, including latest revisions.

2. ASTM: American Society for Testing and Materials.

3. AASHTO: American Association of State Highway and Transportation Officials.

4. "Erosion and Sedimentation Control Guidelines," published by the Commonwealth of Massachusetts, Department of Environmental Quality Engineering, Division of Water Supply, and Montachusett Regional Planning Commission, August 1983.

1.05 EXAMINATION OF SITE CONDITIONS

A. The Contractor shall fully inform himself of existing conditions at the site before submitting his bid, and shall be responsible for carrying out all site work required to fully and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed, except those conditions described in the GENERAL CONDITIONS.

B. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct to the best of the Architect's knowledge, but the Contractor shall have examined them for himself during the bidding period and formed his own conclusions as to the full requirements of the work involved.

1.06 PERMITS, CODES, AND SAFETY REQUIREMENTS

A. Comply with all rules, regulations, laws and ordinances of the City and State, and all other authorities having jurisdiction over the Project site. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided by the Contractor without additional cost.

B. Comply with the provisions of the Manual for Accident Prevention in Construction of the Associated General Contractors of America, Inc., and the requirements of the Occupational Safety and Health Administration, United States Department of Labor.

C. Procure and pay for all permits and licenses required for the complete work specified herein and shown on the Drawings.

D. The Contractor shall not close or obstruct any street, sidewalk, or passageway without written permission from authorities having jurisdiction. The Contractor shall so conduct his operations as to interfere as little as possible with the use ordinarily made of roads, driveways, or other facilities near enough to the Work to be affected thereby.

1.07 LAYOUT AND GRADES

A. Maintain and/or reestablish benchmarks and survey monuments shown on the Drawings or found to exist on the site to provide a base reference for the construction. Replace any which may become destroyed or disturbed. Employ and pay all costs for a registered Civil Engineer or

Surveyor who is licensed within the jurisdiction of the Project site to lay out all lines and grades in accordance with the Drawings and Specifications, and as necessary or required for construction.

B. The words "finished grade" as used herein shall mean final grade elevations indicated on the Drawings. Spot elevations shall govern over proposed contours. Where not otherwise indicated, Project site areas shall be given uniform slope between points for which finished grades are indicated or between such points and existing established grades.

1.08 PROTECTION OF EXISTING CONDITIONS

A. All rules and regulations governing the respective utilities shall be observed by the Contractor in executing 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.

B. Locate and mark underground utilities to remain in service before beginning the work. Protect all existing utilities to remain during operations. Do not interrupt existing utilities except when authorized in writing by authorities having jurisdiction.

C. When an active utility line is exposed during construction its location and elevation shall be plotted on the Record Drawing by the Contractor and both the Architect and the Utility Owner notified in writing.

D. Provide barricades, fences, lights, signs, and all other safety devices required for the protection of the public.

1.09 SAMPLES AND TESTING

A. All operations under this Section of the Specifications shall be subject to observation of the Owner's Representative, and of a soils testing laboratory, engaged and paid directly by the Owner except as described herein. The laboratory will determine conformance of materials and workmanship, particularly compaction, to the requirements of these Specifications.

B. The laboratory shall make such tests of materials and compaction as the Landscape Architect directs. Costs of such tests shall be borne by the Contractor only when they indicate noncompliance of materials or compaction to the requirements of these Specifications. Cost of tests shall be borne by the Owner when they indicate compliance of materials or compaction to the requirements of the Specifications.

C. Contractor shall provide a 70 lb. minimum sample of each fill material from each proposed source including on-site. Additional samples shall be provided if a change in material type occurs at the borrow source. Allow a minimum of three working days for testing evaluation before material is needed. Submit samples from alternate sources if intended for use.

D. The laboratory will defer testing of an area until the Contractor states that he has reached the specified compaction on the particular area. The laboratory will make a reasonable number of tests or visual examinations of materials proposed for fill at no charge to the Contractor, but the Owner reserves the right to make charges for such tests where Contractor repeatedly proposes marginal materials for test or examination.

E. Areas for which tests indicate insufficient compaction shall be re-compacted and retested until the areas conform to the requirements of the Specifications. Cost shall be borne by Contractor.

1.10 RECORD DRAWINGS

A. The Contractor shall submit to the Owner a set of as-built drawings for work covered under these Specifications. The drawings shall be prepared upon reproducible copies of the Contract Documents supplied by the Owner or on AutoCAD compatible disks supplied by the Owner.

B. As-built drawings shall record all changes made during construction with respect to materials, layout, grading contours and spot elevations, all as compared to the original Contract Drawings.

1.11 DUST CONTROL

A. During the construction period, the Contractor shall take special measures including, but not limited to, wetting down to control dust on site, in order to prevent annoyance/and or damage to adjacent property, whether public or private. Calcium chloride or any other chemical material may not be used on subgrades of areas to be seeded or planted.

B. The Contractor shall take all necessary measures to keep streets over which equipment and service for project travel, clean and free from dirt, dust, mud and debris resulting from construction operations. The actions taken shall meet the requirements of all parties having jurisdiction.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

A. Fill materials shall conform to the following material descriptions. Gradation requirements shall be determined by AASHTO T11 and T27. All fill materials shall meet the following requirements:

1. GRAVEL, also referred to as “free draining gravel” and “crushed bank run gravel”, shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials. Gradation shall conform to MDPW Specification Designation, M1.03.1, and the following:

U.S. Sieve No.	Percent Passing by Weight
3”	100
1 ½”	70-100
¼”	50-85
#4	30-60
#200	0- 10

Maximum size of stone in gravel shall be two inches (2") largest dimension.

2. CRUSHED STONE shall consist of inert angular material derived from a stone quarry that is hard, durable, washed stone, free of deleterious materials. Gradation shall conform to MDPW Specification Designation, M2.01.4, and the following:

U.S. Sieve No.	Percent Passing by Weight
2"	100
1 3/4"	90-100
1 1/2"	10- 50
1 1/4"	0- 20
1"	0- 5

3. ORDINARY BORROW: Well-graded, natural, inorganic soil approved by the Landscape Architect and meeting the following requirements:

   - Ordinary Borrow shall have no more than 2% organic matter, be free of weak, compressible or frozen materials, and of stones larger than eight inches in dimension. It shall not contain granite block, concrete, masonry rubble, roots, stumps or other similar materials.
   - It shall be of such nature and character that it can be compacted to the specified densities.
   - Topsoil and the zone directly below the topsoil indicated on the drawings as "subsoil" shall not be considered Ordinary Fill nor shall topsoil or subsoil stockpiled on the site. Where subsoil is encountered, it shall be stripped separately from the topsoil and the granular material directly beneath the subsoil. This excavated material shall only be utilized in lawn areas, or other non-structural areas, and shall be placed in these areas at distances away from adjacent site improvements as specified herein or as directed by the Landscape Architect.
   - It shall have a minimum dry density of not less than 115 pounds per cubic foot.
   - Material from excavations on the site may be used as Ordinary Fill if it meets the above requirements.

B. Uses of Fill Materials: Fill materials listed above shall be utilized as follows and as otherwise indicated on the Drawings, specified or directed.

1. Gravel:
   a. Base for all walkways, pavements, pipe cover and as required by drawings.
   b. Backfill beneath structures and/or pavement.

2. Crushed Stone:
   a. Pipe bedding and as fill around perimeter/infiltrator drains.

3. Ordinary Borrow:
   a. Raise in grade or fill condition as outlined in the drawings.

2.02 EROSION AND SEDIMENTATION CONTROL MATERIALS

A. Straw bales shall be wire or nylon bound bales of straw. Provide two inch by two inch (2" x 2") hardwood stakes to secure bales.

PART 3 - EXECUTION

3.01 GRADES AND ELEVATIONS

A. The Drawings indicate, in general, alignments, grade elevations and invert elevations. Establish the lines and grades in conformity with the Drawings. The Landscape Architect, however, may make such adjustments in the field in grades and alignments as are found necessary in order to avoid interference with any special conditions encountered.

B. Spot elevations shall govern over proposed contours. Where not otherwise indicated, project site areas shall be given uniform slopes between points for which finished grades are indicated or between such points and existing established grades.

C. Establish and maintain suitable stakes over all areas to be graded as directed, specified or required. Maintain sufficient reference points at all times during construction to properly perform the work of this Section.

3.02 EXCAVATION

A. Excavation shall include the removal of all materials of every description, including ledge, rock or boulders throughout the limit of work.

B. Materials to be excavated shall include organic and inorganic silts, peat, clays, sand, and gravel; pavement, cobbles, and boulders; soft or disintegrated rock; brick and concrete masonry; and all other obstructions not included in other Sections.

1. Unsuitable materials for use as backfill are defined as organic matter, silt, peat, or any combination thereof having unsuitable in-situ bearing properties; and all materials that are too loose or saturated to provide satisfactory bearing when used for backfill.

2. If unsuitable material is encountered at the depths indicated on the Drawings for bottom limit of excavation, the Contractor shall immediately notify the Owner and shall not proceed further until instructions are given.

C. The ground adjacent to all excavation shall be graded to prevent running in. The Contractor shall remove by pumping or other means as approved by the Landscape Architect, any water accumulated in excavation and keep the trench de-watered until the bedding is complete. No extra payment will be made for any pumping that may be required.

