Town of Yorktown
Parks & Recreation

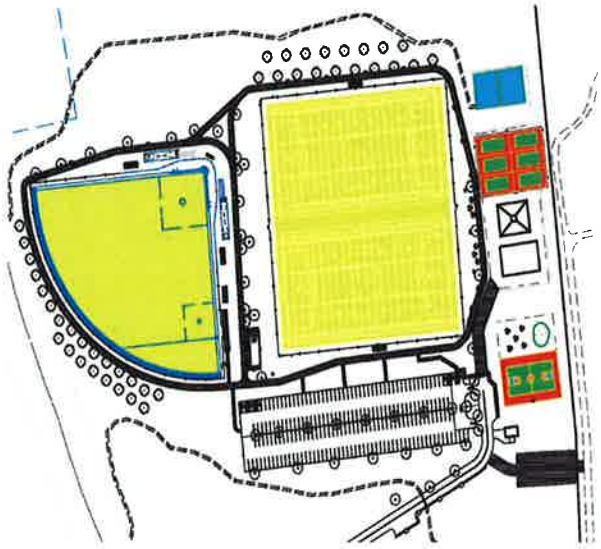
Granite Knolls Sports & Recreation Complex
Stony Street – Town of Yorktown

Site Improvement Project

Town of Yorktown Project No. 01-17

Project Specifications

May 2017



Site Design Consultants
Civil Engineers – Land Planners
251-F Underhill Avenue • Yorktown Heights, NY 10598
914-962-4488 • 203-431-9504 • fax 914-962-7386
www.sitedesignconsultants.com

INVITATION TO BID
GRANITE KNOLLS SPORTS AND RECREATION COMPLEX PROJECT
TOWN OF YORKTOWN, NEW YORK

NOTICE IS HERE GIVEN that sealed bids will be received by the Town Clerk, Town of Yorktown, Yorktown, NY until 11:00 A.M. on Monday, June 12th, 2017 at Town Hall, 363 Underhill Avenue, Yorktown Heights, N.Y. 10598 for Town of Yorktown Parks and Recreation Granite Knolls Sports & Recreation Complex Project. Copies of the Bid Documents will be available in the office of the Town of Yorktown Town Clerk located at 363 Underhill Avenue, Yorktown Heights, NY 10598. A completed Bid Proposal Form must be returned to the Town Clerk, 363 Underhill Avenue, Yorktown Heights, NY10598, marked: **"Bid: Granite Knolls Sports & Recreation Complex Project."**

All prospective bidders shall be required to attend one mandatory Pre-Bid Meeting at the Granite Knolls Park. The Town will conduct two pre-bid meetings on Friday, May 19, 2017 at 10:00 AM and Monday, May 22, 2017 at 2:00 PM at the site.

Plans, Specifications and standard proposals for the work proposed may be obtained at the office of the Town Clerk at said Town Hall upon cash or certified check in the amount of **FIFTY DOLLARS ($50.00).** Said fee will **not** be refunded and will be used to defray costs of printing plans and specifications.

All bids must be accompanied by a Certified check payable to the Town of Yorktown in an amount not less than ten percent (10%) of the total bid, or an executed Consent of Surety.

The bidder assumes the risk of any delay in the mail or in the handling of mail by the employees of the Town of Yorktown. Whether sent by mail or means of personal delivery, the bidder assumes the responsibility for having bids in on the time and the place specified above.

The Town of Yorktown reserves the right to waive any informalities in the bids, to reject any or all bids and reserves the right to accept that bid which it deems most favorable to the interests of the Town of Yorktown. No bidder may withdraw his bid within sixty (60) days after the actual date of the opening thereof.

If mailed, sealed proposals must be addressed in care of the Town Clerk at the above address.

Bid documents may also be obtained on the Town of Yorktown's website at www.yorktownny.org

DIANA L. QUAST
Town Clerk
Town of Yorktown

Dated: May 2017

TOWN OF YORKTOWN
SERVICES AND PUBLIC WORKS CONTRACTS BID
INSTRUCTIONS TO BIDDERS

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Special Note" All prospective bidders shall be required to attend one mandatory Pre-Bid Meeting at the Granite Knolls Park. The Town will conduct two pre-bid meetings on Friday, May 19, 2017 at 10:00 AM and Monday, May 22, 2017 at 2:00 PM at the site.

The Bid Documents consists of the following documents:

1. **Instructions to Bidders**
2. **Part One** Bid Proposal Form
   Non-Collusive Bidding Certificate
   Bid Bond
   Certificate of Surety
   Itemized Proposal & Project Bid Sheet (Sheets 1-8 of 8)
3. **Part Two** General Terms and Conditions of Bid
4. **Part Three** Technical Specifications
5. **Part Four** Addenda, if any
6. **Non-Collusive Bidding Certificate**

Wherever in the Bid Documents any section or paragraph is stamped "VOID", only the section(s) or paragraph(s) so stamped are void. All other sections(s) and paragraph(s) remain in full force and effect.

A submitted bid will consist of

1. One original completed **Bid Proposal Form**, signed on behalf of Bidder with information for all blanks supplied, and a detailed listing of any exceptions taken by Bidder; and
2. A signed and notarized Non-Collusive Bidding Certificate.
3. Bid Bond
4. Certificate of Surety
5. Itemized Proposal & Project Bid Form (Sheet IP1- 8)

Diana L. Quast
Town Clerk

TOWN OF YORKTOWN
SERVICES AND PUBLIC WORKS CONTRACTS BID

PART ONE

BID PROPOSAL FORM

The Town of Yorktown seeks bids from qualified parties:

Granite Knolls Sports & Recreation Complex Project

BIDDER'S OFFICIAL CORPORATE NAME (required, if bidder is a corporation):

_____

BIDDER'S D/B/A NAME (if any) _____

See Attached Proposal & Project Bid Sheets 1 through 8

The price(s) set forth above shall remain valid for one (1) year from the date of bid award.

Prices in the bid must cover all of bidder's costs. There shall be no additional charges to the Town for delivery, training, set-up, etc.

Name and Title of person authorized to submit bid for bidder: _____

Signed: _____

[Signature of authorized person, if not a corporate officer attach corporate resolution authorizing submission of bid.]

BIDDER'S CORPORATE NAME:

_____

BIDDER CONTACT INFORMATION:
PRINT NAME: _____

TITLE: _____

Address: _____ State: _____ Zip: _____
Phone: _____
Fax: _____
Email: _____@_____

NON-COLLUSIVE BIDDING CERTIFICATION

This Non-Collusive Bidding Certificate is made pursuant to Section 103-d of the General Municipal Law of the State of New York.

By submission of this bid, Bidder and each person signing on behalf of Bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his or her knowledge and belief:

The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such prices with any other Bidder or with any competitor;

Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by Bidder and will not knowingly be disclosed by Bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and

No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

A bid shall not be considered for award nor shall any award be made where (1) (2) and (3) above, have not been complied with; provided, however, that if in any case Bidder cannot make the foregoing certification, Bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where (1) (2) and (3) above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the political subdivision, public department, agency or official thereof to which the bid is made, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

Dated: _____ Bidder: _____
(Legal name of person, firm or corporation)
By: _____
(Signature)

_____
(Please Print Name)

_____
(Title)

State of New York)
County of Westchester)ss.:

On the _____ day of _____ in the year 2017 before me, the undersigned, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
(Notary Public)

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____

(Insert Name, or Legal Title, of Bidder)

of _____

(Insert Address of Bidder)

as Principal, hereinafter called the Principal, and _____

_____

(Insert Name, or Legal Title, of Surety)

of _____

(Insert Address of Surety)

a corporation duly organized under the laws of the State of _____

as Surety, hereinafter called the Surety, are firmly bound unto the Town of Yorktown, as Obligee, hereinafter called the Obligee, in the penal sum of

_____Dollars.

(Surety to Insert Amount)

For the payment of which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a Bid for _____

_____

(Insert Name of Work Bid Upon)

NOW, THEREFORE, if the Obligee shall accept the Bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such Bid, and provide such insurances as may be specified in the Bidding or Contract Documents, and give such Bond or Bonds as may be specified in the Bidding or Contract Documents with good and sufficient surety acceptable to the Obligee, or in the event of the failure of the Principal to enter such Contract and provide such insurances and give such Bond or Bonds, if the Principal shall pay to the Obligee the penal amount of this Bond, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety shall not be impaired or affected in any way by any extension of the time within which the Obligee may accept the Bid of the Principal and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on this day of _____, 20___.

By: _____

(Individual Principal Signature)

_____

(Printed or Typed Name of Individual)

Doing business as _____

By: _____

(Partnership Principal)

_____

(Printed or Typed Name of Partner)

By: _____

(Firm's Name)

By: _____

(Partner's Signature)

_____

(Printed or Typed Name of Partner)

_____

(Corporate Principal)

By: _____

(Corporation's Name)

_____

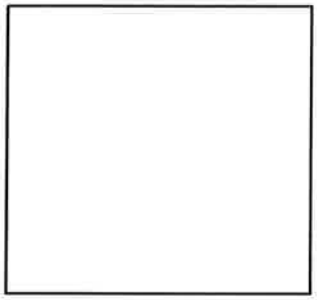
(State of Incorporation)

By: _____

(Signature of Officer Authorized to Sign)

_____

(Printed or Typed Name and Title of Officer Authorized to Sign)



(Corporate Seal)

Attest _____

(Secretary)

By: _____

(Joint Venture Principal)

By: _____

(Signature)

_____

(Printed or Typed Name)

By: _____

(Signature)

_____

(Printed or Typed Name)

(Each joint venture must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

_____

(Corporate Surety)

_____

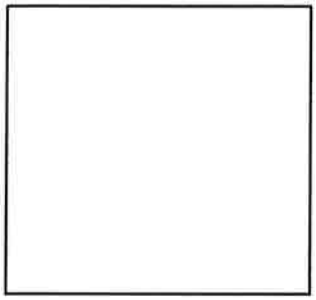
(Corporation's Name)

By: _____

(Signature or Officer or Attorney-in-Fact*)

_____

(Printed or Typed Name and Title of Officer, or Name of Attorney-in-Fact*)



(Corporate Seal)

Attest _____

(Secretary)

* Attach certified and effective dated copy of power of attorney showing authority of attorney-in-fact to execute on behalf of corporation.

CERTIFICATE OF SURETY

(To be submitted if a bank check is submitted as Bid security)

The undersigned hereby certifies that he/she is the duly authorized agent of

_____

(Name of Surety)

duly authorized to do business in the State of New York, and agree to furnish to

_____

(Name of Bidder)

the bond or bonds required by the Bid Documents for this contract if awarded to the bidder. The maximum amount that Surety will be surety for on each bond is:

_____

_____

(Name of Surety)

By: _____

(signature)

_____

(name – printed)

_____

(title)

_____

_____

(address)

TOWN OF YORKTOWN
SERVICES AND PUBLIC WORKS CONTRACTS BID

PART TWO

General Terms and Conditions of Bid

Town of Yorktown Parks & Recreation
Granite Knolls Sports & Recreation Complex Project
Town of Yorktown Project No. 01-17
Itemized Proposal & Project Bid - Sheet 1 of 8

Contractor:	
Address:	

Prepared by:	
Date:	

Item #	Unit	Quanity	Description	Line Total
0101	LS	1	Site Preparations and Removals _____ per LS	$ _____
0102	LS	1	Survey and Stakeout _____ per LS	$ _____
0103	LS	1	Erosion and Sediment Control _____ per LS	$ _____
0201	CY	78,700	Earthwork _____ per CY	$ _____
0202	CY	500	Unclassified Excavation _____ per CY	$ _____
0203	Select Fill Material			
0203.1	CY	500	Borrow Material _____ per CY	$ _____
0203.2	CY	500	Select Granular Fill _____ per CY	$ _____
203.3	CY	500	Granular Fill _____ per CY	$ _____

Town of Yorktown Parks & Recreation
Granite Knolls Sports & Recreation Complex Project
Town of Yorktown Project No. 01-17
Itemized Proposal & Project Bid - Sheet 2 of 8

Contractor:	
Address:	

Prepared by:	
Date:	

Item #	Unit	Quanity	Description	Line Total
0204	CY	500	Crushed Stone Fill _____ per CY	$
0205	LF	1820	Nature Trail _____ per LF	$
0206	SF	4,050	Gravel Parking Area _____ per SF	$
0301	Asphalt Pavement			
0301.1	SF	29,065	Asphalt Driveway & Parking Pavement _____ per SF	$
0301.2	SF	30,460	Asphalt Pavement - 2" Thick _____ per SF	$
0301.3	SF	1,885	Asphalt Pavement - Pickleball Court Expansion _____ per SF	$
0301.4	SF	28,370	Asphalt Overlay - 2" Thick _____ per SF	$
0301.5	SF	9,175	Asphalt Replacement Basketball Court _____ per sf	$

Town of Yorktown Parks & Recreation
Granite Knolls Sports & Recreation Complex Project
Town of Yorktown Project No. 01-17
Itemized Proposal & Project Bid - Sheet 3 of 8

Contractor:	
Address:	

Prepared by:	
Date:	

Item #	Unit	Quanity	Description	Line Total
0401	CY	90	Cast-In-Place Concrete _____ per CY	$ _____
0402	LF	2,745	Cast-In-Place Concrete Curbs _____ per LF	$ _____
0501	LF	1,410	Water Main _____ per LF	$ _____
0502	LF	2,410	Force Main _____ per LF	$ _____
0503	LF	245	Copper Service _____ per LF	$ _____
0601	Drainage Conveyance System			
0601.1	LF	80	24" Dia. HDPE Drainage Pipe _____ per LF	$ _____
0601.2	LF	4,810	18" Dia. HDPE Drainage Pipe _____ per LF	$ _____
0601.3	LF	1,455	Shoulder Drain - 6" Diameter (Perforated) _____ per LF	$ _____