D. The Contractor shall provide all bracing, sheathing and shoring necessary to perform and protect all excavation as indicated in the Drawings, as required for safety, or to conform to governing laws and as required by a certified engineer. No extra payment will be made for any bracing, sheathing or shoring.

E. All unsuitable material shall be removed from beneath slabs-on-grade and footings. Excavation subgrades under the grandstands shall be proof-rolled by four coverages of a vibratory roller or plate compactor having a centrifugal force of at least 2 tons. Excavation subgrades in the grandstand area are subject to the approval of the Architect.

F. No excavation shall be deposited or stockpiled at any time so as to endanger portions of the new or an existing structure, either by direct pressure or indirectly by overloading banks contiguous to the operation. Material, if stockpiled, shall be stored so as not to interfere with the established sequence of the construction. If there is not sufficient area available for stockpiling within the limits of the project, the Contractor will be required to furnish his own area for stockpiling. No excavation shall be deposited within existing tree protection zones.

G. Comply with local safety regulations and with provisions of "Accident Prevention in Construction" published by the Associated General Contractors of America, Inc.

H. When the Drawings require excavation in areas in close proximity to existing buildings, roads, structures and utilities it shall be the responsibility of the Contractor at his expense to construct suitable drainage ditches or use other satisfactory means and methods to protect and maintain the stability of such roads, and structures located immediately adjacent to but outside the limits of excavation.

3.03 DEWATERING

A. Keep excavation continuously free of water from all sources without extra cost to the Owner. Provide, maintain and operate pumps and related equipment, including standby equipment of sufficient capacity to keep excavations free of all water at all times and under any and all contingencies that may arise until the completion of the Contract.

B. Dispose of water through temporary pipelines or ditches with discharge to suitable outfall points. Prevent erosion of surrounding areas. Protect roads and other improvements on the site. Build temporary culverts if required. At completion of dewatering, remove temporary facilities and restore subgrade, and damaged areas.

C. Dewater all excavations as required by the records plans, details, and specifications. refer to Geotechnical Investigation Provided by Geotechnical Services, Inc. dated July 21, 2016 (attached hereto) for ground water elevations documented on site.

3.04 SHEETING AND SHORING

A. Provide necessary shoring, bracing and sheeting as required to assure against collapse of excavation sides. Comply with local safety regulations and with provisions of "Accident Prevention in Construction" published by the Associated General Contractors of America, Inc.

B. All sheeting, shoring, and bracing involved shall be removed by the Contractor after the completion of the permanent structure, in a manner so as not to disturb or mar the structure. Sheeting may be left in place only by written permission from the Landscape Architect, subject to such conditions as the Architect may require. No payment will be made by the Owner for such sheeting and shoring and bracing so left in place.

K. Do not excavate to full depth in freezing weather unless concrete or backfill can be placed immediately. Following the pouring of concrete footings, the soil beneath these footings shall be protected from frost to the satisfaction of the Architect.

3.05 ROCK EXCAVATION

A. Limits of Rock Excavation:

1. Pipe trenches to limits outlined in below.
2. Two feet below finish grade, or to the normal excavation depths as indicated on the drawings, unless otherwise determined by the Architect to facilitate footings, etc.
3. All ledge or boulder excavation encountered and required to be removed for the construction of work defined on the Drawings and required under this Contract, as being within the Contract limits.

B. Blasting:

1. No blasting shall be allowed on site.

C. Pay Limits for Rock Excavation: The cost of rock removal shall be paid to the Contractor as an additional cost if the quantities meet the following criteria.

1. Boulders greater than 2 cubic yards in open excavation.
2. Boulders greater than 1 cubic yard in trench excavations.
3. Intact rock that cannot be excavated using a C9 or D8 dozer having a ripper attachment or equivalent, or a pneumatic ram hammer.

3.06 FILLING, BACKFILLING AND COMPACTION

A. Placing Fills and Compacting:

1. Place fill materials in accordance with the requirements of the details, specifications and Geotechnical Investigation Provided by Geotechnical Services, Inc. dated July 21, 2016 (attached hereto)

2. All 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 material below it are frozen. No fill materials containing ice or frozen lumps shall be used.

3. The Contractor shall notify the Landscape Architect when excavation is ready for formal inspection. Filling and backfilling shall not be started until conditions have been approved by the Landscape Architect.

4. The Landscape Architect reserves the right to disapprove of compaction equipment being used for compacting if he deems the equipment in use to be unsuited or inadequate to compact materials to the specified densities and within a reasonable length of time.

5. Compacted subgrade shall be the graded surface prior to any fills. Rough grade shall be the top surface of gravel, crushed stone and ordinary fill ready to receive the final surface material application. Unless stated otherwise, all rough grades shall represent compacted material depths, as specified herein.

6. At the completion of excavation and before placing any fills, proof-roll compact subgrades to the same compaction levels required for placed fills as required hereinafter. Compaction procedure shall be approved by the Landscape Architect. Subgrade compaction shall be tested by the testing laboratory before proceeding further.

7. All fill is to be placed "in-the-dry", to which end dewatering may be required. Spreading and drying of each layer may also be required.

8. Conversely, if the testing laboratory determines that the fill is too dry for proper compaction, water shall be added to provide the specified optimum moisture content, as necessary for proper compaction.

9. Compaction of each lift shall be as specified herein and as determined by ASTM Test, Designation D1556. Fill shall be placed in successive horizontal lifts no thicker than six inches and compacted to the required density as specified herein. Maximum dry density shall be determined in accordance with ASTM D1557, Method D. The following percentages of maximum dry densities shall be achieved for fill materials or prepared subgrades.

    a. Under structures, footings, paved surfaces, drainage piping, utilities and other improvements:

        1. All fills 95%

        2. Top twelve inches of subgrades in cut 95%

    b. Within lawn and planting areas:

        1. All fills to within eighteen inches of finished subgrade 90%

        2. Top eighteen inches to finished grade 88%-90%

10. In the case of lawn and planting areas, compaction requirements for subgrades and fills shall be considered minimums and maximums within the density percentages called for, and any over-compaction of subgrades or fills which would be detrimental to lawn or planting objectives shall be corrected by loosening subgrades or fills through tilling or other means and re-compacting to specified compaction limits.

11. The Contractor shall notify the Architect three (3) days in advance when the rough grades are established and ready for formal inspection.

3.07 BACKFILLING OF TRENCHES AND STRUCTURES

A. All requirements for description, placement, compaction and spreading of fill materials as specified herein shall be applicable to backfilling operations.

B. Backfill materials as specified herein shall be used as bedding and backfill around drainage pipes, around structures and for other uses as illustrated on the Drawings.

C. Do not commence backfilling operations for trenches and structures until all piping, etc., has been installed, tested and approved, and the locations of all pipe and appurtenances have been recorded. Backfill carefully by hand around pipe to depth of one foot above top of pipe using material specified herein, and tamping firmly in layers not exceeding six inches, compacting with hand rammers or mechanical tampers.

D. Backfill materials as specified shall be placed to the full width of the trench as indicated on the Drawings. After a pipe is bedded, the trench shall be filled to the centerline of the pipe with fill as specified except at the joint. After the joint is inspected, that portion shall be filled in. Material under and around the pipe shall be carefully and thoroughly compacted to the densities specified herein.

E. From the centerline of the pipe to a point twelve inches above the top of the pipe the backfill shall be placed by hand and compacted with mechanical tampers to not less than 95% of maximum density at optimum moisture content of the material. Above this point, backfill may be placed by machine in layers six inches (6") deep and compacted to the densities specified herein. This backfill shall be extended as shown on the Detail Drawings. Backfill simultaneously on all sides of pipe or structure.

3.08 ROUGH GRADING

A. Rough grading shall include the shaping, trimming, rolling, and refinishing of all surfaces of the sub-base, shoulders, and earth slopes, and the preparation of grades as shown on the Drawings. The grading of shoulders and sloped areas may be done by machine methods. All ruts shall be eliminated. Traffic of workers and equipment across soil subgrade areas shall be prohibited following excavation to the required lines and grades.

B. If, during the progress of the Work, any pipe, drain or other construction is damaged due to operations under this Contract, the Contractor shall repair all damage at no additional cost to the Owner and restore damaged areas to their original conditions.

C. Do all other cutting, filling and grading to the lines and grades indicated on the Drawings. Grade evenly to within the dimensions required for grades shown on Drawings and as specified herein. No stones larger than four inches (4") in largest dimension shall be placed in upper six inches (6") of fill. Fill shall be left in a compacted state at the end of the work day and sloped to drain.

D. The Contractor shall bring all areas to grades as shown on the Drawings and in the details. The Architect, however, may make such adjustments in grades and alignments as are found necessary to avoid special conditions encountered.

E. No rubbish of any description shall be allowed to enter fill material. Such material shall be removed from the site and are legally disposed of.

F. Wherever athletic fields, lawns, sidewalks, pavements or other items contained within or outside the Limit of Contract lines have been excavated in fulfilling the work required under this Contract, this Contractor shall furnish and install all materials necessary to bring finish surfaces level with the existing adjacent surfaces. All work shall be installed to match the existing conditions in accordance with the governing authority. Notify the proper authorities prior to restoring surfaces outside the Contract Limit Lines.

G. Placed fill materials which become disturbed shall be regraded and re-compacted. Fill materials which become contaminated shall be removed and replaced, as directed by the Landscape Architect.

3.09 FINISH GRADING

A. Finish grading shall be completed with a laser grading system. Finish grading equipment shall include a computer controlled hydraulic system on rubber flotation tires with a maximum tolerance within one quarter inch (.25”) of the grades as specified on the grading plans. The operator(s) completing the finish grading shall be familiar with the equipment and be able to satisfactorily achieve the grades within the specified tolerance.

3.10 EROSION AND SEDIMENTATION CONTROL

A. The Contractor shall provide suitable and adequate means of temporary protection during construction, to prevent erosion, siltation and sedimentation of construction areas, and on-site and off-site undisturbed areas. This work shall be accomplished adjacent to or in the following work areas:

1. Topsoil stockpiles and on-site storage and staging areas.
2. Cut and fill slopes and other stripped and graded areas.
3. Constructed and existing swales and ditches.
4. At all basins and structures.

B. Means of protection shall be as required to provide continuous erosion control protection throughout the construction period.

C. Installation and maintenance procedures for erosion control devices shall, unless designated otherwise, conform to the "Erosion and Sedimentation Control Guidelines," specified herein.

D. All materials required for erosion control shall be provided by the Contractor at no additional expense to the Owner.

3.11 REMOVAL OF SURPLUS AND UNSUITABLE MATERIALS

A. With the exception of excess topsoil which will remain the property of the owner, surplus excavated materials not required to complete site construction and unsuitable excavated materials shall, unless directed otherwise by the Architect, become the property of the Contractor who shall remove and legally dispose of such materials from the site at no additional cost to the Owner. Excess topsoil shall be screened and reused on site, with any remaining quantities being screened and trucked to the Swampscott Cemetery - 400 Essex Street - Swampscott, MA 01907.

B. At the end of all excavation, filling and grading operations and before acceptance of the work, the Contractor shall remove all debris, rubbish, etc., from the site. He shall dispose of them in a manner satisfactory to the Architect. The premises shall be left clean, presentable, and satisfactory.

END OF SECTION

31 10 00
SITE PREPARATION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

A. Furnish all labor, materials and equipment to properly complete the site demolition work shown or specified and as needed to properly complete the work of the Contract Documents, including:

1. Clearing, grubbing, and disposing of vegetation, including bushes, brush, trees, stumps, roots, rubbish, refuse, trash and debris within the indicated limits.

2. Protection from injury to, or defacement of, any objects indicated or designated by the Landscape Architect to be preserved.

3. Removal, salvage, or other disposition of slabs and footings, existing pavement, curbs, sidewalks, steps, structures, backstops, fences and site improvements which interfere with construction as indicated, or as required, by the Architect.

4. Coordination of disconnection and capping of utilities as needed.

5. Saw cutting new openings and saw cutting demolition limits into existing construction.

6. Reclamation/pulverization of existing bituminous concrete pavement as required by the proposed construction.

1.03 RELATED WORK

A. Earthwork, Section 31 00 00.
B. Paving, Section 32 12 16
C. Lawns, Section 32 92 00

1.04 JOB CONDITIONS

A. General: The Contractor shall visit and accept the site as he finds it, and shall inform himself of the character and the type of site items to be removed. The Contractor shall walk the site with the Architect prior to commencing work to review the full scope of demolition and items to remain. The Owner assumes no responsibility for the actual condition or structural adequacy of any existing construction to be demolished.

Damage or loss to site improvements shall be at the risk of the Contractor from and after the date of Contract execution, and no such damage or loss shall relieve the Contractor from any obligation under the Contract.

B. Disposal: Dispose of cleared, grubbed, and removed material off the site. Burning of materials on the job site will not be permitted. Stockpile salvaged material in a secured location, designated by the Architect.

C. Traffic: Conduct operations and removal of debris to ensure minimum interference with the normal use of public ways and other adjacent facilities. Do not close or obstruct traffic ways, streets, walks or other used facilities without the written permission of the Owner and authorities having jurisdiction.

D. Protection: Existing facilities will be in use during site preparation and construction. Ensure the safe passage of persons in and around the area during demolition. Prevent injury to persons and damage to property. Immediately repair damaged property to its condition before being damaged.

1. Shoring and Bracing: Provide adequate shoring and bracing to prevent uncontrolled collapse or damage to existing structures or utilities.

2. Fire Protection: Maintain existing fire protection systems in operation throughout the work of this project or provide temporary equivalent protection.

E. Protection of existing landscape and athletic facilities to remain: Prior to beginning any work of the Contract on site, take effective action to protect all existing athletic fields and associated structures indicated to remain.

1. Fences: Erect secure, construction barriers, snow fencing, siltation fences and other barriers as needed to protect existing athletic fields and associated facilities from damage. Erect secure traffic barriers between all disturbed areas and existing athletic fields as indicated on the Drawings.

2. Protection: Prevent the parking of vehicles, driving of vehicles, storage of materials, removal of soils, and stockpiling of soils within all active areas, except for work directly related to grading indicated.

3. Utilities: Route utilities away from existing trees to remain even if shown otherwise. Minimize the cutting of tree roots, and when cutting is unavoidable, cut cleanly with a power saw and not an excavating machine.

F. Dust and Noise Control: Take effective measures to prevent windblown dust and to control noise to avoid creating a nuisance. Avoid creating ice hazards in freezing weather.

G. Utilities: Maintain all utilities except those requiring removal or relocation. Keep utilities in service and protect from damage. Do not interrupt utilities serving used areas without first obtaining permission from the utility company and the Owner. Provide temporary services as required.

PART 2 - PRODUCTS

2.01 SCHOOL FACILITY PROTECTION

A. Contractor shall walk the site with the Landscape Architect to insure that the adjacent school facilities have been adequately protected during construction.

B. A construction fence shall be erected along the limit of work line as shown on the record drawings. Construction fence shall be 6’ in height, chain link construction fence. See plans for detail.

PART 3 - EXECUTION

3.01 DEMOLITION

A. General: Demolish completely and legally remove from site and dispose of properly as required by the owner. Use demolition methods within limitations of governing regulations. Proceed with demolition systematically. Demolish in small sections and where applicable avoid overloading structure.

B. Demolish all existing above and below grade improvements except those indicated to remain. Wherever areas of new construction are shown to go over or encompass existing constructions or improvements, it is intended for the existing construction and improvements to be completely removed in their entirety, unless specifically indicated to remain.

C. Unsuitable material in the subgrade shall be removed to the lines and depths established by the Landscape Architect and replaced with Ordinary Borrow or Crushed Bank Run Gravel conforming to Section 310000, Earthwork. The mixed and/or blended material shall be spread and compacted in accordance with the requirements of Section 310000, Earthwork, to the widths, depths and crowns shown on the plans.

3.02 CLEARING AND GRUBBING

A. Clear materials specified herein to the limits shown and remove from the site.

3.03 SALVAGE

A. Salvage indicated material or materials determined to be suitable and required for reuse, including: wood and metal fences; signs, and other miscellaneous site items as indicated on the drawings.
B. Protect metallic coatings on salvaged items. Remove adhering concrete from salvaged items.

3.05 BACKFILL

A. Backfill trenches and excavations resulting from work under this Section in accordance with Section 31 00 00, Earthwork.

END OF SECTION

32 12 16
PAVING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Include GENERAL REQUIREMENTS and SUPPLEMENTARY CONDITIONS as part of this section.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

A. Perform all work required to complete the work of this Section, as indicated. Such work includes, but is not limited to, the following:

1. Reclamation/pulverization of existing pavements.
2. Construction of Gravel Base Course for all new walkways, and parking areas.
3. Rough grading and compaction of base material.
4. Bituminous Concrete Paving for Curbs, Walkways and Parking Areas.

1.03 RELATED WORK

A. Site Preparation, Section 31 10 00
B. Earthwork, Section 31 00 00
C. Storm Drainage, 33 40 00
D. Lawns, Section 32 92 00

1.04 REFERENCES

A. Work shall conform to codes and standards of the following:

1. ASTM - American Society for Testing and Materials

2. MADOT. – Massachusetts Highway Department Standard Specifications for Highways and Bridges.

3. AASHTO - American Association of State Highway and Transportation Officials

1.05 QUALITY ASSURANCE

A. Codes and standards: Perform site improvement work in compliance with applicable requirements of governing authorities having jurisdiction.

B. Qualifications of workers: Use adequate numbers of skilled workers who are trained in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

C. Layout and Grading: After staking and laying out the work, and before beginning final construction, obtain the Architect's/ Engineer's approval of layout and grades. Contractor shall make minor adjustments as determined by the Architect/Engineer.

D. The Contractor and his Subcontractors shall inspect all subbases for unstable, unsuitable or improperly prepared areas. Do not begin work over unacceptable areas. Beginning work means the Contractor and his Subcontractors accept the subbase, previous work and conditions and shall be held responsible for any corrections required to properly implement the Construction Documents.

1.06 SUBMITTALS

A. Product Information: Provide manufacturer's data showing installation and limitations in use. Supply Certificates of Compliance for all materials required for fabrication and installation. Work includes but is not limited to the following items:

1. Bituminous Concrete - mix data.

1.07 PROJECT CONDITIONS

A. Environmental Requirements: The Subcontractor shall verify site conditions to assure that the requirements for installation procedures conform to the following:

1. Paving shall not be placed when the ambient temperature is below 40 degrees Fahrenheit or when there is frost in the base or any other time when weather conditions are unsuitable for the type of material being placed.