Town of Yorktown Parks & Recreation
Granite Knolls Sports & Recreation Complex Project
Town of Yorktown Project No. 01-17
Itemized Proposal & Project Bid - Sheet 5 of 8

Contractor:	
Address:	

Prepared by:	
Date:	

Item #	Unit	Quanity	Description	Line Total
0803	LS	1	Athletic Field Lighting _____ per LS	$
0901	SF	272,080	Synthetic Turf Preparation _____ per LS	$
0902	LS	1	Outdoor Equipment _____ per SF	$
0903	LS	1	Dugouts _____ per LS	$
0904	Metal Fence & Gates			
0904.1	LS	1	Backstop Fence _____ per LS	
0904.2	LF	2,400	4' High Fence _____ per LF	$
0904.3	LF	930	6' High Fence _____ per LF	$

Town of Yorktown Parks & Recreation
Granite Knolls Sports & Recreation Complex Project
Town of Yorktown Project No. 01-17
Itemized Proposal & Project Bid - Sheet 6 of 8

Contractor:	
Address:	

Prepared by:	
Date:	

Item #	Unit	Quanity	Description	Line Total
0905	LS	1	Pavement Markings _____ per LS	$ _____
0906	Site Restoration			
0906.1	LS	1	Reconstruction of Basketball Courts _____ per LS	$ _____
0906.2	LS	1	Rehabilitation of Handball Courts _____ per LS	$ _____
0906.3	LS	1	Topsoil & Seeding _____ per LS	$ _____
0906.4	LS	1	Landscape Plantings _____ per LS	$ _____
0906.5	LS	1	Tree Planting _____ per LS	$ _____
0906.6	SF	1,680	Stone Retaining Wall _____ per SF	$ _____
0906.7	SF	45	Brick Pavers _____ per SF	$ _____

Town of Yorktown Parks & Recreation
Granite Knolls Sports & Recreation Complex Project
Town of Yorktown Project No. 01-17
Itemized Proposal & Project Bid - Sheet 7 of 8

Contractor:	
Address:	

Prepared by:	
Date:	

Item #	Unit	Quanity	Description	Line Total
0906.8	SF	11,745	Grass Pavers _____ per SF	$ _____
0906.9	SF	100	Gravel Path _____ per SF	$ _____
0906.10	LS	1	Pickleball Courts - Playing Surface _____ per LS	$ _____
0907	LS	1	Traffic Signs _____ per LS	$ _____
0908	LF	230	Timber Guard Rail _____ per LF	$ _____
BID SUBTOTAL				$
			(In Words)	(In Numbers)
1001	LS	1	Site Mobilization & Demobilization _____ per LS (4% Maximum of Bid Subtotal)	$
1002	Stipend	1	Additional Miscellaneous Work _____ per LS	$50,000

Town of Yorktown Parks & Recreation
Granite Knolls Sports & Recreation Complex Project
Town of Yorktown Project No. 01-17
Itemized Proposal & Project Bid - Sheet 8 of 8

Contractor:	
Address:	

Prepared by:	
Date:	

BID TOTAL = Bid Subtotal + Item 1001 + Item 1002		
BID TOTAL		$
	(In Words)	(In Numbers)

SPECIAL NOTE: The Town Reserves the right to award the bid based on Best Value, as set forth in the General Municipal Law.

The undersigned bidder hereby offers, in the amount stated below, to furnish all labor, materials, tools, equipment, apparatus, facilities, transportation and permits for the construction at the **Granite Knolls Sports & Recreation Complex,** Yorktown, NY if this offer is accepted by the Town Clerk.

Note: All bids are to be submitted in words and numbers. In the event of a discrepancy, the bid in words shall govern.

_____
Company Name

_____ _____
Signature of Partner or Corporate Officer **Date**

Special Note to Bidders: Prevailing Wage Rates Apply to this Project

Corporate Seal

NOTICE TO BIDDERS: A Bid Bond of 10% or Consent of Surety must be executed and submitted with Bid.

Section 1. Bid Proposal Form

1.1 The bidder shall complete the Bid Proposal Form by filling in the unit price and the total price in the appropriate designated spaces. Unit price and total price of each item bid shall be written legibly in ink, or typed. All bids shall be signed in ink. Any erasures or alterations shall be initialed in ink by the signer. The completed Bid Proposal Form shall be submitted, along with any documentation in support of the bid proposal if required by the Bid Documents, in a sealed envelope addressed as required in the Invitation to Bidders on or before the time and at the place so designated. Any Bid Proposal Form which has been materially altered in any way may render the bid nonresponsive and the bid rejected.

1.2 In the event of a discrepancy between the unit price and the total price of the Bid Proposal Form, the unit price will prevail. In the event of a discrepancy between the written bid amount and the numerical bid amount, the written amount will take precedence and be controlling as to the amount of the Bid. All items not bid shall be indicated as "not bid" in the total price space. When bids are requested on a lump sum basis, bidder must bid on each item in the lump sum group. Any bidder desiring to bid "no charge" on an item in a group must so indicate.

1.3 Failure to comply with the provisions of this section may be grounds for rejection of the bid proposal.

1.4 Correction or withdrawal of a bid because of an inadvertent, non-judgmental mistake in the Bid Proposal Form requires careful consideration to protect the integrity of the competitive bidding process, and to ensure fairness. If the mistake is attributable to an error in judgment, the Bid Proposal Form may not be corrected. Bid correction or withdrawal by reason of the non-judgmental mistake is permissible at the sole discretion of the Town Clerk, but only to the extent that it is not contrary to the interests of the Town or the fair treatment of other bidders.

1.5 By signing the Bid Proposal Form, the bidder certifies that:

i. the person whose signature appears below is legally empowered to bind the bidder;

ii. the bidder has read the complete Bid Documents and understands and agrees to all terms and conditions set forth in the Bid Documents;

iii. if accepted by the Town, the bid is guaranteed as written and will be implemented as stated;

iv. By submission of the bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the New York State Finance Law.[1]

[1] List found at http://ogs.ny.gov/about/regs/docs/ListofEntities.pdf.

v. The bidder understands and agrees that quantities shown on the Bid

vi. Proposal Form opposite items of the work for which unit prices have been requested are York State Finance Law.[2]

1.6 The approximate estimated quantities, and that during the progress of the work the Town may find it advisable and shall have the right to omit portions of the work, and to increase or decrease the shown approximate estimated quantities, or the scope of the whole work; and that the Town reserves the right to add to or take from the total amount of the work up to a limit of thirty (30%) percent of the total amount of the contract based upon the executed contract price for all the specified work.

1.7 The bidder shall make no claim for anticipated profits or loss of profits, because of any difference between the quantities of the various classes of work actually done, or of the materials actually furnished, and the original specified scope of work and the shown approximate estimated quantities.

1.8 All prices bid include a sum sufficient for the preparation and submission of approved final "As-builts", record drawings, guarantees, warranties, and operations and maintenance manuals.

1.9 All plans and other like records compiled by the contractor in completing the work under this contract shall become the property of the Town. The Contractor may retain copies of each such plan or record for its own use.

1.10 The contractor shall secure and pay for all necessary permits for the proper executing and completion of work.

1.11 The Town is exempt from all federal, state and local taxes.

Section 2. <u>Pre-Bid Site Inspection</u>

5.1 The bidder shall satisfy itself by personal examination of the location of the proposed work and surroundings thereof, and by such other means as it may prefer, as to the scope of the work and the accuracy of the approximate estimated quantities; and shall not at any time after submission of the bid dispute such approximate estimated quantities or assert that there was any misrepresentation by the Town or any misunderstanding by the bidder in regard to the quantity or kind of materials to be furnished, or work to be done. Failure to do so will not relieve a successful bidder contractor ("contractor") of the obligation to furnish all material and labor necessary to carry out the provisions of the contract documents and to complete the contemplated work for the consideration set forth in its bid.

[2] List found at http://ogs.ny.gov/about/regs/docs/ListofEntities.pdf.

5.2 Unless otherwise stated, the bidder is free and encouraged to examine the work site during normal work hours preceding the submission of the bid. For those bidders requesting further clarification of the conditions, an appointment with the Town's representative, can be requested, by contacting the, Town Clerk.

5.3 At the time of the opening of bids each bidder will be presumed to have inspected the sites and to have read and to be thoroughly familiar with the Bid Documents.

Section 3. Quality and Samples

3.1 All equipment, material and supplies bid upon must conform to the description and specifications set forth in the in the Bid Documents, or their reasonable equivalent.

3.2 References in the Bid Documents to type, style, brand or trade name, and catalog are intended to be descriptive only and not restrictive.

Section 4. Request for information or interpretation and/or clarification of the Bid Documents

4.1 The bidder shall have seven (7) business days prior to the bid opening date to notify the Town Clerk in writing of any errors or defects in the Bid Documents which would prevent the bidder from providing a responsive bid.

4.2 No interpretation of the Bid Documents will be made to any bidder orally by any representative of the Town.

4.3 Any request for information or interpretation and/or clarification of the Bid Documents must be addressed in writing to Diana Quast, Yorktown Town Clerk, 363 Underhill Avenue, Yorktown Height, NY 10598, and be submitted not later than five (5) business days prior to the date fixed for the opening of bids.

4.4 Any written response to a request for information or interpretation and/or clarification of the Bid Documents shall be issued by Town Clerk and will be incorporated into and made part of the Bid Documents and will be made available in the same manner and method as the Bid Documents. The Town Clerk's decision shall be final and binding on all parties. The failure of any bidder to receive such Addenda will not relieve the contractor of any obligation to comply with the terms and conditions of the Addenda.

4.5 The Bid Documents, including the drawings, Bid Documents, have been prepared with care and are intended to show as clearly as is practicable the work required to be done. The bidder must realize however, that construction details cannot always be accurately anticipated and that in executing the work, field conditions may require reasonable modifications in the details of the plans and quantities of work involved. Work under all items in the contract must be carried out to meet these field conditions to the satisfaction of the Town and in accordance with the Bid Documents. The bidder shall not take advantage of any apparent errors or omission in the Bid Documents. In the event the contractor discovers an error or omission in the Bid Documents, it shall immediately notify the Town. The Town will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the Bid Documents.

4.6 A bidder's failure to request a clarification, interpretation, etc. of any portion of the Bid Documents or to point out any inconsistency therein will preclude such bidder from thereafter claiming any ambiguity, inconsistency, or error which should have been discovered by a reasonably prudent bidder and from asserting any claim for damages arising directly or indirectly therefrom.

Section 5. Non-Collusion

5.1 The bidder shall certify that it has complied with all of the requirements stated in the non-collusive bidding certificate by signing the form included in the Bid Documents. Failure by the bidder to complete and sign the non-collusive bidding certificate will constitute grounds for rejection of the bid.

Section 6. Late Bids

6.1 All bids received after the deadline date and time stated in the Instructions to Bidders will not be considered and will be returned to the bidder unopened. The bidder assumes the risk of any delay in the mail and the handling of the mail by the employees of the Town. Whether sent by mail or by means of personal delivery, the bidder assumes all responsibility for having the bid delivered on time and to the place specified above.

Section 7. Bid Opening

7.1 Sealed bids will be publicly opened on the date and time specified in the Instructions to Bidders. Bids may be read aloud to those persons present when practicable. Any bidder may request to review any submitted Bid Proposal Forms by arranging a mutually convenient time with the Town Clerk.

7.2 The prices stated in the Bid Proposal Form are irrevocable until the Notice of Award is issued, unless the bid is withdrawn only after the expiration of sixty (60) days from the bid opening and only in writing received by the Town Clerk and in advance of the issuance of the Notice of Award.

Section 8. Acceptance or Rejection

8.1 A responsive bid is one that complies with all material terms and conditions of the Bid Documents.

8.2 If the lowest price bid or proposal is found non-responsive, a determination setting in detail and with specificity the reasons for such finding shall be issued by the Town Clerk. A copy of such determination shall be mailed to the non-responsive bidder no later than two (2) business days after the determination is made.

8.3 The Town reserves the sole right to waive any informality that is a matter of form rather than substance without prejudice to other bidders and what is in the best interests of the Town. The Town's decision shall be final and binding.

8.4 Any corporation not incorporated under the Laws of New York State, must furnish a copy of its certificate of authority, from the New York State Secretary of State, to do business in the State of New York, in accordance with Article 13 of the New York State Business Corporation Law.

8.5 The Town will consider the qualifications of all bidders and may conduct such investigation as it deems necessary to assist in the evaluation of any bid. The Town reserves the right to reject any bid if the evidence submitted by, or the investigation of such bidder fails to satisfy the Town, in the Town's sole discretion, that it is properly qualified to carry out the obligations of the contract and to complete the contemplated work. In evaluating a bidder's responsibility the Town may consider the following factors:

i. financial resources;

ii. technical qualifications;

iii. experience;

iv. organization, material, equipment, facilities, and personnel resources and expertise (or the ability to obtain them) necessary to carry out the work and to comply with required delivery or performance schedules, taking into consideration other business commitments;

v. a satisfactory record of performance;

vi. a satisfactory record of business integrity;

vii. where the contract includes provisions for reimbursement of contractor costs, the existence of accounting and auditing procedures adequate to control property funds, or other assets, accurately delineate costs, and attribute them to their causes; and

viii. compliance with requirements for the utilization of small, minority-owned, and women-owned businesses as subcontractors.

8.6 The Town reserves the right to require additional information as it deems appropriate concerning the history of any bidder's performance of prior contracts. The final determination of whether the bidder possesses the requisite experience rests in the sole discretion of the Town. Failure of a bidder to provide relevant information specifically requested by the Town may be grounds for a determination of non-responsive and/or non-responsible.