2. After final rolling of bituminous pavement, no vehicular traffic of any kind shall be permitted until it has cooled and hardened for at least 24 hours.

3. Bituminous concrete shall not be placed when temperatures are below the standards set in the Mass. Specs.

B. Site information: Data on indicated grades, utilities and other existing conditions are not intended as representations or warranties of accuracy.

C. Existing utilities: Locate existing utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during installation of site improvements.

D. Protection: The Contractor shall use all means necessary to protect the materials of this Section before, during and after installation. In the event of damage, make all repairs and replacements necessary to approval of the Architect and at no additional cost to the Owner. All work shall be executed in such a manner as to prevent any damage to existing streets, curbs, paving to remain, existing plant materials, and adjoining properties.

E. The Contractor shall remove all debris, construction equipment and scrap material from areas within the limit of work prior to inspection for acceptance.

F. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make minor adjustments in grades and alignment as are found necessary.

PART 2 - PRODUCTS

2.01 CONSTRUCTION OF GRAVEL BASE COURSE FOR ALL PAVED SURFACES.

A. Gravel shall be as specified under Section 31 00 00, Earthwork.

B. The Contractor shall submit to the Architect a sieve analysis by an independent recognized testing laboratory of the material he intends to utilize. No material shall be placed until approved by the Landscape Architect in writing.

2.02 ALL PAVED SURFACES

A. Bituminous concrete for all paved surfaces shall be Class I, Type I-1 hot plant mix, conforming to the applicable sections of the Mass. Specs. and shall consist of two (2) courses of bituminous concrete with a minimum finished pavement depth after rolling of three (3") inches.

1. Binder course shall be two inches (2") in thickness consisting of one lift Binder Course bituminous concrete.

2. Surface course shall be one inch (1") thickness consisting of one course of Top Course bituminous concrete.

PART 3 - EXECUTION

3.01 CONSTRUCTION OF GRAVEL BASE COURSE FOR PAVED AREAS

A. The gravel shall be spread in layers from self-spreading vehicles or with power graders of approved types, or by hand methods. Gravel shall be spread to obtain the required compacted measure of a min 95% as outlined in Section 31 00 00, Earthwork of this specification. Any specific area which after being rolled does not form a satisfactory, solid stable foundation, shall be removed, replaced and recompacted.

3.02 BITUMINOUS CONCRETE PAVEMENT.

A. Install bituminous concrete as per the Bituminous Concrete section of this specification.

B. Surface Smoothness: Test finished surface of each asphalt pavement course for smoothness, using a 10' straight edge. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:

1. Binder Course: 1/4" in 10'.
2. Surface Course: 1/8" in 10'.

C. The Contractor shall check the final surface for depressions by applying water in the presence of the Landscape Architect or Engineer. Minor depressions (less than 1/8" in depth) need not be corrected, however, in cases where the variation in the surface course exceeds 1/8", the entire area affected shall be removed and replaced with new surface course at the expense of the Contractor.

END OF SECTION

32 16 13.13
CAST-IN-PLACE CONCRETE CURB
(SYNTHETIC TURF ANCHOR)

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Include GENERAL CONDITIONS and ail other Division 1 - General Requirements as part of this Section.
B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
C. Coordinate work with that of all other trades affecting, or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

A. Perform all work required to complete the work of the Section, as indicated. Such work includes, but is not limited to, the following:
B. Cast in Place Curb (Synthetic Turf Anchor) for anchoring synthetic turf.

1.03 RELATED WORK UNDER OTHER SECTIONS

A. Earthwork
B. Cement Concrete Pavement
C. Infilled Synthetic Turf
D. Lawns

1 04 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.
B. American Society for Testing and Materials (ASTM):

C 33	Concrete Aggregates
C 91	Masonry Cement
C 94	Ready-Mix Concrete
C 150	Portland Cement
C 260	Air Entraining Admixtures for Concrete
C 494	Chemical Admixtures for Concrete

C. Massachusetts Highway Department Standard Specifications for Highways and Bridges (MHD Specifications).

1.05 SUBMITTALS

A. Complete shop drawings of the infilled synthetic turf anchor specified shall be submitted.

1.06 TESTING AND INSPECTION

A. The contractor shall pay for testing of every load of concrete or day's pour (whichever is less). Testing includes slump test and 7, 14 and 28 day compression tests. Submit test results to Landscape Architect and Owner.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver manufactured products in manufacturer's original, unopened, and undamaged containers with labels intact and legible.

B. Store and handle manufactured products to prevent damage and deterioration.

PART 2 - PRODUCTS

2.01 CAST-IN-PLACE CONCRETE CURB (SYNTHETIC TURF ANCHOR)

A. Ready-mix concrete shall conform to ASTM C-94, the batch plant shall be certified in compliance with the National Ready Mix Concrete Association standards. Concrete shall be 4000 psi.

B. Forms shall be steel or wooden forms at the Contractor's option and as approved by the Landscape Architect. Provide forms capable of producing uniform, straight, or curved concrete surfaces. Use only non-staining form release compounds.

C. Portland Cement shall conform to ASTM C-150, type as required. Use only one brand of cement throughout the project. Limit the temperature of the cement to 140 degrees Fahrenheit when delivered to the batching plant.

D. Aggregates shall conform to ASTM C-33. Provide aggregates with a long history of successful use in similar work and conditions. Grade fine aggregates from 1/4" to fines. Grade coarse aggregates from 1/4" to size specified.

E. Water shall be clean, potable and free of all impurities that are detrimental to concrete.

F. Air-entraining admixtures shall conform to ASTM C-260; use only admixtures which have been accepted in the mix design.

G. Water reducing admixtures shall conform to ASTM C-494; use only admixtures which have been accepted in the mix designs.

H. Curing/sealing compound shall comply with FS TT-C-800, having at least 30% solids content.

I. Expansion materials:

1. Unless otherwise indicated on the drawings, expansion joints shall be located 30 feet O.C., maximum.
2. Expansion joint filler shall be preformed, non-bituminous type joint filler conforming to ASTM D1752, Type II, similar to Seal tight Cork Expansion Joint Filler, manufactured by W.R. Meadows, Inc., Elgin, IL 60120, or approved equal.
3. Pre-molded filler shall be one piece for the full depth and width of the joint leaving a sealant recess as indicated.
4. Use of multiple pieces of lesser dimensions to make up required depth and width of joint will not be permitted.
5. Except as otherwise noted on the Drawing, joint filler shall be *Vz* thick.
6. Expansion joint shall receive joint backer rod and shall be sealed with approved joint sealer.

J. Grout:

1. Grout shall be mixed in the proportions of one part Portland cement to two parts sand, by volume. Only sufficient water shall be used to enable grout to barely hold its shape when squeezed into a ball in the hand. Sand for grout shall be "Fine-Aggregate", conforming to ASTM C33.
2. Non-shrink grout shall be pre-mixed non-shrinking, high strength grout. Compressive strength in 28 days shall be 5,000 psi minimum, but in no case less than the specified strength of the adjacent concrete. Manufacturer shall provide evidence that the material meets the requirements of the COE CRDC 621 (558). Grout permanently exposed to view shall be non-oxidizing; metallic grout may be used in other locations.

    a. Non-shrink grout shall be one of the following or approved equal:

Manufacturer	Product
Gifford-Hill Co.	Supreme
Master Builders Co.	Embeco
Us Grout Corporation	Five Star Grout

PART 3 - EXECUTION

3.01 CAST-IN-PLACE CONCRETE CURB (SYNTHETIC TURF ANCHOR)

A. Contractor shall excavate area to the lines and grades shown to provide proper footing for all concrete curb.

B. Contractor shall erect proper formwork to pour the concrete footings where required on Drawings. Formwork shall be free of defects and shall provide a smooth and even finish to the entire curb surface. Install form liners per manufacturer's instructions and as directed by the Landscape Architect. Landscape Architect reserves the right to inspect and approve all formwork prior to pouring concrete.

C. Pour concrete and finish as indicated on the Drawings. Contractor shall leave forms for a minimum of 48 hours.

D. Contractor shall protect the concrete against injury from the elements and defacement of any nature during construction.

E. Strictly comply with industry standards and the recommendations of the National Concrete Masonry Association, and Pre-stressed Concrete Institute, except where more restrictive requirements are specified in this Section.

END OF SECTION

32 18 23.29

SYNTHETIC FIELD SPORTS SURFACING
(Base, Anchor & Site Work Only)

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

A. Include GENERAL CONDITIONS and all other Division 1 - General Requirements as part of this section.

B. It is the intent of this Section to specify a complete stone base, including drainage system and concrete turf anchor for a new Synthetic Turf Field. The synthetic turf system, infill materials, resilient pad, grooming equipment and Gmax testing shall be the responsibility of others and are not included in this bid.

C. Examine all other Sections of the Specifications for requirements that affect work of this Section whether or not such work is specifically mentioned in this Section.

D. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK

A. Provide an inspection and certification of subsurface drainage system and free draining subbase as outlined herein upon completion.
B. Furnish and install a new free draining stone base, drainage system and concrete turf anchor.
D. Provide all attachments and penetrations as required to complete the work as shown on the Drawings and approved Shop Drawings.
E. Provide a drainage test on free draining subbase prior to installation of new synthetic turf surface in conformance with *ASTM F 2898 - 11 Standard Test Method for Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-confined Area Flood Test Method*

1.03 RELATED WORK

A. Site Preparation
B. Earthwork
C. Cast-in-Place Concrete Curb
D. Chain Link Fence and Gates
E. Storm Drainage System
F. Protective Netting

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM).
B. Consumer Products Safety Commission (CPSC).
C. Massachusetts Interscholastic Athletic Association (MIAA)

D. US Lacrosse (USL).
E. United States Soccer Federation (USSF).
F. Federation Internationale de Football Association (FIFA).

1.05 QUALITY CONTROL

A. Experience:

1. Stone base, drainage and concrete turf anchor system shall be provided by an experienced specialty vendor which shall have supplied at least 25 outdoor athletic field systems of 75,000 s.f. or greater of the type and installation process herein specified within the last three (3) year period.

C. Inspection and Acceptance: The Owner's Infilled Synthetic Turf System Vendor and Contractor shall inspect the completed subgrade and drainage system to verify their acceptance of installation and condition. Commencement of subsequent installation in a given work area indicates acceptance of underlying substrates and systems.

D. Planarity and Grade: Deviation in planarity within the finished stone subbase shall not exceed 1/8" beneath a 10' straightedge. Deviation from a straight grade between levels on drawings shall not exceed 1/4".

E. Protection: Heavy equipment or vehicles of any kind should not be allowed on the field area subsequent to the completion of the drainage system.

F. Restoration of Damage: The General Contractor shall exercise care in the execution of his work and avoid damage or defacement of adjacent or surrounding areas by using suitable protective means. Damage or defacement which occurs shall be remedied at General Contractor's cost to the satisfaction of the Awarding Authority.

1.06 SUBMITTALS

A. Submit samples for all stone, filter fabric and drainage pipe, as required.

1.07 DELIVERY. STORAGE AND HANDLING

A. Deliver, store and handle products in exact accordance with the Manufacturer's requirements and specifications.

B. Products delivered to the site which are not in compliance with the requirements of this Section shall be removed from the site immediately at no cost to the Awarding Authority.

PART 2- PRODUCTS

2.01 BASE AND DRAINAGE MATERIALS

A Geotextile Fabric:
1 Non-woven polypropylene geotextile fabric shall be chemically and biologically inert and shall be equivalent to the following:

a. Mirafi 140N, Mirafi Inc., Pendergrass, GA (888) 795-0808
b. Poly Filter-X, Carthage Mills (800) 543-4430
c. Supac-5P, Phillips Fibers Corp.

B. Free Drainage Gravel Sub-Base for Infill Synthetic Turf System.
The contractor shall verify that the free draining gravel sub-base system provides a uniformly mixed processed stone over the entire field subgrade. The contractor shall extend the aggregate to a depth as indicated on the record drawings and shall insure that the final base constitutes a compacted, stable, permeable stone subbase course. Care shall be taken during installation, amendment and recompaction of the aggregate to maintain the grade designed and installed for the subgrade below. The capability of the processed stone drainage layer to meet the stability and permeability requirements must be determined by a certified laboratory prior to the construction of the base course. Aggregate shall be durable and shall not exceed 12% loss of materials as determined by a sulfate soundness test (ASTM C88). The processed stone layer shall be compacted to a minimum of 95% of maximum density per ASTM D698. Gradation shall conform to the following:

Sieve Designation	% Passing by Weight
1.5”	100
1”	95-100
.75”	80-100
.50”	60-80
.375”	30-50
No. 4	20-40
No. 8	10-30
No. 40	5-17
No. 200	0-2

PART 3- EXECUTION

3.01 GENERAL

A. The installation shall be performed in full compliance with the record plans and details.

B. All installation operations shall be performed by personnel fully familiar with the materials and their application, under the full time direction and supervision of a qualified technical supervisor employed by the Vendor of the Infilled Synthetic Turf System. Installation supervisors shall have a minimum of 3 years of experience.

C. The surface to receive the Infilled Synthetic Turf System shall be inspected and certified by the General Contractor, the Landscape Architect and the Owner's Infilled Synthetic Turf System Vendor as ready for the installation of the Infilled Synthetic Turf System and must be perfectly clean as installation commences and shall be maintained in that condition throughout the process. The General Contractor shall amend and reconstruct the base as necessary to secure written approval from the Landscape Architect prior to the installation of the synthetic turf system.

3.02 DRAINAGE AND BASE INSTALLATION

A. Install backfill in accordance with Section 02722 - Storm Drainage System.
B. Install Free Draining Base in accordance with paragraph 2.01 of this section.

3.03 BASE VERIFICATION

A. The Contractor and Infilled Synthetic Turf Vendor shall verify that the subsurface drainage system is functioning properly prior to the commencement of the Infilled Synthetic Turf System installation by performing a drainage test on free draining subbase prior to installation of new synthetic turf surface in conformance with *ASTM F 2898 - 11 Standard Test Method for Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-confined Area Flood Test Method.*

B. The Free Draining Base shall be inspected by the Contractor or Infilled Synthetic Turf System Vendor by means of a laser level on a 25-foot grid pattern. Based on the inspection of the topological survey, the Contractor or Infilled Synthetic Turf System Vendor shall fine grade the Free Draining Base suitably, including proper rolling and compaction. The Free Draining Base shall not be approved for tolerance to grade without obtaining a topographic survey. Submit electronic topographic survey to Landscape Architect for review and approval.

C. The Free Draining Base shall be tested to insure a 95% maximum dry density per a standard proctor test at the contractor's expense.

D. Upon written certification from the Contractor and Infilled Synthetic Turf Vendor that the Free Draining Base and drainage system have been properly installed, the Infilled Synthetic Turf System installation shall commence.

3.07 AS BUILT FIELD LAYOUT DRAWING

A. Provide As-Built Field Spot Grade Plan including verification of concrete turf anchor dimensions to the Landscape Architect.

3.09 CLEAN UP

A. Provide the labor, supplies and equipment as necessary for final cleaning of surfaces and installed items. Surfaces, recesses, enclosures, etc. shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate use by the Awarding Authority.

3.10 ACCEPTANCE

A. Should any imperfections develop in the surface areas prior to the installation of the synthetic turf system, they shall be removed and replaced with new materials.

B. All such repair work shall be done at no additional cost to the Awarding Authority.

END OF SECTION

32 31 13
CHAIN LINK FENCE AND GATES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

1. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

2. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

3. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

1. Perform all work required to complete the work of the Section, as indicated. Such work includes, but is not limited to, the following:

    1. Fusion Bond Chain Link Fence and Gates

1.03 RELATED WORK UNDER OTHER SECTIONS

1. Erosion and Sediment Control
2. Earthwork
3. Bituminous Concrete Paving

1.04 REFERENCES

1. ASTM - American Society for Testing and Materials

2. Commonwealth of Massachusetts Highway Department - Standard Specifications for Highways and Bridges (MHD Specifications)

1.05 LAWS, ORDINANCES, PERMITS AND FEES

1. The Contractor shall:

    1. Give necessary notices, obtain all permits and pay all Governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals of the local Building Departments having jurisdiction.
    2. Obtain all required certificates of inspection for this work and deliver same to the Architect before request for acceptance and final payment for the work.
    3. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to Contract Drawings and Documents) in order to comply with all applicable laws, ordinances, rules and regulations, whether or not shown on the Drawings and/or specified.

1.06 QUALITY ASSURANCE

1. Source: For each type of product required for the work of this Section, provide products of one manufacturer and source for consistency.

2. Codes and Standards: Perform site improvements work in compliance with applicable requirements of governing authorities having jurisdiction. Workmanship and finish shall be equal to the best practice of modern shops for each item of work.

3. Qualifications of Workers: Use adequate numbers of skilled workers who are trained in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

4. The work of this Section shall be completely coordinated with the work of other Sections. Verify dimensions and work of other trades which adjoin materials of this Section before installing items specified.

1.07 SUBMITTALS

1. Shop Drawings: Supply shop drawings at an approved scale for location, installation and erection of all parts of the work under this Section including but not limited to the following:

    1. Fusion Bond Chain Link Fence and Gates

2. Product Information: Provide manufacturer's data showing installation and limitations in use. Supply Certificates of Compliance for all materials required for fabrication and installation. Work includes but is not limited to the following items:

    1. Fusion Bond Chain Link Fence and Gates

3. Material Selection and Samples: Submit samples showing the complete range of colors, textures and finishes available for all components required for construction. Work includes but is not limited to the following:

    1. Provide one sample of each fence fabric.

PART 2 - PRODUCTS

2.01 FUSION BOND CHAIN LINK FENCE AND GATES

1. Fences that secure the multi-purpose field shall be a minimum of 4’in height, as per the record drawings.

2. The types of fencing required for the project are as indicated below, subject to detailed material requirements which follow.

3. All material shall be new, and products of recognized reputable manufacturers. Used, re-rolled or re-galvanized materials are not acceptable.

4. Like items of materials provided hereinafter shall be the end products of one manufacturer in

order to achieve standardization for appearance, maintenance and replacement.