Section 9. Appeal of Determination of Non-Responsiveness or Non-Responsible

9.1 Any determination that a bid is non-responsive or a bidder is non-responsible may be appealed as set forth herein.

9.2 Time Limit; A bidder shall have five (5) business days from receipt of the determination of non-responsiveness or non-responsible to file an appeal with the Town Clerk. Receipt of notice by the bidder shall be deemed to be no later than five (5) business days from the date of mailing or upon delivery, if delivered. Filing of the appeal shall be accomplished by actual delivery of the appeal document to the Town Clerk. The bidder shall also send a copy of its appeal, for informational purposes, to the Town Attorney.

9.3 Form and Content: The appeal shall be in writing and shall briefly state all the facts or other basis upon which the bidder contests the finding of non-responsiveness or non-responsible. Supporting documentation, if any, shall be included.

9.4 Stay of Award of Contract Pending. Award of the contract shall be stayed pending the determination of the Town Clerk unless the Town Clerk makes a determination that proceeding with the award without delay is necessary to protect substantial Town's interests. Where such a determination is made, the bidder shall be advised of this action in the determination of non-responsiveness or, if the stay is removed at any time after the bidder has been notified of determination of non-responsiveness or non-responsible, notification shall be provided to the bidder no later than two (2) business days after such determination is made. The Town Clerk shall consider the appeal, and may, in his or her sole discretion, meet with the bidder to discuss the merits of the appeal. The Town Clerk shall make a prompt determination with respect to the merits of the appeal, a copy of which shall be sent to the bidder. The Town Clerk s determination shall be final.

Section 10. Award

10.1 Town reserves the right to make an award within sixty (60) days after the date of the bid opening, during which period bids may not be withdrawn.

10.2 The Award will be made to the responsible and responsive bidder submitting the lowest bid that fully complies with all the specifications stated in the Bid documents.

10.3 Town reserves the right to reject all bids and to purchase any or all items on contracts awarded by agencies or departments of the State of New York or of the Town, if such items can be obtained on substantially the same terms, conditions, specifications, and at a lower price.

Section 11. Notice of Award

11.1 If the bid is awarded by Town, a written Notice of Award will be issued by the Town Clerk to the contractor. Such Notice of Award will constitute a binding enforceable contract between the contractor and the Town of Yorktown. These General Terms and Conditions shall be incorporated into the contract as material terms.

11.2 The Town may issue a Notice of Award based on either Lowest Responsible Bid or Best Value, in accordance with the 2012 amendments to General Municipal Law § 103, as implemented by Yorktown Town Code Chapter 78 entitled *Procurement for Goods and Services.*

11.3 Upon receipt of the Notice of Award the contractor will be required to submit to the Town Clerk a completed W-9 form in addition to any other information or documents required by the Town. Failure to supply a completed W-9 form or such other information or documents required by the Town will invalidate the bid.

Section 12. Performance And Payment Bond

12.1 If a Performance and Payment bond is required in accordance with the Instruction to Bidders, the "Bid Bond and Consent of Surety" Form must be executed by the contractor's Surety Company and submitted to the Town.

Section 13. Assignment Prohibited

13.1 The contractor shall not assign, transfer, convey or otherwise dispose of the contract or any part of it or any monies due and payable under the contract, without prior written approval of the Town. If such approvals are granted by the Town, they shall in no way relieve the contractor or from any obligations under the terms of the contract.

Section 14. Special Requirements

14.1 Special requirements for any bid may supersede and/or be added to any provision contained in these General Terms and Conditions.

Section 15. Purchase of Additional Quantities of Bid Items

15.1 The Town may purchase additional quantities of the bid items at any time during the contract period, for the same price and under the same terms and conditions as set in the Bid Proposal Form.

Section 16. Contractor's Subcontracts And Material Lists

16.1 Within fifteen (15) days after execution of the Contract, the contractor shall submit to the Town for approval a list of the subcontractors, materialmen and materials that the contractor plans to use in the performance of the work and statements of the work they are to perform. The format and content of the list shall be in accordance with directives from the Town. No part of the work may be sublet until after the contractor has received the Town's approval. The contractor shall be fully responsible for all acts and omissions of its subcontractors and persons directly or indirectly employed by them, and the Town's approval to sublet parts of the work will in no way relieve the contractor of any of its obligations under the Contract. All dealings of the Town with the subcontractors shall be through the contractor.

16.2 The contractor shall insert appropriate clauses in all subcontracts to bind the subcontractors to the contractor by all applicable provisions of the contract documents executed between the contractor and the Town, but this shall not be construed as creating any contractual relationships between subcontractors and the Town. Prior to approval of the subcontractors, the Town has the right to review and recommend changes in the subcontracts. The Town reserves the right to reject any subcontractor proposed by the contractor if in the reasonable opinion of the Town such subcontractor lacks the experience or capability to perform its subcontract work or is otherwise non-responsible.

16.3 The contractor shall insert appropriate clauses in each subcontract that require that if the contractor is terminated by the Town either for default or convenience that at the sole option of the Town the subcontract shall automatically attorney to the Town and the subcontractor shall continue without delay or interruption to fully perform all of the obligations required by its subcontract.

Section 17. Representative Always Present

17.1 The contractor in case of its absence from the work shall have a competent representative or foreman present, who shall obey without delay, all instructions of the Town in the prosecution and completion of the work in conformity with the contract, and shall have full authority to supply labor and material immediately.

17.2 The contractor, or its superintendent, shall attend job meetings with the Town for the purpose of discussing expedition, execution and coordination of the work. Job meetings will be scheduled periodically (the first to be prior to commencement of construction) at a time and place designated by the Town.

17.3 The contractor shall not commence any work prior to the first (pre-construction) meeting between the contractor, Town, and other concerned governmental and utility company representatives.

Section18. Performance

18.1 All work performed and all materials furnished shall be in reasonably close conformity with the lines, grades, cross sections, dimensions and materials requirements, including tolerances, shown in the Bid Documents.

18.2 Plan dimensions and contract specification values are to be considered as the target value to be strived for and complied with as the design value from which any deviations are allowed. It is the intent of the specifications that the materials and workmanship shall be uniform in character and shall conform as nearly as realistically possible to the prescribed target value or to the middle portion of the tolerance range. The purpose of the tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons. When a maximum or minimum value is specified, the production and processing of the material and the performance of the work shall
be so controlled that material or work shall not be preponderantly of borderline quality or dimension.

18.3 Figured dimensions on the plans shall be given preference over scaled dimensions, but shall be checked by the contractor before starting construction.
Information and data on the contract documents shall take precedence in the following order (1) Drawing; Details, Sections, Plans, Notes, General Notes, (2) Technical Specifications, (3) General Specifications. Any errors, omissions or discrepancies shall be brought to the attention of the Town whose decision thereon shall be final.

18.4 In the event that the Town determines that the materials or the finished product in which the materials used are not within reasonably close conformity with the Bid Documents but that reasonably acceptable work had been produced, the Town shall then make a determination if the work shall be accepted and remain in place. In this event, the Town will document the basis of acceptance by contract modification, subject to the approval of the Town Board, which will provide for an appropriate adjustment in the contract price for such work or materials as deems necessary.

18.5 In the event that the Town determines that the materials or the finished product in which the materials used are not within reasonably close conformity with the Bid Documents and have resulted in an inferior or unsatisfactory product, the work or materials shall be removed and replaced or otherwise corrected by and at the expense of the contractor.

18.6 All traffic control devices (signs, signals, markings, and devices placed by the authority of a public body or official having jurisdiction for the purpose of regulating, warning or guiding traffic) shall be in conformity with the latest edition of the New York State Manual of Uniform Traffic Control Devices or other such standard as directed by the Town.

18.7 Time being of the essence, the contractor shall take notice that the timely completion of the work called for under the contract is of the greatest importance. The contractor shall commence its work within ten (10) days after "Notice of Award" has been given it by the Town (unless a definite starting date is otherwise stated). Prior to commencing its work, the contractor shall notify the Town, at least forty-eight (48) hours prior to the planned date of its "start".

Section 19. Insurance Requirements

19.1 The contractor, upon award of the contract, shall provide at its own cost and expense the following insurance to the Town from insurance companies licensed in the State of New York, carrying a Best's financial rating of "A" or better, which insurance shall be evidenced by certificates and/or policies as determined by the Town.

19.2 Each certificate or policy shall require that, thirty (30) days prior to cancellation or material change in the policies, notice thereof shall be given to the Town Clerk by registered mail, return receipt requested, for all of the following stated insurance policies. All such notices shall name the contractor and identify the contract number or description.

19.3 All policies and certificates of insurance shall be approved by the Town prior to the inception of any work.

i. Workmen's Compensation: The contractor shall evidence compliance with Workers' Compensation Law, or as otherwise directed by the Town.

ii. Commercial General Liability Insurance with minimum limits of liability per occurrence of $1,000,000 with the Town named as an additional insured.

iii. Automobile Liability Insurance with minimum limits of liability per occurrence of $1,000,000 with the Town named as an additional insured.

iv. Additional insurance may be required on an individual basis for extra hazardous contracts and specific service agreements. If such additional insurance is required for a specific contract, that requirement will be described in the Special Requirements of the contract specifications.

v. If any of the insurance requirements are not complied with at their renewal dates, payments to the contractor will be withheld until those requirements have been met, or at the option of the Town, the Town may pay the Renewal Premium and withhold such payments from any monies due the contractor.

vi. If at any time any of the foregoing policies shall be or become unsatisfactory to the Town, as to form or substance, or if a company issuing any such policy shall be or become unsatisfactory to the Town, the contractor shall upon notice to that effect from the Town, promptly obtain a new policy, submit the same to the Town for approval and submit a certificate thereof as herein above provided. Upon failure of the contractor to furnish, deliver and maintain such insurance as above provided, the contract, at the election of the Town, may be forthwith declared suspended, discontinued or terminated. Failure of the contractor to secure and/or maintain or the taking out and/or maintenance of any required insurance, shall not relieve the contractor from any liability under the contract, nor shall the insurance requirements be construed to conflict with or otherwise limit the obligations of the contractor concerning indemnification.

vii. In the event that claims in excess of the insured amounts provided herein, are filed by reason of any operations under the contract, the amount of excess of such claims or any portion thereof, may be withheld from payment due or to become due the contractor until such time as the contractor shall furnish such additional security covering such claims as may be determined by the Town.

Section 20. Indemnification

20.1 The contractor hereby agrees to indemnify and save harmless the Town, its officers, employees, elected officials, and agents from and against all liability, loss or damage the Town may suffer, arising directly or indirectly out of the contract between the contractor and the Town. The Contractor further agrees to provide defense for and defend any claims or causes of action of any kind or character directly or indirectly arising out of this Agreement at its sole expense and agrees to bear all other costs and expenses relating thereto. The foregoing provisions shall not be construed to cause the contractor to indemnify the Town, its officers, elected officials, agents or employees from its or their sole negligence.

20.2 Neither the acceptance of the completed work nor payment therefore shall release the Contractor from its obligation under this section.

Section 21. Delivery Point

21.1 Shipping of any products shall be FOB Destination. Delivery shall be at the location set forth in the Specifications except on national, state or local holidays when Town buildings are closed. Bidder shall be responsible to verify that the appropriate Town building for delivery is open prior to delivering items. All bid items shall be unloaded and placed within the particular Town building, at points of delivery, and in quantities, as directed by the Town. Any costs incurred by the Town or bidder due to the failure of bidder to comply with this requirement will be the responsibility of bidder. Bidder should be prepared to furnish proof of delivery, if requested by Town. Deliveries shall be made in accordance with the specifications, and shall be made Monday through Friday from 8 a.m. to 2 p.m. unless otherwise stated in the Specific Specifications.

21.2 If bidder is shipping bid items to Town using a third-party carrier (US Postal Service, UPS, FedEx), there shall be no additional shipping charge to the Town.

21.3 Delivery will not be complete until the good are inspected and accepted by the Town.

Section 22. Date of Delivery

22.1 Delivery of all materials included under this bid shall be made not later than the date specified in the Bid Documents or Project Schedule. If contractor cannot meet the delivery date specified in Bid Documents or Project Schedule, contractor shall state on the bid form the proposed date of delivery and such date will considered when determining responsiveness in awarding the bid.

Section 23. Damages

23.1 The contractor shall be fully responsible for shipping and delivery of materials specified in the Bid Documents or Project Schedule in an undamaged condition. Town will not consider the carrier responsible for damaged or delayed deliveries. Any bid item damaged or broken when delivered to Town shall be replaced immediately by contractor at no cost to the Town.

Section 24. Warranty/Guarantee

24.1 It is the intent of the Bid Documents to require first-class work and materials and any work not fully covered herein Bid Documents shall be interpreted to require first-class work and materials, and such interpretations shall be binding upon the Contractor. The contractor shall be fully responsible for performance of work in a satisfactory manner with satisfactory results in the discretion of the Town quality materials.

24.2 Contractor is deemed to warrant and guarantee all work performed under this agreement.

24.3 Unless otherwise stated in other parts of the specifications, all work performed or goods supplied under the contract shall be guaranteed by the contractor against all defects resulting from the use of inferior materials, equipment or workmanship, for a period of one (1) year from the date of final completion and acceptance of the work, which shall be defined as the date of the Town's approval of the final Certificate for Payment or from the date the Town takes possession and makes full use of the constructed facility.

24.4 Any goods furnished must be standard, new, latest model of the regular stock product, as required by the specifications, with parts regularly used for the type of equipment offered.

24.5 No attachment or part will be substituted or applied contrary to manufacturer's recommended and standard practice. All regularly manufactured stock electrical items must bear the label of the Underwriters Laboratories, Inc. Any equipment, part or constructed item which is or becomes defective during the guarantee period shall be replaced or redone by the contractor, including all labor at no additional charge to the Town. All replacements shall carry the same guarantee as the original equipment. The contractor shall make any such replacement promptly upon receiving written notice from Town.