5. Fencing Fabric Wire shall conform to the following:

   1. Over a galvanized steel core wire in accordance with ASTM F668 for Class 2B vinyl fabric. Material specifics shall be as follows:

Core (inches)	Wire (gauge)	Zinc (oz/S.F.)	Min.Vinyl thickness	Mesh Size
0.192	6	.40	7 mils	2.0”

   2. Selvages: Unless directed otherwise on the plans, fence fabric shall be knuckle selvaged at top and bottom.

   3. Vinyl coated fabric color shall be black.

6. Framework shall be standard weight, schedule 40 round galvanized steel pipe meeting requirements of ASTM A120. Pipe shall be zinc coated inside and outside by the hot dip process with no less than 1.8 oz. coating per sq. ft.

   1. Schedule of pipe sizes shall be as follows:

Application	Height in Feet	Out. Dia. in Inches	Weight in Pound/Foot
Terminal/	6 ft. Or less	2.375	3.65
Corner Posts	Over 6 ft.	2.875	9.11
Line Post	6 ft. Or less	1.90	2.72
	6 ft. - 8 ft.	2.375	3.65
	Over 8 ft.	2.875	5.79
Rails	(all heights)	1.660	2.27

   2. Posts shall be of sufficient length to allow for installation into concrete footings to a minimum depth of 3.5 ft. below finish grade.

   3. Post tops shall be provided with post caps which fit securely and exclude moisture.

7. All posts and rails shall be vinyl coated following galvanizing by thermal fusion process with a 10 to 15 mil thick vinyl coating, matching color of fence fabric.

8. Fence fittings and accessories shall be fabricated of steel or cast iron and shall conform to minimum requirements of ASTM F-626, and as below. Following fabrication and galvanizing, all fence fittings shall receive a 10 to 14 mil thick fusion bonded vinyl coating to match fabric color. With the exception of field painting for nuts and bolts, no painted fittings will be accepted.

   1. Tension wire shall be No. 7 gauge (0.177 inch) galvanized marcelled steel wire with a Class 2 zinc coating in accordance with ASTM A-824.
   2. Stretcher Bars shall not be less than 3/16 by 3/4 inch and not less than 2 inches shorter

than the nominal height of the fabric with which they are to be used. One stretcher bar shall be provided for each end and gate post, and two for each corner and pull post.

3. Fabric connectors shall be provided in sufficient number for attaching the fabric to all line posts at intervals not exceeding twelve inches (12"); and not exceeding twelve inches (12") when attaching fabric to top or bottom rail. Connectors shall be galvanized with a min. 0.8 oz s.f. coating of zinc.
4. Unless designated otherwise on the details, banded fasteners shall be fabricated from pressed steel stock which has been cut to required lengths for bolted connections at the site. Manufactured "hook ties" and “wire ties” will not be accepted.
5. Tension Bands shall be provided in sufficient number for attaching the fabric and stretcher bars to all terminal posts at intervals not exceeding twelve inches (12"). Tension bands shall be formed from flat or beveled steel and shall have a minimum thickness after galvanizing of 0.078 inch; and minimum width of 3/4 inch for posts 4 inch O.D. or less; and 0.108 inch thickness by 7/8 inch for posts larger than 4 inch O.D. Brace bands shall be formed from flat or beveled steel and shall have a minimum thickness of 0.108 inch after galvanizing; and a minimum width of 3/4 inch. Attachment bolts shall be 5/16 x 1-1/4 inch galvanized carriage bolts with nuts, ASTM A-307, Grade A.
6. Other hardware required shall be fabricated from steel, and galvanized in accordance with ASTM A123 and/or ASTM A153.

9. Top Rails shall have lengths not less than eighteen feet and shall be fitted with min. 6 inch long outside sleeved or internally swaged couplings for connecting the lengths into a continuous run. Provide top rail with pass-through fittings at line posts and rail end cups and brace bands at terminal or gate posts.

1. Middle and Bottom Rails shall be secured to line posts with steel boulevard clamps, and to terminal, corner, gate or pull posts with rail end cups and brace bands.

10. Brace Rails shall be provided for each terminal post with fabric height of six feet or more. Extend brace to each adjacent post at approximate mid-height of fabric and secure with rail end cups and brace bands. Provide diagonal truss bracing with 3/8 inch steel rod and turnbuckle.

11. Chain Link Swing Gates:

1. Gate frames shall be constructed of round steel pipe in accordance with ASTM F 900. Gates over 8' high or 15' wide shall be provided with additional horizontal and vertical members to ensure proper strength, and ¾” stainless steel center gate stop.
2. Chain link fabric for gates shall match fabric of fencing.
3. Gate posts shall be standard weight schedule 40, finished to match fence posts:

Post Size Gate leaf	(inches)	Weight (lb/ft.)
6 ft. or less	2.875	5.79
6 - 12 ft.	4.00	9.11
12 - 19 ft.	6.625	18.97

4. Gate hinges shall be heavy duty offset type. Install gate for 180 degree outward operation. Hinges shall have large bearing surfaces for clamping in position. The hinges shall not twist or turn under the action of the gate. The gates shall be capable of

being opened and closed easily by one person.

5. All gates shall be equipped with a positive closure latch and padlock fitting.

12. Poured-in-place concrete footings shall have a twenty-eight day compressive strength of 4,000 psi.

PART 3 - EXECUTION

3.01 CHAIN LINK FENCE AND GATES

1. General: Unless modified herein, installation of fencing shall meet the requirements of ASTM F567. Erect fencing in straight lines between angle points by skilled mechanics experienced in this type of construction.
2. Grounding: All posts 10' or higher shall be grounded. Provide ground rods at all corners, at all terminal posts, and at minimum of two hundred fifty feet on center (250' O.C.) if not required otherwise.
3. Post Holes: Shall be cored into concrete retaining wall/turf anchor as per record plans and details.
4. Space posts in the fence line equally with the maximum spacing shown on Drawings.
5. Provide corner or pull posts at maximum intervals of 250 ft. O.C., and for any change in direction of 15 degrees or more, and for any abrupt change in grade, with bracing in both directions.
6. Hanging Fabric:
    1. Fasten chain link fence fabric to terminal posts, and gate posts with tension bars and tension bar bands.
    2. Fence fabric shall be secured to all rails and to posts that are not terminal, or gate with wire ties at specified spacing. Tie down wire shall be woven through the fence fabric, completely around the rail and wire shall be twisted securely with three twists on the rail side of the fence and the tails of the wire cut off to preclude untwisting by hand. Twisted tie wire ends shall be turned under at horizontal rails and turned down at vertical rails to reduce potential for human contact. In lawn and shrub beds attach fabric away from adjacent shrub bed.
    3. Stretch fabric as tightly as possible without pulling the material out of shape. Top of fabric shall be parallel with top rail.
7. Testing of Fence Fabric:
   Each fence panel shall be constructed such that it will pass the following test. Deflection of fence fabric shall be no greater than 2 inches when a force of 30 pounds is applied in the center of the panel, perpendicular to the plane of the fence fabric. Fabric shall return to original position when force is released.
8. Gates: Install gates in conformance with specification and detail requirements. Test swing and latch and adjust as necessary for proper operation.

END OF SECTION

32 92 00
LAWNS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

1. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

2. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

3. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

1. Refer to the Drawings for the extent and details of this work.
2. The work of this Section consists of all seeding and sodding and related work as shown on the Drawings or required herein and includes, but is not limited to the following:

    1. Providing all topsoil required for work of this Section.
    2. Screening stripped and stockpiled topsoil.
    3. Providing additional new topsoil from off-site sources as required to complete work for this Section.
    4. Providing all soil amendments, fertilizers, erosion controls and mulches as required for work in this Section.
    5. Scarification of subsoil in preparation for loaming.
    6. Spreading and fine grading topsoil for all lawn areas.
    7. Seeding and sodding required for work in this Section.
    8. Maintenance and guarantee.

1.03 RELATED WORK UNDER OTHER SECTIONS

1. Erosion and Sediment Control
2. Site Preparation
3. Earthwork
4. Planting

1.04 SUBMITTALS

1. Materials list: Submit a complete list of all materials proposed for use in this work, demonstrating complete conformance with the requirements specified.

    1. Submit grass seed mixes for approval.
    2. Submit sod grass seed mix for approval.
    3. Submit topsoil analysis results for review by the Landscape Architect. State recommended quantities of amendments necessary to produce satisfactory topsoil as stated in the specifications herein. If on-site stockpiled topsoil is to be used, submit topsoil analysis of screened products.
    4. Submit product information with mix ratios and amounts for hydromulching to be used during hydroseeding for Landscape Architect's approval.
    5. Submit fertilizer, herbicide and fungicide products for application as required for

Landscape Architect's approval.

6. Submit mechanical analysis of any soil amendments.

1.05 QUALITY ASSURANCE

1. All seed, sod, and amendments shall comply with all Federal, State and local laws and regulations requiring inspection for plant disease and insect control.

1.06 PRODUCT HANDLING

1. Delivery and Storage:

    1. Deliver all items to the job site in their original containers with all labels intact and legible at time of Landscape Architect's inspection.
    2. Immediately remove from the site all materials which do not comply with the specified requirements
    3. Prior to the installation, cover and store all sod in a cool, dry shaded area.
    4. Use all means necessary to protect seed from moisture and other contaminants which may adversely effect proper germination.
    5. Use all means necessary to protect fertilizers, amendments and other materials from moisture and other contaminants which may adversely effect their efficacy.

1.07 JOB CONDITIONS

1. Utilities: Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate as required. Maintain grade stakes set by others until removal is mutually agreed upon by all parties concerned.

2. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Landscape Architect before spreading topsoil.

PART 2 - PRODUCTS

2.01 LAWN PRODUCTS

1. Topsoil

    1. Topsoil stockpiled from on-site stripping may be utilized if in compliance with the requirements for new topsoil.
    2. All topsoil that was stripped and stockpiled shall be screened to a maximum stone size of 3/4 in.
    3. The existing topsoil was tested and the results of this test are included at the end of this section. The contractor is responsible for modifying the existing topsoil as required to meet the specification for new topsoil.

2. New Topsoil

    1. New Topsoil: Shall be natural, fertile loam typical of cultivated topsoils of the locality, containing not less than 5% or more than 8% by weight, of decayed organic matter

(humus) as determined by ASTM F-1647. If organic amendments are needed to obtain the specified matter content of the topsoil, the organic matter source may be a compost material. Compost may be used, provided that the material has been composted in an in-vessel system, has an organic content of not less than 70%, and a PH range of 6.5 to 7.2.

2. Topsoil shall be taken from a well-drained, arable site, free of subsoil, large stones, earth clods, sticks, stumps, clay lumps, roots or other objectionable, extraneous matter or debris.
3. Topsoil shall be free of Quack-grass rhizomes, *Agropyron Repens*, and the nut-like tubers of Nutgrass, *Cyperus Esculentus*, and all other primary noxious weeds.
4. Topsoil shall have a pH not less than 6.0 or greater than 7.0.
5. Topsoil shall not be delivered or used while in a frozen or muddy condition.
6. Topsoil shall conform to the following particle size distribution, as determined by pipette method in compliance with ASTM F-1632:

Sand	40-60%
Silt	30-40%
Clay	5-20%

If determined by a soil test the existing topsoil that was stripped does not meet these specifications, the topsoil shall be amended to provide an acceptable topsoil for use.

3. Soil Analyses:

1. The Contractor shall submit representative samples of topsoil he intends to bring onto the site, and samples of topsoil that was stockpiled from on-site stripping, to a Soil Plant Testing Laboratory acceptable to the Landscape Architect. All reports shall be sent to the Landscape Architect for approval. The cost for testing and analysis of the soils shall be borne by the Contractor.
2. Samples of topsoil to be brought to the site must be approved prior to delivery. Deficiencies in the topsoil shall be corrected by the Contractor
3. Testing reports shall include the following tests and recommendations.

    1. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System.
    2. The silt and clay content shall be determined by a Pipette Test of soil passing the No. 270 sieve.
    3. Percent of organics shall be determined by an Ash Burn Test or Walkley/Black Test (ASTM F-1647)
    4. Tests for gradation and organics shall be performed by a private testing laboratory approved by the Landscape Architect. Tests for soil chemistry and pH may be performed by a public extension service agency
    5. Chemical analysis shall be undertaken for Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts, and acidity (pH).
    6. Soil analysis tests shall include recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish particular objectives noted
    7. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.

4. Soil Amendment (Washed Screened Sand):

1. Washed screened sand for use as a soil amendment to improve drainage properties and to reduce compaction of existing stripped topsoil or new topsoil, shall meet the following mechanical analysis:

Sieve Size	% Passing by Weight
4 in.	100
No.4	93
No. 8	83
No. 16	71
No. 30	49
No. 50	18
No. 100	2
No. 2000	.2

5. Lime

1. Lime shall be an approved agricultural limestone containing no less than fifty (50%) percent of total carbonates and twenty five (25%) percent total magnesium with a neutralizing value of at least one hundred (100%) percent
2. The material shall be ground to such a fineness that forty (40%) percent will pass through a Number 100 U.S. Standard Sieve, and ninety eight (98%) percent will pass through a Number 20 U.S. Standard Sieve.
3. The lime shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis.
4. Any lime which becomes caked or otherwise damaged making it unsuitable for use, will be rejected.

6. Fertilizer:

1. Type 1 Fertilizer: General starter fertilizer with a nutrient analysis 19-26-5, N-P-K. A minimum of 75% of the total nitrogen 19% is derived from urea and methylene ureas; a minimum of 25% from monoammonium phosphate. A minimum of 2.1% from water-insoluble methylene ureas; remaining 97.9% from water-soluble urea, slowly available methylene urea and monoammonium phosphate. Phosphorus (26%) from monoammonium phosphate; potash (5%) and sulfur as sulfate (1.8%) from potassium sulfate
2. Type 2 Fertilizer: Fertilizer with pre-emergence weed control, containing active ingredient: siduron (3.1%). Analysis 16-21-4. A minimum of 75% of total nitrogen (16%) derived from urea and methylene ureas, with a minimum of 24.4% from monoammonium phosphate. A minimum of 22% is water insoluble nitrogen, with remaining 77.5% from urea, methylene urea and monoammonium phosphate. 21% phosphorous and 3% Potash.
3. Type 3 Fertilizer: All purpose fertilizer with a nutrient analysis of 36-3-7, N-P-K. A minimum of 30% of total nitrogen (36%) is from polymer-encapsulated sulfur-coated urea providing 21 percent slow release nitrogen. A minimum of 98.2% derived from coated and uncoated urea, and 1.8% from monoammonium phosphate. Phosphorus (3%) from monoammonium phosphate; potash (7%) from potassium chloride; sulfur (3.6%) from elemental sulfur.

4. Type 4 Fertilizer: Fertilizer with a nutrient resource analysis of 32-3-10 N-P-K. A minimum of 97 percent of total nitrogen shall be derived from urea and methylene ureas. A minimum of 21 percent is from water-insoluble methylene ureas. Phosphorus - 3 percent shall be derived from monoammonium phosphate; potash 10 percent and sulfur as sulfate 3.5 percent from potassium sulfate.

7. Water

1. Water shall be supplied by the Owner unless otherwise specified.
2. General Lawn Areas:

1. The Contractor is responsible for providing all equipment, hoses, etc. for watering throughout the project and until final acceptance of lawn and turf areas by the Landscape Architect.

3. Athletic and Play Fields:

1. Where permanent irrigation system will not be installed as part of the Contract, the contractor shall provide, at no cost to the Owner, a temporary irrigation system adequate to meet requirements specified herein.
2. Provide plans of temporary irrigation system for approval by Landscape Architect. Temporary irrigation pipes, hoses, and other equipment shall periodically be relocated to avoid shading or damage to lawn areas.

8. Herbicides, Pesticides And Fungicides

1. Herbicides, pesticides, and fungicides may be used subject to the approval of the Landscape Architect, and handled by State Licensed operators only.

1. Seed

1. Grass seed shall be clean, new crop seed, composed of a mixture of varieties, mixed in proportion by weight and tested for minimum percentages of purity and germination. Submit proposed mixture to the Landscape Architect for approval.

a. General Lawn Area Mix:

1) Perennial Ryegrass 40%
2) Chewings Fescue 30%
3) Kentucky Bluegrass 30%

b. Utility Mix for shoulders, swales and basins:

1) Tall Fescue 80%
2) Perennial Ryegrass 20%

10. Hydroseed Mix

1. All work will be carried out by an approved spraying machine specifically used for this

work. Amounts of fertilizer used shall reflect recommendations outlined in the Soil Analysis, see Section 2.01 C. The Contractor shall submit to the Landscape Architect for approval, prior to the start of work, a certified statement as to number of pounds of fertilizer, amounts and types of grass seed, and processed fiber, per one hundred (100) gallons of

2. Hydromulch: Shall be Terra-Sorb GB, or an approved equal. Add Terra-Sorb to the hydroseed tank at the amount of 60 pounds per acre.

11. Sod

1. Sod shall be good quality, free of weeds, disease and insects, and of good color and density. Sod shall be machine cut at a uniform soil thickness necessary for plant viability during the harvest-transport-installation cycle. Individual pieces of sod shall be cut to the suppliers' standard width and length. Maximum allowable deviation from standard widths and lengths shall be five (5%) percent. Standard size sections of sod shall be strong enough to support their own weight, and retain their size and shape when suspended vertically from a firm grasp on the upper ten (10%) percent of the section.
2. Sod grass mix shall consist of the following seed mixtures: minimum of fifty (50%) percent to be Kentucky Bluegrass and fifty (50%) percent Perennial Rye.
3. The sod shall be as grown by Tuckahoe Turf Farms, Inc., Slocum, RI, (800)-556-6985; Kingston Turf Farms, Inc. Kingston, RI, (401) 789-0630; Gold Star Sod Farms, Inc., Canterberry, NH (800) 648-8873; or other approved source.
4. Sod shall be machine cut at a uniform soil thickness of 3/4 in. plus or minus 1/4 in. at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be five (5%) percent. Broken pads and torn or uneven ends will not be acceptable. Sod shall be at least one (1) year old from time of original seeding
5. Sod shall be furnished and installed in rectangular sod strips measuring 12 in. or 16 in. in width and min. 4 ft. in length, stored in rolls with the grass top side inverted so that the topsoil is to the exterior.
6. Stakes: Stakes for pegging the sod shall be sound hardwood approximately one inch by two inches (1"x 2") and of sufficient length to penetrate the mat, the seed bed and to a minimum depth of two (2") inches of subsoil. Stakes shall be free from insects and fungi and capable of remaining in the ground at least two (2) years.