Section 25. Breach of Contract/Termination

25.1 If contractor fails to deliver as ordered, or within the time specified, or within reasonable time as interpreted by Town, or fails to make replacement of rejected or defective goods, whether so requested immediately or as directed by Town, that shall constitute a breach of the contract, and Town may arrange to have the work performed from other sources to take the place of the work product found defective or not delivered. Without limiting the foregoing, Town reserves the right to terminate the contract upon breach upon within ten (10) days written notice provided to the contractor.

Section 26. Prevailing Wage Rates And Supplements

26.1 Wages to be Paid and Supplements to be Provided

i. The contractor shall, at its own cost and expense, comply with all provisions of the Labor Law (i.e. prevailing rate of wages and supplements), Lien Law, Workmen's Compensation Law and all other laws and ordinances affecting the contract or order, either Federal, State or local.

26.2 Records to be kept on Site

The contractor, subcontractors at any tier shall certify their payrolls and keep them on site and available, in addition to the following informative records:

i. Record of hours worked by each workman, laborer and mechanic on each day;

ii. Record of days worked each week by each workman, laborer and mechanic;

iii. Schedule of occupation or occupations at which each workman, laborer and mechanic on the project is employed during each work day and week;

iv. Schedule of hourly wage rates paid to each workman, laborer and mechanic for each occupation.

v. A statement or declaration signed by each workman, laborer and mechanic attesting that they have been provided with a written notice, informing them of the prevailing wage rates and supplements requirement for the contract.

Section 27. Estimates and Payments

27.1 As the work progresses but not more often than once a month and then on such days as the Town shall direct, the contractor will submit a requisition in writing of the amount and value of the work performed and the materials and equipment provided to the date of the requisition, less any amount previously paid to the contractor.

27.2 From each requisition, the Town will retain five percent (5%) plus one hundred fifty percent (150%) of the amount necessary to satisfy any claims, liens or judgments against the contractor that have not been suitably discharged. The Town will thereupon cause the balance of the requisition therein to be paid to the contractor.

27.3 As a condition to the making of any progress payment as set forth in this paragraph, the Town, in its sole discretion may require the contractor to submit such document as may be reasonably required to establish that the contractor and its subcontractors have timely and properly paid their respective subcontractors and materialmen at any tier.

27.4 When the work or major portion thereof, as contemplated by the terms of the contract are substantially completed in the judgment of the Town, the contractor shall submit a requisition for the remainder of the contract balance. An amount equal to two (2) times the value of the remaining items to be completed plus one hundred fifty percent (150%) of the amount that the Town deems necessary to satisfy to satisfy any claims, liens or judgments against the contractor which have not been suitably discharged shall be deducted from the requisition. As the remaining items of work are satisfactorily completed or corrected, the Town will, upon receipt of a requisition, pay for these items less one hundred fifty percent (150%) of the amount necessary to satisfy any claims, liens or judgments.

27.5 All estimates will be made for actual quantities for work performed and materials and equipment incorporated in the work as determined by the measurements of the Town, and this determination shall be accepted as final, conclusive and binding upon the contractor. All estimates will be subject to correction in any succeeding estimate.

27.6 Payment will be made only upon the written request of the contractor. Payment requests shall be processed by the Town no more than one (1) time per month. Payment will be made for materials pertinent to the project which have been delivered to the site or off-site by the contractor suitably stored and secured in first-class condition as required by the Town. The contractor must submit certified copies of the manufacturer's or vendor's invoices or statements establishing the true purchase value of the material or equipment; freight bills, release of liens and certificate of insurance covering all equipment and materials.

27.7 The Contractor shall be responsible for safeguarding stored equipment and materials against loss or damage of any nature whatsoever, shall retain title until incorporated into the work and acceptance by the Town and in case of loss or damage, the contractor shall replace such lost or damaged equipment and materials at no cost to the Town. After receipt of payment, the contractor shall not remove from the site equipment and materials for which such payment was made without written authorization from the Town.

27.8 Within thirty (30) days after receiving written notice from the Contractor of substantial completion of the work under this Agreement, the Town will cause an inspection to be made of the work done under the contract. If, upon such inspection, the Town determines that the work is substantially complete, a Substantial Completion Payment to the contractor for the work done under the contract, less any and all deductions authorized to be made by the Town under the contract or by law, will be issued.

27.9 As a condition precedent to receiving payment therefore, the Contractor must have received Town approval of all Shop Drawing submittals, the Operation and Maintenance Manuals, and As-Built Drawing(s).

27.10 Together with its application for substantial completion payment the Contractor shall also deliver to the Town a verified statement certifying that all claims or liabilities arising from the completed work, including all charges for Extra Work, Change Orders, additional time, damages or credits (collectively referred to as "claims") have been presented to the Town. All such claims shall be described in sufficient detail so as to be easily identified. The contractor's failure to submit the verified statement shall constitute a full and final waiver of all claims against the Town from the beginning of the project through the date of substantial completion as established by the Town. The presentation of the verified statement to the Town shall not constitute an acknowledgement by the Town that any such claim is valid. The Town expressly reserves its right to assert that any such claim(s) is waived or precluded by reason of other provisions of the contract documents. Only claims particularly identified on the contractor's verified statement shall be preserved; all other claims whatever nature shall be deemed waived and released. It shall also submit proof of title of the materials and equipment covered by the contract. The contractor shall also, prior to the issuance of said Substantial Completion Payment, supply to the Town affidavits and certificates for labor, material and equipment (where applicable).

27.11 Within ten (10) days after receiving written notice from the contractor of completion of all the work, the Town will make a final inspection. If upon inspection the Town determines that no further work is needed, the Town will request that the Town approve the completion of the project and authorize payment of the Final Estimate.

Section 28. Payments To Subcontractors And Materialmen By Contractor

28.1 Within fifteen (15) calendar days of the receipt of any payment from the Town, the contractor shall pay each of its subcontractors and materialmen the proceeds from the payment representing the value of the work performed and/or materials furnished by the subcontractor and/or materialmen as reflected in the payment from the Town less an amount necessary to satisfy any claims, liens or judgment against the subcontractor or materialman which have not been suitably discharged and less any retained amount as hereafter described.

28.2 Nothing provided herein shall create any obligation on the part of the Town to pay or to see the payment of any moneys to any subcontractor or materialman from any contractor nor shall anything provided herein serve to create any relationship in contract or otherwise, implied or expressed between the subcontractor or materialman and the Town. Notwithstanding anything to the foregoing, the Town may tender payments to the Contractor in the form of joint or dual payee checks.

Section 29. Change in the Contract Price

29.1 The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to the contractor for performing the work pursuant to the contract. All duties, responsibilities and obligations assigned to or undertaken by the contractor shall be at its expense without change in the Contract Price.

29.2 The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered to Town within fifteen (15) days of the occurrence of the event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within twenty (20) days of such occurrence unless the Town allows an additional period of time to ascertain accurate cost data. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order. All change orders are subject to the determination and approval of the Town Board.

Section 30. Proper Method of Work And Proper Materials

30.1 The Town shall have the power in general to direct the order and sequence of the work, which will be such as to permit the entire work under the contract to be begun and to proceed as rapidly as possible, and such as to bring the several parts of the work to a successful completion at about the same time.

30.2 If at any time before the commencement or during the progress of the work the materials and appliances used or to be used appear to the Town as insufficient or improper for securing the quality of work required, or the required rate of progress, he may order the contractor to increase its efficiency or to improve their character, and the contractor shall promptly conform to such order; but the failure of the Town to demand any increase of such efficiency or improvement shall not release the Contractor from its obligation to secure the quality of work or the rate of progress specified.

30.3 The Contractor will establish the lines, grades and measurements necessary in his opinion to properly locate the work, by setting suitably marked offset or reference stakes. These stakes are referenced to the control points, coordinates and similar data that may be shown on the contract drawings, but the Town reserves the right to modify that information.

30.4 The Contractor shall carefully and properly preserve all stakes, pins and markers required at no additional costs to the Town. All existing property lines and survey monuments which may, of necessity have to be disturbed during the construction work, will be property tied to fixed points and reset by the Contractor at no cost to the Town.

Section 31. Utilities and Service Lines

31.1 The Contractor is hereby warned that a reasonable opportunity is to be given the municipalities and public service corporations to alter and install pipes, conduits or other structures prior to placing to pavement. No guarantee is given that public utility structures and service lines herein shown are correctly located. Locations given are from the best available information.

Section 32. Protection, Existing Structures

32.1 The Contractor, at his expense, shall protect adjacent and other property or premises from damage of any kind during the progress of the work and shall erect and maintain guards around his work in such a way as to afford protection to the public. The Contractor shall be held responsible for improper, illegal, or negligent conduct of himself, his subcontractors, employees and agents in and about said work or in the execution of the work covered by this Contract.

32.2 The Contractor shall, at his expense, sustain in their places and permanently protect from direct or indirect injury any and all pipelines, subways, pavements, sidewalks, curbs, railways, buildings, trees, poles, wells, and other property in the vicinity of his work, whether over-or underground, or which appear within the trench or excavations, and he shall assume all costs and expenses for direct or indirect damage which may be occasioned by injury to any of them.

32.3 The Contractor's liability shall also include the damage or injury sustained by any structure whatsoever due to settlement of trenches or excavations or to settlement or lateral movement of the sides of such trenches or excavations, whether such movement occurs during or after excavation or backfilling of such trenches or excavations. His liability to so support and protect all such structures from damage or injury shall continue without limitation, throughout the Contract period and during the period of guarantee.

32.4 The Contractor shall at all times have on the ground suitable and sufficient material and shall use the same as may be necessary or required for sustaining and supporting any and all such structures which are uncovered, undermined, weakened, endangered, threatened, or otherwise materially affected.

32.5 In case injury occurs to any portion of a pipeline or structure, or to the material surrounding or supporting the same, through blasting or similar operations, the Contractor shall immediately notify the Engineer, and, at his expense, shall remove such injured work and shall rebuild the pipeline or structure and shall replace the material surrounding the supporting the same, or shall furnish such material and perform such work of repairs or replacement as the Town may order. Any damage whatsoever shall be promptly, completely and satisfactorily repaired by the Contractor at his expense.

Section 33. Acceleration of the Work

33.1 The Town may, at its sole discretion and as circumstances reasonably require, require the contractor to accelerate the schedule of performance by providing overtime, extended day, extra crews, Saturday, Sunday and/or holiday work and/or by having all or any subcontractors designated by the Town provide overtime, extended day, extra crews, Saturday, Sunday or holiday work by the contractor's or his subcontractor's own forces.

33.2 The Town, pursuant to a validly issued written change order, may reimburse the contractor for the direct cost to the contractor of the premium time for the labor utilized by the contractor in such overtime, extended day, extra crews, Saturday, Sunday or holiday work(but not for the straight time costs of such labor) together with any social security and state or federal unemployment insurance taxes in connection with such premium time. However, no overhead, supervision costs, commissions, profit or other costs and expenses of any nature whatsoever, including impact costs or costs associated with lost efficiency or productivity, shall be payable in connection therewith.

33.3 Anything to the foregoing notwithstanding, in the event that the contractor has fallen behind schedule or in the Town's judgment appears likely to fall behind schedule, Town shall have the absolute right to direct the contractor to accelerate the performance of its work, including that of its subcontractors, and the full costs for such acceleration shall be borne solely by the contractor.

Section 34. Stopping Work

34.1 Town May Suspend Work:

i. The Town may, at any time and without cause, suspend the work or any portion thereof for a period of not more than ninety (90) days by notice in writing to the contractor which shall fix the date on which work shall be resumed. The contractor shall resume the Work on the date so fixed. Subject to the approval of the Town Board, the contractor may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.

34.2 The Town May Terminate:

A. Upon the occurrence of any one or more of the following events:

1. If the contractor is adjudged bankrupt or insolvent,
2. If the contractor makes a general assignment for the benefit of creditors,
3. If a trustee or receiver is appointed for the contractor or for any of the contractor 's property,
4. If the contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws,
5. If the contractor repeatedly fails to supply sufficient skilled workers or suitable materials or equipment,

6. If the contractor repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment,

7. If the contractor disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction,

8. If the contractor disregards the authority of the Town, or

9. If the contractor otherwise violates in any substantial way any provisions of the Bid Documents or the Contract. The Town may after giving the contractor and its Surety seven (7) days written notice, terminate the services of the contractor, exclude the contractor from the site, incorporate in the Work all materials and equipment stored at the site or for which Town has paid the contractor but which are stored elsewhere, and finish the Work as Town may deem expedient. In such case the contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the work, including compensation for additional professional services, such excess shall be paid to the contractor. If such costs exceed such unpaid balance, the contractor shall pay the difference to the Town.

B. Where the contractor's services have been so terminated by the Town, the termination shall not affect any rights of Town against the contractor then existing or which may thereafter accrue. Any retention or payment of moneys due the contractor by Town will not release the contractor from liability.

C. Upon seven (7) days written notice to the contractor, Town may, without cause and without prejudice to any other right or remedy, elect to abandon the work and terminate the Agreement. In such case, the contractor shall be paid (without duplication of any items):

1. For completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date or termination, including fair and reasonable sum of overhead and profit on such work;

2. For expenses sustained prior to effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. For amounts paid in settlement of terminated contracts with Subcontractors, manufacturers, fabricators, suppliers or distributors and others; and

4. For reasonable expenses directly attributable to termination, the contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss or any consequential damages arising out of such termination.

Section 35. Date of Completion

35.1 The Town is desirous of having the work hereunder completed in a timely fashion so that the Granite Knolls Sports & Recreation Complex is ready for use no later than **March 1, 2018**. The Bidder must be able to provide assurances that the Complex will be substantially complete in time for March 1, 2018. Bidder **must** provide an expected date of completion together with a bid price for the work.

Section 36. Change in the Contract Time

36.1 The contractor agrees that it will make no claim against the Town or any of its representatives for damages for delay, interference or disruption in the performance of its Contract occasioned by any act or omission to act by the Town or any of its representatives, or occasioned by any act or omission of any other contractor and further agrees that any such claim shall be fully compensated for by an extension of time to complete the performance of the work as provided herein.

36.2 The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to Town within fifteen (15) days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within twenty (20) days of such occurrence unless the Town allows an additional period of time to ascertain more accurate data. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

36.3 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of the contractor. Such delays shall include, but not be limited to, acts or neglect by Town, or to fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God. No extension of the Contract Time will be granted where the delay is attributable to a subcontractor, manufacturer, fabricator, supplier or distributor or any other party performing services or furnishing material or equipment on behalf of the contractor unless such party's delay is attributable to one of the above enumerated causes.

36.4 The time limits concerning Substantial Completion and final completion as stated in the Contract Documents are of the essence. The provisions of this section shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party, provided, however that the contractor shall not be entitled to damages for any delay occurring as a consequence of a delay if the performance of said additional work was noted in the Contract Documents and the delay (by others) was not directly caused by the fault of the Town.

Section 37 Disputed Work - Notice of Claims For Damages

37.1 If the contractor is of the opinion that any work required, necessitated, or ordered violates or conflicts with or is not required by the terms and provisions of the contract, he must promptly, within five (5) calendar days after being directed to perform such work, notify the Town, in writing, of its contentions with respect thereto and request a final determination thereon. If the Town determines that the work in question is contract and not extra work, or that the order complained of is proper, he will direct the Contractor in writing to proceed and the Contractor shall promptly comply. In

order, however, to preserve its right to claim compensation for such work or damages resulting from such compliance, the Contractor must, within seven (7) calendar days after receiving notice of the Town's determination and direction, notify the Town, in writing that the work is being performed or that the determination and direction is being complied with, under protest. Failure of the Contractor to so notify shall be deemed as a waiver of claim for extra compensation or damages therefore.

37.2 The contractor is bound by the provisions of all applicable laws, including but not limited to the General Municipal Law and the Town Law, as related to the presentation of claims.

37.3 While the contractor is performing disputed work or complying with a determination or order under protest in accordance with this Article, in each such case the contractor shall furnish the Town daily with three copies of written statements signed by the Contractor's representatives at the site showing:

i. the name of each workman employed on such work or engaged in complying with such determination or order, the number of hours employed thereon, and the character of the work each is doing; and

ii. the nature and quantity of any materials, plant and equipment furnished or used in connection with the performance of such work or compliance with such order, and from whom purchased or rented.

37.4 The contractor shall carry on the work and maintain the progress schedule during all disputes or disagreements with the Town. No work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the contractor and Town may otherwise agree in writing.

37.5 Before final acceptance of the work by the Town, all matters of dispute must be adjusted to the mutual satisfaction of the parties thereto. Determinations and decisions in case any question shall arise, shall constitute a condition precedent to the right of the Contractor to receive the money therefore, until the matter in question has been adjusted.

Section 38. Liquidated Damages

38.1 As actual damages for any delay in completion of the work which the Contractor is required to perform under this Contract are impossible of determination, the Contractor and his Sureties shall be liable for and shall pay to the OWNER the sum of FIFTEEN HUNDRED DOLLARS ($1,500.00) as fixed, agreed and liquidated damages (but not as a penalty) for each calendar day of delay from the date specified in INFORMATION FOR BIDDERS, Section 35 – Date of Completion, until such work is satisfactorily completed and accepted.

SECTION 39
PREVALING RATE SCHEDULE

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. In most cases the payment or provision of supplements is for each hour worked (noted in the schedule as 'Per hour worked'). Some classifications require the payment or provision of supplements for each hour paid (noted in the schedule as 'Per hour paid'), which require supplements to be paid or provided at a premium rate for premium hours worked. Some classifications may also require the payment or provision of supplements for paid holidays on which no work is performed.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.state.ny.us) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3

Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Westchester County General Construction

Boilermaker — 09/01/2016

JOB DESCRIPTION Boilermaker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per Hour:	07/01/2016
Boilermaker	$ 51.56
Repairs & Renovations	$ 51.56

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2016
Boilermaker	32% of hourly
Repairs & Renovations	Wage Paid + $25.19

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

OVERTIME PAY
OVERTIME PAY
See (D, O) on OVERTIME PAGE
HOLIDAY
Paid: See (8, 16, 23, 24) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 12, 15, 25) on HOLIDAY PAGE
NOTE: *Employee must work in pay week to receive Holiday Pay.
**Boilermarker gets 4 times the hourly wage rate for working on Labor Day.
***Repairs & Renovation see (B,E,Q) on HOLIDAY PAGE

HOLIDAY

REGISTERED APPRENTICES
Wage per hour:
(1/2) Year Terms at the following pecentage of Boilermaker's Wage

1st	2nd	3rd	4th	5th	6th	7th	8th
65%	65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits Per Hour:

	07/01/2016
Apprentice(s)	32% of Hourly Wage Paid Plus Amount Below
1st Term	$ 19.27
2nd Term	20.11
3rd Term	20.95
4th Term	21.80
5th Term	22.65
6th Term	23.49
7th Term	24.33

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

Carpenter — 09/01/2016

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per hour: 07/01/2016

Piledriver	$ 51.63
Dockbuilder	$ 51.63

SUPPLEMENTAL BENEFITS
Per hour paid:

Journeyworker	$ 48.62

OVERTIME PAY
See (B, E2, O) on OVERTIME PAGE

HOLIDAY
Paid: See (18,19)on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.
Apprentices See (5,6,11,13,16,18,19,25)

Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES
Wages per hour
(1)year terms:

1st	2nd	3rd	4th
$20.65	$25.82	$33.56	$41.30

Supplemental benefits per hour:

Apprentices	$ 32.49

8-1556 Db

Carpenter **09/01/2016**

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

PARTIAL COUNTIES
Orange: The area lying on Southern side of Orange County demarcated by a line drawn from the Bear Mountain Bridge continuing east to the Bear Mountain Circle, continue North on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W, then east on County Road 107 to Route 32, then north on Route 32 to Orrs Mills Rd, then west on Orrs Mills Rd to Route 94, continue west and south on Route 94 to the Town of Chester, to the intersection of Kings Highway, continue south on Kings Highway to Bellvale Rd, west on Bellvale Rd to Bellvale Lakes Rd, then south on Bellvale Lakes Rd to Kain Rd, southeast on Kain Rd to Route 17A, then north and southeast along Route 17A to Route 210, then follow Route 210 to NJ Border.

WAGES
Per hour: 07/01/2016

Carpet/Resilient Floor Coverer	$ 50.50

INCLUDES HANDLING & INSTALLATION OF ARTIFICIAL TURF AND SIMILAR TURF INDOORS/OUTDOORS.

SUPPLEMENTAL BENEFITS
Per hour paid:

Floor Coverer	$ 45.85

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (18, 19)on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.
Apprentices See (5,6,11,13,16,18,19,25)

Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES
Wage per hour is Pecentage of Journeyworkers Wage

(1) year terms:

1st.	2nd.	3rd.	4th.
$20.20	$25.25	$32.83	$40.40

Supplemental benefits per hour:

$ 31.11

8-2287

Carpenter **09/01/2016**

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per Hour: 07/01/2016

Marine Construction:

Marine Diver	$ 65.38
Marine Tender	46.44

SUPPLEMENTAL BENEFITS
Per Hour Paid:

Journeyman $ 48.62

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (18, 19) on HOLIDAY PAGE
Overtime: See (5, 6, 10, 11, 13, 16, 18, 19) on HOLIDAY PAGE

8-1456MC

Carpenter **09/01/2016**

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per hour: 07/01/2016

Building
Millwright $ 51.50

SUPPLEMENTAL BENEFITS
Per hour paid:

Millwright $ 52.38

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (18,19)* on HOLIDAY PAGE.

Overtime See (5,6,8,11,13,18,19,25) on HOLIDAY PAGE.

* must show up to work

REGISTERED APPRENTICES
Wages per hour is Percentage of Journeyworkers wage:

(1) year terms:

1st.	2nd.	3rd.	4th.
$28.33	$33.48	$38.63	$48.93

Supplemental benefits per hour paid:

(1) year terms:

1st.	2nd.	3rd.	4th.
$34.25	$37.85	$42.10	$48.66

8-740.1

Carpenter — 09/01/2016

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES
Per Hour:

	07/01/2016
Timberman	$ 46.99

SUPPLEMENTAL BENEFITS
Per Hour:

	07/01/2016
	$ 48.23

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (18,19) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.
Apprentices See (5,6,11,13,16,18,19,25)

Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES
Wages per hour:
(1) year terms:

1st	2nd	3rd	4th
$18.80	$23.50	$30.54	$37.59

Supplemental benefits per hour:
$ 32.30

8-1556 Tm

Carpenter — 09/01/2016

JOB DESCRIPTION Carpenter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Westchester

PARTIAL COUNTIES
Orange: South of but including the following, Waterloo Mills, Slate Hill, New Hampton, Goshen, Blooming Grove, Mountainville, east to the Hudson River.
Putnam: South of but including the following, Cold Spring, TompkinsCorner, Mahopac, Croton Falls, east to Connecticut border.
Suffolk: West of Port Jefferson and Patchogue Road to Route 112 to the Atlantic Ocean.

WAGES

Per hour:	07/01/2016	10/17/2016 Additional
Core Drilling:		
Driller	$ 37.82	$ 2.21
Driller Helper	$ 30.17	$ 1.94

Additional Helpers: One (1) year increments. This is not an apprenticeship for Driller:

Helper 1st year	$ 21.12
Helper 2nd year	24.14
Helper 3rd year	27.15
Helper 4th year	30.17

Note: Hazardous Waste Pay Differential:
For Level C, an additional 10% above wage rate per hour
For Level B, an additional 10% above wage rate per hour
For Level A, an additional 10% above wage rate per hour
Note: When required to work on water: an additional $ 0.50 per hour.

SUPPLEMENTAL BENEFITS

Per hour paid:	07/01/2016	10/17/2016
Driller and All Helpers	$ 24.00	$ 24.00

OVERTIME PAY
OVERTIME: See (B,E,K*,P,R**) on OVERTIME PAGE.

HOLIDAY
Paid: See (5,6) on HOLIDAY PAGE.
Overtime: * See (5,6) on HOLIDAY PAGE.
** See (8,10,11,13) on HOLIDAY PAGE.

8-1536-CoreDriller

Carpenter - Building / Heavy&Highway **09/01/2016**

JOB DESCRIPTION Carpenter - Building / Heavy&Highway **DISTRICT** 11

ENTIRE COUNTIES
Putnam, Rockland, Westchester

WAGES
WAGES:(per hour)

	07/01/2016
BUILDING:	
Carpenter	$ 44.35
HEAVY/HIGHWAY:	
Carpenter	$ 44.35
Carpenter Concrete Forms	$ 44.35

SHIFT DIFFERENTIAL: When it is mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen(15) percent of wage plus applicable benefits.
NOTE:Carpenters employed in the abatement or removal of asbestos or any toxic or hazardous material or required to work near asbestos or any toxic or hazardous material and required to wear protective equipment shall receive two (2) hours extra pay per day, plus applicable supplemental benefits.

SUPPLEMENTAL BENEFITS
Per hour paid:
BUILDING AND HEAVY/HIGHWAY:
Journeyworker $ 30.60

OVERTIME PAY
BUILDING:
See (B, E, E2, Q,) on OVERTIME PAGE.

HEAVY/HIGHWAY:
See (B, E, E2, Q*, T**) on OVERTIME PAGE.

HOLIDAY
BUILDING:
Paid: See (1) on HOLIDAY PAGE.
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE.

HEAVY/HIGHWAY:
Paid: See (5, 6, 16, 25) on HOLIDAY PAGE including benefits.
Overtime: See (5*, 6*, 16**, 25**) on HOLIDAY PAGE.
*NOTE: For Holidays 5 and 6 code T applies, with benefits at straight time rate.
**NOTE: For Holidays 16 and 25 code Q applies, with benefits at straight time rate.

REGISTERED APPRENTICES
(1)year terms at the following wage rates.

BUILDING-HEAVY/HIGHWAY:

1st	2nd	3rd	4th
$21.95	$25.62	$29.30	$32.98

Supplemental Benefits per hour paid:

Apprentices

All terms $ 15.60

11-279.1B/HH

Electrician **09/01/2016**

JOB DESCRIPTION Electrician **DISTRICT** 8

ENTIRE COUNTIES
Westchester

WAGES
Per hour:

	07/01/2016
Electrician/A-Technician	$ 50.75
Teledata	$ 50.75

* Note: All maintenance (TEMPORARY WORK ONLY) of feeders, sub-feeders and wiring of electrical equipment for HEATING OF BUILDINGS shall be paid for at 80% of the regular hourly rate for the first 40 hours. After 40 hours they shall be paid time and one-half.

Note: On a job where employees are required to work on bridges over navigable waters, transmission towers, light poles, bosun chairs, swinging scaffolds , etc. 40 feet or more above the water or ground or under compressed air, or tunnel projects under construction or where assisted breathing apparatus is required, they will be paid at the rate of time and one-half for such work except on normal pole line or building construction work.