PART 3 - EXECUTION

3.01 PREPARATION OF SUBSOIL

1. Prior to spreading topsoil & free draining fill, subsoil should be rough graded to correspond with finish grades as indicated on the Drawings. Subgrade shall slope to allow for subsurface drainage. Depressions shall be filled, and areas which are highly compacted shall be loosened to a depth which is adequate for the passage of gravitational water through the subsoil.

2. After acceptance of subsoil grades, loosen and mix subgrade material two inches to four inches (2"-4") deep. Remove stones over two (2") inches, sticks, rubbish, and other deleterious materials which may impede the healthy and vigorous growth of grass. Move no heavy objects or machinery, except as necessary for the spreading of topsoil, over sod and seed beds after preparation of subgrade.

3. Subsoil which becomes compacted due to excessive construction activity shall be loosened as directed by the Landscape Architect at no additional cost to the Owner.

4. Prior to spreading topsoil, free draining fill should be rough graded to correspond with finish grades as indicated on the Drawings. Free draining fill shall slope to allow for subsurface drainage. Depressions shall be filled, and areas which are highly compacted shall be loosened to a depth which is adequate for the passage of gravitational water through the subsoil.

3.02 SPREADING OF TOPSOIL

1. Immediately after approval of subgrade, including installation of free draining fill, evenly spread and lightly compact approved topsoil to finish grades as indicated on the Drawings. Do not spread topsoil which is in a muddy or frozen condition. Handle no topsoil when dry or above the plastic limit. Install a minimum of six (6") inches of topsoil to lawn areas unless otherwise indicated on the Drawings.

2. When possible, spreading of topsoil shall be performed from the center of the lawn area to the perimeter. Contractor may use alternate spreading pattern as approved in writing by the Landscape Architect.

3. Caution should be exercised to minimize or eliminate travel over areas previously covered with topsoil. Topsoil which becomes compacted due to excessive construction activity shall be stripped and re-spread, or loosened as directed by the Landscape Architect at no additional cost to the Owner.

3.03 SOD AND SEED BED PREPARATION

1. The minimum depth of topsoil in all lawn areas shall be six (6") inches. Contractor is responsible for supplying all topsoil needed from off-site sources if stockpiles are inadequate.

2. Grade all lawn areas to finish grades as indicated on the Drawings. When no grades are shown, areas shall have a smooth and continuos grade between existing or fixed controls and elevations shown on plans. Roll, scarify, rake and level as necessary to obtain true even lawn surfaces. All lawn areas shall slope to drain. Finish grades shall be approved by the Landscape Architect prior to commencing any sodding or seeding work. Install soil additive per manufacturer's instructions and as indicated on the Drawings.

3. Place soil amendment in the areas of the lawn areas as shown on the Drawings. Follow the manufacturer's recommendations for installation.

4. Spreading Limestone: Spread ground limestone evenly over the topsoiled surface. Incorporate limestone within the top two (2") inches of soil prior to finish raking. Apply limestone at the rate recommended by the testing and anlysis agency.

3.04 SEEDING

1. Schedule for Seeding: Sow grass seed between April 1 and May 31, or between August 15 and October 1, except as otherwise approved in writing by the Landscape Architect.

2. If seeding out of season as described above, the Contractor is still obligated until final acceptance of all lawn areas.

3. Before seed is sown, scarify soil and rake until surface is smooth, friable, and of uniformly fine texture. Seed evenly at supplier's recommended rates, lightly rake and water with fine spray. Method of seeding may be varied at discretion of Contractor. It is his or her responsibility to establish a smooth, uniform turf composed of approved grasses. Do not use wet seed which is moldy or otherwise damaged in transit or storage.

4. Mulch bank areas with 3 to 1 slope or greater with straw mulch, 1-1/2 to 2 tons per acre. Secure mulch at Contractor's discretion as to method or need. Wood fibre mulch may be substituted at rate of 1,400 pounds per acre at same time as seed and fertilizer.

3.05 SODDING

1. Sod may be placed from April 15th to November 1st as long as the ground is not frozen.

2. Sod shall be harvested, delivered and transplanted within a period of thirty six (36) hours.

3. Immediately prior to sodding operations, after all grading is complete and acceptable, the sod bed shall be lightly scratched with a fine toothed harrow or hand rake to provide a slightly roughened surface to accept the sodding application.

4. The soil on which the sod is laid shall be reasonably moist and shall be watered, if necessary. The sod shall be laid smoothly, edge to edge, and where continuous or solid sodding is called for on the plans sod shall be laid with the longest dimension parallel to the contours. Vertical joints between sods shall be staggered. Immediately after laying, sod shall be pressed firmly into contact with the sod bed by tamping, rolling, or by other approved methods so as to eliminate all air pockets, provide true and even surfaces, insure knitting and protect all exposed sod edges, but without displacement of the sod or deformation of the sod surface. Contractor will topdress newly sodded areas with approved screened topsoil to fill all voids.

5. In all swales, and on all slopes steeper than one on three and elsewhere as specified or as directed by the Landscape Architect, sods shall be held in place by stakes. Pegging shall be done immediately after tamping. At least one stake shall be driven through each strip of sod to be pegged and the stakes shall be not more than two feet apart. Stakes shall have their flat sides against the slope and be driven flush

6. Sod shall be watered during and immediately after installation to prevent drying. It shall then be thoroughly irrigated to a depth sufficient that the underside of the new sod pad, and soil immediately below the pad, are thoroughly wet. Contractor shall be responsible for having adequate water available at the site prior to and during the installation of all sod.

3.06 FERTILIZING

1. At the time of seeding and/or sodding, provide one application of the Type 1 fertilizer at the manufacturers recommended Normal Rate.

2. At the time of 4 weeks after seeding and/or sodding or as determined by the Landscape Architect, provide one application of the Type 2 fertilizer at the manufacturers recommended normal rate

3. If seeding and/or sodding occurs during the fall season, this step is not required at that time. However, this step will be required in early spring April 1 - May 1, if seeding has occurred in the fall. If seeding has occurred during the spring then at the time of 8 to 10 weeks after seeding or as determined by the Landscape Architect, provide soil tests at all general lawn areas and at all athletic fields, and submit the soil analysis to the Landscape Architect for review. If the soil analysis shows nutrient deficiencies, provide fertilizer amendments as necessary and described by the Landscape Architect, to balance those deficiencies.

4. If seeding and/or sodding occurs during the spring planting season, provide one application of the Type 3 fertilizer at a time of 12 to 14 weeks after seeding. If seeding and/or sodding occurs during the fall season, provide one application of the Type 3 fertilizer at a time during the following summer months June 15-August 1, or as determined by the Landscape Architect.

5. If seeding and/or sodding occurs during the spring or fall seasons, provide one application of the Type 4 fertilizer at a time of July 15 - August 15, or as determined by the Landscape Architect. Follow the manufacturer's instructions for application techniques. Apply at the manufacturers recommended normal rate.

3.07 LAWN MAINTENANCE

1. Maintenance of the grass areas shall begin immediately, and generally consist of watering, weeding, mowing and edging, reseeding or replacement of dead sod, disease and insect pest control, repair of all erosion, and any other procedure consistent with good horticultural practice, necessary to insure normal, vigorous and healthy growth.

2. Maintenance shall also include filling, regrading, and reseeding as necessary to correct depressions caused by settling, subsidence, or other physical or mechanical damage.

3. Maintenance shall also include all temporary protection fences, barriers, signs and all other work incidental to proper maintenance.

4. The Contractor shall be responsible for maintenance to establish a uniform stand of the approved grasses until acceptance. After the grass has started, all areas and parts of areas showing poor germination or growth shall be re-seeded, repeatedly, until all areas are covered with a satisfactory growth of grass. At the time of the first cutting, mow lawn with sharp mowing units not less than two and one half (2-1/2") inches high. Lawn shall be maintained between two and one half inches to three and one half inches (2-1/2"-3-1/2") high. Do not remove more than one third 1/3) of the grass blade. All lawns shall receive a minimum of one mowing before Contractor’s request for inspection and acceptance. Additional mowing may be required before final acceptance.

5. Watering: The Contractor shall include cost for daily, and if necessary, continuous watering of all grass areas during a normal 8 hour working day. The seed bed shall be maintained in a continuous moist condition, satisfactory for good germination and growth of grass, as specified. Seeded grass areas must be kept in a moist condition until acceptance.

6. Full and complete written instructions for maintenance of the lawn areas are to be furnished to the Owner, by the Contractor at least ten (10) days prior to the end of the contractual maintenance period, to familiarize him with the maintenance requirements for proper care and

development of the lawns.

3.08 INSPECTION AND ACCEPTANCE

1. The Landscape Architect shall inspect the lawns upon written request by the Contractor. The request shall be received at least ten (10) days before the anticipated date of inspection.
2. Final acceptance will not be granted until all seeded and sodded areas are in satisfactory condition
3. If the grass is in satisfactory condition, the Contractor's care and maintenance responsibilities will end. If the grass stand is unsatisfactory, the Contractor's maintenance responsibility shall continue, including a normal program of mowing, irrigation, reseeding, fertilization and repair until an acceptable stand of grass is achieved.

3.09 CLEAN UP

1. Absolutely no debris may be left on the site. Excavated material shall be removed as directed. Repair any damage to site or structures to restore them to their original condition, as directed by the Landscape Architect, at no cost to the Owner.

END OF SECTION