SUPPLEMENTAL BENEFITS
Per hour worked:

	07/01/2016
Journeyworker	$ 43.70

OVERTIME PAY
See (A, G, *J, P) on OVERTIME PAGE
*NOTE: Emergency work on Sunday and Holidays is at the time and one-half overtime rate.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Entering Program PRIOR to April 23, 2014
(1) year terms at the following wage rates:

	07/01/2016
1st term	$ 13.75
2nd term	16.55
3rd term	18.65
4th term	20.60
MIJ	26.00

Supplemental Benefits per hour worked:

	07/01/2016
1st term	$ 9.74
2nd term	13.18
3rd term	14.58
4th term	15.88
MIJ	13.26

Entering Program AFTER April 23, 2014
(1) year terms at the following wage rates:

	07/01/2016
1st term	$ 12.50
2nd term	14.50

3rd term	16.50
4th term	18.50
MIJ 1-12 months	22.50
MIJ 13-18 months	26.00

Supplemental Benefits per hour worked:

	07/01/2016
1st term	$ 8.91
2nd term	11.81
3rd term	13.14
4th term	14.48
MIJ 1-12 months	11.89
MIJ 13-18 months	13.20

8-3/W

Electrician — 09/01/2016

JOB DESCRIPTION Electrician **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, New York, Queens, Richmond, Westchester

WAGES

Per hour Paid:	07/01/2016	03/10/2017
Service Technician	$ 32.00	$ 32.40

Service and Maintenance on Alarm and Security Systems.

Maintenance, repair and /or replacement of defective (or damaged) equipment on, but not limited to, Burglar - Fire - Security - CCTV - Card Access - Life Safety Systems and associated devices. (Whether by service contract of T&M by customer request.)

SUPPLEMENTAL BENEFITS

Per hour:		
Journeyworker:	$ 15.47	$ 16.10

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

9-3H

Electrician — 09/01/2016

JOB DESCRIPTION Electrician **DISTRICT** 8

ENTIRE COUNTIES
Westchester

WAGES

	07/01/2016
Electrician	$ 26.00
H - Telephone	$ 26.00

Electrical and Teledata work of limited scope, consisting of repairs and /or replacement of electrical and teledata equipment.
- Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.
See Electrician/A Technician classification for all new installations of wiring, conduit, junction boxes and light fixtures.

SUPPLEMENTAL BENEFITS

	07/01/2016
Electrician & H - Telephone	$ 13.20

OVERTIME PAY
See (B, G, *J, P) on OVERTIME PAGE
*Note: Emergency work on Sunday and Holidays is
at the time and one-half overtime rate.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

8-3m

Elevator Constructor — 09/01/2016

JOB DESCRIPTION Elevator Constructor **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

PARTIAL COUNTIES
Rockland: Entire County except for the Township of Stony Point
Westchester: Entire County except for the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES
Per hour:

	07/01/2016	03/17/2017
Elevator Constructor	$ 60.96	$ 62.64
Modernization & Service/Repair	47.91	49.14

SUPPLEMENTAL BENEFITS
Per Hour:

Elevator Constructor	$ 36.86	$ 38.57
Modernization & Service/Repair	35.87	37.55

OVERTIME PAY
Constructor. See (D, M, T) on OVERTIME PAGE.

Modern./Service See (B, F, S) on OVERTIME PAGE.

HOLIDAY
Paid: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES PER HOUR:
*Note:1st Term is based on Average wage of Constructor & Modernization.
Terms 2 thru 4 Based on Journeyman's wage of classification Working in.

1 YEAR TERMS:

1st Term*	2nd Term	3rd Term	4th Term
50%	55%	65%	75%

SUPPLEMENTAL BENEFITS

Elevator Constructor		
1st Term	$ 30.44	$ 31.96
2nd Term	31.27	32.82
3rd Term	32.51	34.10
4th Term	33.75	35.37
Modernization & Service/Repair		
1st Term	$ 30.37	$ 31.89
2nd Term	30.73	32.26
3rd Term	31.87	33.43
4th Term	33.02	34.61

4-1

Elevator Constructor — 09/01/2016

JOB DESCRIPTION Elevator Constructor **DISTRICT** 1

ENTIRE COUNTIES
Columbia, Dutchess, Greene, Orange, Putnam, Sullivan, Ulster

PARTIAL COUNTIES
Delaware: Towns of Andes, Bovina, Colchester, Davenport, Delhi, Harpersfield, Hemdon, Kortright, Meredith, Middletown, Roxbury, Hancock & Stamford
Rockland: Only the Township of Stony Point.
Westchester: Only the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per Hour	07/01/2016
Mechanic	$ 53.72
Helper	70% of Mechanic Wage Rate

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30R; and there must be a dispensation of hours in place on the project. If the PW30R is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked	07/01/2016
Journeyman/Helper	$ 29.985*

(*)Plus 6% of gross wages if less than 5 years service
(*)Plus 8% of gross wages if more than 5 years service

OVERTIME PAY
See (D, O) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 15, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE
Note: When a paid holiday falls on Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
Wages per hour:

0-6 mo*	6-12 mo	2nd yr	3rd yr	4th yr
50 %	55 %	65 %	70 %	80 %

*No supplemental benefits

Supplemental Benefits per hour worked:

Same as Journeyman/Helper

1-138

Glazier — 09/01/2016

JOB DESCRIPTION Glazier **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per hour:	07/01/2016	11/01/2016 + additional $.85
Glazier	$ 53.55	
Scaffolding	$ 54.55	

Scafolding includes swing scaffold, mechanical equipment, scissor jacks, man lifts, booms & buckets 24' or more, but not pipe scaffolding.

Repair & Maintenance	$ 26.88

Repair & Maintenance- All repair & maintenance work on a particular building,whenever performed, where the total cumulative contract value is under $121,550

SUPPLEMENTAL BENEFITS

Per hour paid:	07/01/2016	11/01/2016
Journeyworker	$ 28.94	$ 28.94
Repair & Maintenance	17.26	17.26

OVERTIME PAY

OVERTIME: Premium is applied to the respective base wage only.
See (C*,D* E2, O) on OVERTIME PAGE.

* If an optional 8th hour is required to complete the entire project, the same shall be paid at the regular rate of pay. If a 9th hour is worked, then both hours or more (8th & 9th or more) will be paid at double time rate of pay.

For Repair & Maintenance see (B,B2, F, P) on overtime page.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (4, 6, 16, 25) on HOLIDAY PAGE
Paid for the Repair & Maintenance (5, 6, 16 & 25)

REGISTERED APPRENTICES

Wage per hour:
(1) year terms at the following wage rates:

	07/01/2016	11/01/2016
1st term	$ 18.20	$ 18.20
2nd term	26.44	26.44
3rd term	31.89	31.89
4th term	42.69	42.69
Supplemental Benefits:		
(Per hour worked)		
1st term	$ 14.24	$ 14.24
2nd term	19.67	19.67
3rd term	21.58	21.58
4th term	25.12	25.12

8-1281 (DC9 NYC)

Insulator - Heat & Frost — 09/01/2016

JOB DESCRIPTION Insulator - Heat & Frost **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Rockland, Westchester

WAGES

Per hour:	07/01/2016
Insulator	$ 49.45
Discomfort & Additional Training**	$ 52.41
Fire Stop Work*	$ 25.79

* Applies on all exclusive Fire Stop Work (When contract is for Fire Stop work only). No apprentices on these contracts only.

**Applies to work requiring; garb or equipment worn against the body not customarily worn by insulators;psychological evaluation;special training, including but not limited to "Yellow Badge" radiation training

Note: Additional $0.50 per hour for work 30 feet or more above floor or ground level.

SUPPLEMENTAL BENEFITS

(Per hour paid)
Journeyworker $ 31.90

Discomfort &
Additional Training $ 33.89

Fire Stop Work:
Journeyworker $ 16.07

OVERTIME PAY
See (B, E, E2, Q, *T) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE.
Note: Last working day preceding Christmas and New Years day, workers shall work no later than 12:00 noon and shall receive 8 hrs pay.

Overtime: See (2*, 4, 6, 16, 25) on HOLIDAY PAGE.
*Note: Labor Day triple time if worked.

REGISTERED APPRENTICES
(1) year terms.

Insulator Apprentices:

1st	2nd	3rd	4th
$ 21.49	$ 26.15	$ 35.47	$ 40.14

Discomfort & Additional Training Apprentices:

1st	2nd	3rd	4th
$ 22.66	$ 27.62	$ 37.53	$ 42.49

Supplemental Benefits paid per hour paid:

Insulator Apprentices:
1st term $ 13.19
2nd term 16.30
3rd term 22.55
4th term 25.68

Discomfort & Additional Training Apprentices:
1st term $ 13.97
2nd term 17.30
3rd term 23.94
4th term 27.26

8-91

Ironworker — 09/01/2016

JOB DESCRIPTION Ironworker **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:	07/01/2016	01/01/2017
IRONWORKER:		
		An Additional
Ironworker Rigger	$ 58.34	$ 1.36
Ironworker Stone Derrickman	$ 58.34	$ 1.36

SUPPLEMENTAL BENEFITS
Ironworker: $ 38.85

OVERTIME PAY
See (B, D1, *E, Q, **V) on OVERTIME PAGE
*Time and one-half shall be paid for all work on Saturday up to eight (8) hours and double time shall be paid for all work thereafter.
** Benefits same premium as wages on Holidays only

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 25) on HOLIDAY PAGE

*Work stops at schedule lunch break with full day's pay.

REGISTERED APPRENTICES
Wage per hour:

1/2 year terms at the following hourly wage rate:

	1st	2nd	3rd	4th	5th	6th
07/01/2016	$29.17	$29.17	$41.44	$46.07	$50.71	$50.71

Supplemental benefits:

Per hour paid:	$19.43	$19.43	$29.15	$29.15	$29.15	$29.15

9-197D/R

Ironworker **09/01/2016**

JOB DESCRIPTION Ironworker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES
Per hour:

	07/01/2016	01/01/2017	07/01/2017
Ornamental	$ 43.65	$ 43.90	Additional
Chain Link Fence	43.65	43.90	$ 1.20/Hr.
Guide Rail Installation	43.65	43.90	To be allocated

SUPPLEMENTAL BENEFITS
Per hour paid:

Journeyworker:	$ 50.16	$ 51.16

OVERTIME PAY
OVERTIME: See (A*,D1,E**,Q,V) on OVERTIME PAGE.

*Time and one-half shall be paid for all work in excess of seven (7) hours at the end of a work day to a maximum of two (2) hours on any regular work day (8th & 9th hours of work) and double time shall be paid for all work thereafter.
**Time and one-half shall be paid for all work on Saturday up to seven (7) hours and double time shall be paid for all work thereafter.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
1st term represents first 1-10 months, thereafter (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th
50%	55%	60%	70%	80%

Supplemental Benefits per hour paid:

1st Term	$ 38.49	$ 38.74
2nd Term	39.65	39.93
3rd Term	40.82	41.12
4th Term	43.16	43.51
5th Term	45.49	45.89

4-580-Or

Ironworker **09/01/2016**

JOB DESCRIPTION Ironworker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES
PER HOUR:

	07/01/2016	01/01/2017	07/01/2017
Ironworker:		Additional	Additional
Structural	$ 49.50	$ 1.62/Hr.	$ 1.73/hr.

Bridges	to be allocated	to be allocated
Machinery		

SUPPLEMENTAL BENEFITS
PER HOUR:

Journeyman	$ 70.23

OVERTIME PAY
See (B, B1, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES PER HOUR:

6 month terms at the following rate:

1st	$ 25.85
2nd	26.45
3rd - 6th	27.05

Supplemental Benefits
PER HOUR:

All Terms	$ 48.84

4-40/361-Str

Ironworker — 09/01/2016

JOB DESCRIPTION Ironworker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES
Rockland: Southern section - south of Convent Road and east of Blue Hills Road.

WAGES
Per hour: 07/01/2016

Reinforcing & Metal Lathing	$ 54.53

SUPPLEMENTAL BENEFITS
Per hour paid:

Reinforcing & Metal Lathing	$ 33.05

OVERTIME PAY
See (B, B1, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 13, 18, 19, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1) year terms at the following wage rates:
Wages Per Hour:

1st term	2nd term	3rd term	4th Term
$ 26.63	$ 30.63	$ 33.63	$ 36.63

SUPPLEMENTAL BENIFITS
Per Hour:

1st term	2nd term	3rd term	4th Term
$ 11.09	$ 13.09	$ 17.05	$ 18.05

4-46Reinf

Laborer - Building — 09/01/2016

JOB DESCRIPTION Laborer - Building **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES

	07/01/2016
Laborer	$ 37.60
Laborer-Asbestos & Hazardous Materials Removal	$ 39.25*

* Abatement/Removal of:
Lead based or lead containing paint on materials to be repainted is classified as Painter.
Asbestos containing roofs and roofing material is classified as Roofer.

Upgrade/Material condition work plan for work performed during non-outage under a wage formula of 90% wage/100% fringe benefits at nuclear power plants.

SUPPLEMENTAL BENEFITS
(per hour worked)
Journeyworker $ 24.35

OVERTIME PAY
OVERTIME:..... See (B, E, E2, Q, V*) on OVERTIME PAGE.
*Note: For Sundays and Holidays worked benefits are at the same premium as wages.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
(Laborer Only)

(Hourly) terms at the following wage.

Level A	Level B	Level C	Level D	Level E
0-1000	1001-2000	2001-3000	3001-4000	4001+
$ 22.00	$ 25.85	$ 29.25	$ 34.80	$ 37.60

Supplemental Benefits per hour worked:

Apprentices	
Level A	$ 12.25
Level B	14.55
Level C	17.30
Level D	17.45
Level E	24.35

8-235/B

Laborer - Heavy&Highway **09/01/2016**

JOB DESCRIPTION Laborer - Heavy&Highway **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES
PUTNAM: APPLIES TO ALL HEAVY & HIGHWAY WORK EXCLUDING HIGHWAYS, STREETS, AND BRIDGES

GROUP I: Blaster and Quarry Master

GROUP II: Burner, Drillers(jumbo, joy, wagon, air track, hydraulic), Drill Operator, Self Contained Rotary Drill,Curbs/ Asphalt Screedman/Raker, Bar Person.

GROUP III: Pavement Breakers, Jeeper Operator, Jack Hammer, Pneumatic Tools (all), Gas Driller, Guniting, Railroad Spike Puller, Pipelayer, Chain Saw, Deck winches on scows, Power Buggy Operator, Power Wheelbarrow Operator, Bar Person Helper.

GROUP IV: Concrete Laborers, Asph. Worker, Rock Scaler, Vibrator Oper., Bit Grinder, Air Tamper, Pumps, Epoxy (adhesives, fillers and troweled on), Barco Rammer, Concrete Grinder, Crack Router Operator, Guide Rail-digging holes and placing concrete and demolition when not to be replaced, distribution of materials and tightening of bolts.

GROUP V: Drillers Helpers, Common Laborer, Mason Tenders, Signal Person, Pit Person, Truck Spotter, Powder Person, Landscape/Nursery Person, Dump Person, Temp. Heat.

GROUP VIA: Asbestos/Toxic Waste Laborer-All removal (Roads, Tunnels, Landfills, etc.) Confined space laborer

WAGES: (per hour)	07/01/2016
GROUP I	$ 40.24*
GROUP II	38.89*
GROUP III	38.49*
GROUP IV	38.14*
GROUP V	37.79*
GROUP VIA	39.79*
Gas Mechanic	45.24*
Flagperson	31.44*

*NOTE: To calculate overtime premiums, deduct $0.15 from above wages

SHIFT WORK: A shift premium will be paid on Public Work contracts for off-shift or irregular shift work when mandated by the NYS D.O.T. or other Governmental Agency contracts. Employees shall receive an additional 15% per hour above current rate for all regular and irregular shift work. Premium pay shall be calculated using the 15% per hour differential as base rate.

SUPPLEMENTAL BENEFITS

Per hour:
Journeyworker:
First 40 Hours
Per Hour Paid $ 20.46
Over 40 Hours
Per Hour Worked 15.46

OVERTIME PAY

See (B, E, P, R, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE
NOTE: For 'Holiday Paid: 5,6,8,9,15,25
For 'Holiday Overtime: 5,6 Code 'S' applies
For 'Holiday Overtime: 8,9,15,25' Code 'R' applies

REGISTERED APPRENTICES

ENROLLED ON OR AFTER APRIL 1, 2014

1st term	2nd term	3rd term	4th term
1-1000hrs	1001-2000hrs	2001-3000hrs	3001-4000hrs
$ 21.58	$ 25.46	$ 29.34	$ 33.12

Supplemental Benefits per hour worked:

1st term	$ 3.85-After 40 hours: $ 3.60
2nd term	3.95-After 40 hours: $ 3.60
3rd term	4.45-After 40 hours: $ 4.00
4th term	5.00-After 40 hours: $ 4.50

8-60H/H

Laborer - Tunnel **09/01/2016**

JOB DESCRIPTION Laborer - Tunnel **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES
Class 1: All support laborers/ sandhogs working above the shaft or tunnel.

Class 2: All laborers/sandhogs working in the shaft or tunnel.

Class 4: Safety miners

WAGES:(per hour)	07/01/2016
Class 1	$ 45.65
Class 2	$ 47.65
Class 4	$ 53.65

SHIFT WORK:When mandated by the contracting agency, 2nd and 3rd shifts, and irregular shift work shall be paid at time and one half the regular rate, Monday through Friday. Saturday shall be 1.65 times the regular rate.Sunday shall be paid at 2.15 times the regular rate. Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional $ 3.00 an hour.

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker:

Straight time:	$ 26.75
Premium time:	$ 40.13
Shift work	
Irregular shifts	
Saturday, Sunday	
Holidays	

OVERTIME PAY
See (B, E, Q, *S, V) on OVERTIME PAGE
*Work on a holiday which falls on a Saturday

HOLIDAY
Paid: See (5, 6, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 15, *16, 25) on HOLIDAY PAGE
* Double rate and benefits if worked

REGISTERED APPRENTICES
SEE HEAVY/HIGHWAY CLASSIFICATION FOR APPRENTICE RATES

8-60Tun

Lineman Electrician — 09/01/2016

JOB DESCRIPTION Lineman Electrician **DISTRICT** 6

ENTIRE COUNTIES
Westchester

WAGES
Below rates apply to electrical overhead and underground distribution and maintenance work and overhead and underground transmission line work, electrical substations, switching structures, continuous pipe-type underground fluid or gas filled transmission conduit and cable installations, maintenance jobs or projects, railroad catenary installations and maintenance, third rail installations, the bonding of rails and the installation of fiber optic cable. (Ref #14.04.01)

Includes Teledata Work performed within ten (10) feet of high voltage (600 volts or over) transmission lines.

Per hour:	07/01/2016
Lineman, Tech, Welder	$ 50.46
Crane, Crawler Backhoe	50.46
Cable Splicer-Pipe Type	55.51
Digging Mach Operator	45.41
Cert. Welder-Pipe Type	52.98
Tractor Trailer Driver	42.89
Groundman, Truck Driver	40.37
Equipment Mechanic	40.37
Flagman	30.28

Additional $1.00 per hour for entire crew when a helicopter is used.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

** IMPORTANT NOTICE **
Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.
*Effective 05/06/2013, Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30R; and there must be a dispensation of hours in place on the project. If the PW30R is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS
Per hour worked (but also required on non-worked holidays):

Journeyman	$ 21.75 *plus 7.25% of hourly wage

*The 7.25% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY
See (B, E, Q,) on OVERTIME PAGE. *Note* Double time for emergency work designated by the Dept of Jurisdiction.

HOLIDAY

Paid	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES
WAGES: Per hour. 1000 hour terms.

1st	2nd	3rd	4th	5th	6th	7th
$ 30.28	$ 32.80	$ 35.32	$ 37.85	$ 40.37	$ 42.89	$ 45.41

SUPPLEMENTAL BENEFITS: Same as Journeyman

6-1249aWest

Lineman Electrician - Teledata — 09/01/2016

JOB DESCRIPTION Lineman Electrician - Teledata **DISTRICT** 6

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES
Per hour:

FOR OUTSIDE WORK.

	07/01/2016	01/01/2017
Cable Splicer	$ 30.29	$ 30.90
Installer, Repairman	28.75	29.33
Teledata Lineman	28.75	29.33
Technician, Equipment Operator	28.75	29.33
Groundman	15.25	15.56

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman	$ 4.43	$ 4.43

*plus 3% of wage paid	*plus 3% of wage paid

*The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

Lineman Electrician - Traffic Signal Lighting — 09/01/2016

JOB DESCRIPTION Lineman Electrician - Traffic Signal Lighting **DISTRICT** 6

ENTIRE COUNTIES
Westchester

WAGES
Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

A Groundman/Groundman Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chain saws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a ground man/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.

(Ref #14.01.03)

Per hour:	07/01/2016
Lineman, Technician	$ 46.56
Crane, Crawler Backhoe	46.56
Certified Welder	48.89
Digging Machine	41.90
Tractor Trailer Driver	39.58
Groundman Truck Driver	37.25
Equipment Mechanic	37.25
Flagman	27.94

Above rates applicable on all Lighting and Traffic Signal Systems with the installation, testing, operation, maintenance and repair of all traffic control and illumination projects, traffic monitoring systems, road weather information systems, and the installation of Fiber Optic Cable.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

** IMPORTANT NOTICE **
Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.
*Effective 05/06/2013, Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30R; and there must be a dispensation of hours in place on the project. If the PW30R is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS
Per hour worked (but also required on non-worked holidays):

Journeyman	$ 21.75

*plus 7.25% of
hourly wage

*The 7.25% is based on the hourly wage paid, straight time rate or premium rate.
Supplements paid at STRAIGHT TIME rate for holidays.

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE. *Note* Double time for emergency work designated by the Dept. of Jurisdiction.

HOLIDAY
Paid: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.
Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES
WAGES: Per hour. 1000 hour terms.

1st	2nd	3rd	4th	5th	6th	7th
$ 27.94	$ 30.26	$ 32.59	$ 34.92	$ 37.25	$ 39.58	$ 41.90

SUPPLEMENTAL BENEFITS: Same as Journeyman

6-1249aWestLT

Mason - Building — 09/01/2016

JOB DESCRIPTION Mason - Building **DISTRICT** 11

ENTIRE COUNTIES
Putnam, Rockland, Westchester

PARTIAL COUNTIES
Orange: Only the Township of Tuxedo.

WAGES
Per hour:

	07/01/2016
Bricklayer	$ 40.68
Cement Mason Bldg*	40.68
Plasterer/Stone Mason	40.68
Pointer/Caulker	40.68

Additional $1.00 per hour for power saw work
Additional $0.50 per hour for swing scaffold or staging work

SHIFT DIFFERENTIAL: When shift work is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Second shift an additional 15% of wage plus benefits to be paid
Third shift an additional 25% of wage plus benefits to be paid

* Overtime paid at one and one half wage and benefits

SUPPLEMENTAL BENEFITS
Per hour paid:

Journeyman	$ 32.11

OVERTIME PAY
OVERTIME:

Cement Mason	See (B, E2, H, V) on OVERTIME PAGE.
All Others	See (B, E, E2, Q) on OVERTIME PAGE.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour paid

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before September 1 2009 receive full journeyman benefits

11-5wp-b

Mason - Building — 09/01/2016

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES
Building:

	07/01/2016	01/01/2017
Wages per hour:		
Mosaic & Terrazzo Mechanic	$ 51.82	An additional $1.15
Mosaic & Terrazzo Finisher	50.21	An additional $1.15

SUPPLEMENTAL BENEFITS
Journeyworker:
Per hour:

Mosaic & Terrazzo Mechanic	$ 23.35* per hour paid plus $ 10.20 per hour worked
Mosaic & Terrazzo Finisher	$23.35* per hour paid plus $10.19 per hour worked

OVERTIME PAY
See (A, *E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
Easter Sunday is an observed holiday.Holidays falling on a Saturday will be observed on that Saturday. Holidays falling on a Sunday will be celebrated on the Monday.

REGISTERED APPRENTICES
Wages per hour:
(750 Hour) terms at the following wage rate.

	1st	2nd	3rd	4th	5th	6th	7th	8th
07/01/2016	$ 25.91	$ 28.50	$ 31.09	$ 33.68	$ 36.27	$ 38.87	$ 44.05	$ 49.23

* 01/01/2017 Apprentices will receive an increase per the Journeyman's increase.

Supplemental benefits per hour:

07/01/2016	$ 11.68* plus $ 5.11**
	$ 12.84* plus $ 5.62**
	$ 14.01* plus $ 6.12**
	$ 15.18* plus $ 6.64**

$ 16.35* plus $ 7.15**
$ 17.51* plus $ 7.66**
$ 19.85* plus $ 8.68**
$ 22.18* plus $ 9.70**

* Per Hour paid and subject to same premium as overtime wages.
** Per hour worked

9-7/3

Mason - Building — 09/01/2016

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2016	01/01/2017
Building-Marble Restoration:		
Marble, Stone & Terrazzo Polisher, etc	$ 40.04	$ 40.33

SUPPLEMENTAL BENEFITS
Per Hour Paid:
Journeyworker:

Building-Marble Restoration:		
Marble, Stone & Polisher	$ 24.92	$ 25.45

OVERTIME PAY
See (B, *E, Q, V) on OVERTIME PAGE
*ON SATURDAYS, 8TH HOUR AND SUCCESSIVE HOURS PAID AT DOUBLE HOURLY RATE.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
1ST TERM APPRENTICE GETS PAID FOR ALL OBSERVED HOLIDAYS.

REGISTERED APPRENTICES
WAGES per hour:
(900 hour)terms at the following per cent of journeyman's wages:

	1st	2nd	3rd	4th
	0-900	901-1800	1801-2700	over 2700
07/01/2016	70%	80%	90%	100%

Supplemental Benefits Per Hour:

07/01/2016				
	$ 22.78	$ 23.50	$ 24.21	$ 24.92

9-7/24-MP

Mason - Building — 09/01/2016

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Wages:	07/01/2016	01/01/2017
Marble Cutters& Setters	$ 57.32	$ 57.74

SUPPLEMENTAL BENEFITS
Per Hour:

Journeyworker	$ 33.08	$ 34.11

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wage Per Hour:

750 hour terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-750	751-1500	1501-2250	2251-3000	3001-3750	3751-4500	4501-5250	5251-6000	6001-6751	6751-7500
07/01/2016									
$22.93	$25.79	$28.66	$31.53	$34.39	$37.26	$40.12	$42.99	$48.72	$54.45

01/01/2017: Apprentices will receive an increase per the journeyman's wage increase.

Supplemental Benefits per hour paid at the following term:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
07/01/2016									
$23.52	$24.27	$25.08	$25.84	$26.60	$27.37	$28.13	$28.91	$30.43	$31.96

9-7/4

Mason - Building — 09/01/2016

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2016	01/01/2017
Marble, Stone,etc.		
Maintenance Finishers:	$ 21.96	$ 22.18

Note 1: An additional $2.00 per hour for time spent grinding floor using "60 grit" and below.
Note 2: Flaming equipment operator shall be paid an additional $25.00 per day.

SUPPLEMENTAL BENEFITS

Per Hour:		
Marble, Stone, etc		
Maintenance Finishers:	$ 12.65	$ 12.87

OVERTIME PAY
See (B, *E, Q, V) on OVERTIME PAGE
*Double hourly rate after 8 hours on Saturday

HOLIDAY
Paid: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
1st term apprentice gets paid for all observed holidays.

REGISTERED APPRENTICES

WAGES per hour:	
(750 hour)terms at the following percentage of journeyman's wage rate:	07/01/2016
1st term 0-750	70%
2nd term 750-1500	74%

3rd trem 1501-2250	78%
4th term 2251-3000	82%
5th term 3001-3750	88%
6th term 3751-4500	96%

Supplemental Benefits:
Per hour paid

1st term	$ 12.55
2nd term	13.85
3rd term	13.93
4th term	13.98
5th term	14.07
6th term	14.19

9-7/24M-MF

Mason - Building — 09/01/2016

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2016	12/05/2016 Additional
Building:		
Tile Setters	$ 55.38	$ 1.13

SUPPLEMENTAL BENEFITS
Per Hour:

Journey Worker	$23.34* per hour paid Plus $8.57 per hour worked

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE
* This portion of benefits subject to same premium rate as shown for overtime wages.
Work beyond 10 hours on Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wage per hour:

Tile Setters:
(750 hour) term at the following wage rate:

Term: 1st 1-750	2nd 751-1500	3rd 1501-2250	4th 2251-3000	5th 3001-3750	6th 3751-4500	7th 4501-5250	8th 5251 6000
$28.49	$31.86	$35.62	$39.40	$42.97	$46.35	$49.46	$53.11

Supplemental Benefits per hour:

1st term	$14.95* plus $0.74	6th term	$18.35* plus $1.56
2nd term	$15.95* plus $0.79	7th term	$15.60* plus $5.61
3rd term	$16.25* plus $1.14	8th term	$20.35* plus $6.05
4th term	$16.85* plus $1.18		
5th term	$17.35* plus $1.52		

9-7/52A

Mason - Building — 09/01/2016

JOB DESCRIPTION Mason - Building **DISTRICT** 9

ENTIRE COUNTIES
Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2016	12/05/2016
Building:		An Additional
Tile Finisher	$ 42.89	$ 0.82

SUPPLEMENTAL BENEFITS
Per Hour:

Journey worker $ 20.22* per hour paid
plus $ 8.42 per hour worked

OVERTIME PAY
See (B, E, Q, *V) on OVERTIME PAGE
* This portion of Supplemental benefits subject to same premium rate as shown for overtime wages.
Work beyond 10 hours on a Saturday shall be paid at double the hourly wage rate.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88A-tf

Mason - Building / Heavy&Highway — 09/01/2016

JOB DESCRIPTION Mason - Building / Heavy&Highway **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2016	01/01/2017
Marble-Finisher	$ 45.66	$ 1.08

SUPPLEMENTAL BENEFITS
Journeyworker:
per hour paid

Marble- Finisher $ 31.80

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
* Work beyond 8 hours on a Saturday shall be paid at double the rate.
** When an observed holiday falls on a Sunday, it will be observed the next day.

9-7/20-MF

Mason - Heavy&Highway — 09/01/2016

JOB DESCRIPTION Mason - Heavy&Highway **DISTRICT** 11

ENTIRE COUNTIES
Putnam, Rockland, Westchester

PARTIAL COUNTIES
Orange: Only the Township of Tuxedo.

WAGES
Per hour:

	07/01/2016
Bricklayer	$ 41.18
Cement Mason*	41.18
Marble/Stone Mason	41.18
Plasterer	41.18
Pointer/Caulker	41.18

Additional $1.00 per hour for power saw work
Additional $0.50 per hour for swing scaffold or staging work

SHIFT DIFFERENTIAL: When shift work is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Second shift an additional 15% of wage plus benefits to be paid
Third shift an additional 25% of wage plus benefits to be paid

* Overtime paid at one and one half times wage and benefits

SUPPLEMENTAL BENEFITS
Per hour paid:

Journeyman $ 32.11

OVERTIME PAY
See (B, O) on OVERTIME PAGE
*Cement Mason See (B, H, V)

HOLIDAY
Paid: See (5, 6, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour paid

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before September 1, 2009 receive full journeyman benefits

11-5WP-H/H

Operating Engineer - Building — 09/01/2016

JOB DESCRIPTION Operating Engineer - Building **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES
Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES
GROUP I:
Cranes(All Types up to 49 tons), Boom Trucks, Cherry Pickers, Clamshell Crane, Derrick, Dragline, Franki Pile Rig or similar, High Lift (Lull or similar) with crane attachment and winch used for hoisting or lifting, Hydraulic Cranes, Pile Drivers, Potain and similar.

Cranes (All types 50-99 tons), Conventional and Hydraulic.

Cranes (All types 100 tons and over), Tower, Climbing, Conventional, Hydraulic.

GROUP I-A: Barber Green Loader-Euclid Loader, Bulldozer, Carrier-Trailer Horse, Concrete Cleaning Decontamination Machine Operator,Concrete-Portable Hoist, Conway or Similar Mucking Machines, Elevator & Cage, Excavators all types, Front End Loaders, Gradall, Shovel, Backhoe, etc.(Crawler or Truck), Heavy Equipment Robotics Operator/Mechanic, Hoist Engineer-Material, Hoist Portable Mobile Unit, Hoist-Single, Double or Triple Drum, Horizontal Directional Drill Locator, Horizontal Directional Drill Operator,and Jersey Spreader, Letourneau or Tournapull(Scrapers over 20 yards Struck), Lift Slab Console, etc., Lull HiLift or Similar, Maintenance Engineer, Master Environmental Maintenance Mechanics, Mucking Machines Operator/Mechanic or Similar Type, Overhead Crane, Pavement Breaker(Air Ram), Paver(Concrete), Post Hole Digger, Power House Plant, Road Boring Machine, Road Mix Machine, Ross Carrier and Similar Machines, Rubber tire double end backhoes and similar machines, Scoopmobile Tractor-Shovel Over 1.5 yards, Shovel (Tunnels), Spreader (Asphalt) Telephie(Cableway), Tractor Type Demolition Equipment, Trenching Machines-Vermeer Concrete Saw Trencher and Similar, Ultra High Pressure Waterjet Cutting Tool System, Vacuum Blasting Machine operator/mechanic, Winch Truck A Frame).

GROUP I-B: Compressor (Steel Erection), Mechanic (Outside All Types, Negative Air Machine (Asbestos Removal),Push Button (Buzz Box) Elevator.

GROUP II: Bulldozer D6 and Under, Compactor Self-Propelled, Concrete Pump, Crane Operator in Training(Over 100 Tons, Grader, Machines Pulling Sheep's Foot Roller, Roller 4 ton and over, Scrapers-20 yards Struck and Under, Vibratory Rollers, Welder.

GROUP III-A: Asphalt Plant, Concrete Mixing Plants, Concrete Buggy(One yard and up, Ride on dumper,Benford or Similar) Fire Watchman, Forklift(All power soucres),Joy Drill or similar,Tractor Drilling Machine, Loader(1 1/2 yards and under),Portable Asphalt Plant, Portable Batch Plant, Portable Crusher, Skid Steer(Bobcat or similar), Stone Crusher, Well Drilling Machine, Well Point System.

GROUP III-B: Compressor Over 125 cu.Feet, Conveyor Belt Machine Regardless of Size, Compressor Plant, Ladder Hoist, Lighting Unit (Portable & Generator), Stud Machine.

GROUP IV-A: Batch Plant, Concrete Breaker, Concrete Spreader, Curb Cutter Machine, Finishing Machine-Concrete, Fine Grading Machine, Hepa Vac Clean Air Machine, Material Hopper(sand stone-cement), Mulching Grass Spreader, Pump Gypsum etc, Pump-Plaster-Grout-Fireproofing. Roller(Under 4 Ton),Spreading and Fine Grading Machine, Steel Cutting Machine, Siphon Pump, Tar Joint Machine, Television Cameras for Water, Sewer, Gas etc. Turbo Jet Burner or Similar Equipment, Vibrator (1 to 5),

GROUP IV-B: Compressor(Under 125 cu.Feet), Heater(All Types), Lighting Unit (Portable & Generator) Pump,Pump Station(Water,Sewer, Portable, Temporary), Steam Jenny, Sweeper, Chipper, Mulcher, Welding Machine (Steel Erection & Excavation)

GROUP V: Crane Operator in Training(65 Tons to 100 Tons), Mechanics Helper,Motorized Roller (walk behind), Stock Attendant, Welder's Helper.

GROUP VI-A: Welder,Certified.

GROUP VI-B: Utility Man, Warehouse Man.

WAGES: (per hour)

	07/01/2016	03/06/2017
GROUP I		
Cranes- up to 49 tons	$ 59.81	$ 61.70
Cranes- 50 tons to 99 tons	61.91	63.86
Cranes- 100 tons and over	70.76	72.99
GROUP I-A	52.28	53.95
GROUP I-B	48.14	49.68
GROUP II	50.42	52.03
GROUP III-A	48.55	50.11
GROUP III-B	46.19	47.67
GROUP IV-A	48.06	49.60
GROUP IV-B	40.54	41.85
GROUP V	43.75	45.17
GROUP VI-A	51.32	52.96
GROUP VI-B		
Utility Man	41.48	42.83
Warehouse Man	43.51	44.92

An additional 20% to wage when required to wear protective equipment on hazardous/toxic waste projects.
Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional $2.00 per hour.
Engineers operating cranes with booms 149 feet or over in length will be paid an additional $3.00 per hour.
Loader operators over 5 cubic yard capacity additional .50 per hour.
Shovel operators over 4 cubic yard capacity additional $1.00 per hour.

SUPPLEMENTAL BENEFITS

Per hour:

	07/01/2016	03/06/2017
Journeyworker	$ 19.75	$ 20.50
	Per hour paid	Per hour paid
	+$8.02	+$8.02
	Per hour worked	Per hour worked

OVERTIME PAY

OVERTIME:..... See (B, E,P,R*,U**,V) on OVERTIME PAGE.

HOLIDAY

HOLIDAY:
Paid:..... See (5, 6, 11, 12, 15, 25) on HOLIDAY PAGE.
Overtime:..... See (5, 6, 11, 12, 15, 25) on HOLIDAY PAGE.
* For Holiday codes 11, 12, 15, 25, code R applies.

** For Holiday codes 5 & 6, code U applies.
Note: If employees are required to work on Easter Sunday they shall be paid at the rate of triple time.

8-137B

Operating Engineer - Building — 09/01/2016

JOB DESCRIPTION Operating Engineer - Building **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, New York, Putnam, Queens, Richmond, Westchester

PARTIAL COUNTIES
Dutchess: that part of Dutchess County lying south of the North City Line of the City of Poughkeepsie.

WAGES
NOTE:Construction surveying
Party chief--One who directs a survey party
Instrument Man--One who runs the instrument and assists Party Chief.
Rodman--One who holds the rod and assists the Survey Crew

Wages:(Per Hour)	07/01/2016
Building Construction:	
Party Chief	$ 68.41
Instrument Man	$ 54.45
Rodman	$ 37.27
Steel Erection:	
Party Chief	$ 69.53
Instrument Man	$ 55.48
Rodman	$ 39.09
Heavy Construction-NYC counties only: (Foundation, Excavation.)	
Party Chief	$ 74.23
Instument man	$ 56.12
Rodman	$ 48.07

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2016
Steel Erection Only	$ 20.30* + 5.89
All Other Classifications	$ 20.55* + 6.90

* This portion subject to same premium as wages

OVERTIME PAY
See (A, B, E, Q) on OVERTIME PAGE
Code "A" applies to Building Construction and has double the rate after 7 hours on Saturdays.
Code "B" applies to Heavy Construction and Steel Erection and had double the rate after 8 hours on Saturdays.

HOLIDAY

Paid:	See (5, 6, 8, 11, 12, 15, 25) on HOLIDAY PAGE
Overtime:	See (5, 6, 8, 11, 12, 25) on HOLIDAY PAGE

9-15Db

Operating Engineer - Heavy&Highway — 09/01/2016

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES

GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane, (Crawler, Truck), Dragline,Rough Terrain Crane.

GROUP I-A: Auger, Auto Grader, Dynahoe and Dual purpose and similar machines, Barber Green Loader-Euclid Loader or similar type machine, boat captain, boring machine(all types), Bulldozer-All Sizes, Central Mix Plant Operator, Cherry Picker(Cableway)-Hydraulic, chipper (all types), close circuit t.v., Compactor with Blade,Concrete Portable Hoist, C.M.I. or Similar, Conway or Similar Mucking Machines, Gradall, Shovel Backhoe, etc. Grader, Derrick (Stone-Steel) Elevator & Cage, Front End Loaders over 1 1/2yds Hoist Single, Double, Triple Drum, Hoist Portable Mobile Unit, Hoist Engineer Concrete(Crane-Derrick-Mine Hoist), Hoist Engineer-Material, Hydraulic Boom, Letourneau or Tournapull (Scrapers over 20 yds struck), Mucking Machines, Overhead Crane, Paver (concrete) Pulsemeter, Push Button (Buss Box) Elevator, Road Mix Machines, Ross Carrier and similar, Shovels (Tunnels), SideBoom, Spreader (asphalt), Scoopmobile-Tractor-Shovel over 1 1/2 yards, Trenching Machines, Telephies-Vermeer Concrete Saw Trencher and/or Similar, Tractor type Demolition Equipment, Whirly,P-811 Track Renewal Machine-Similiar, certified Welder, Excavator (and all attachments).

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver-Asphalt.

GROUP II-A: Balast regulators, Compactor Self Propelled, Cow Tracks, Fusion Machine, Rail Anchor Machines, Scrapers-20 yds truck and under, Switchtampers, Vibratory Roller, etc., Roller 4 ton and over, Welder.

GROUP II-B: Mechanic (Outside) All Types.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler (High Pressure), Concrete Breaker, Concrete Pump, Concrete Spreader, Farm Tractor (All Types), Forklift (All), Gas Tapping(Live),Hydroseeder, Loader 1 1/2 yards and under, Locomotive(All Sizes), Machine Pulling Sheep's Foot Roller, Portable Plant, Portable Batch Plant, Portable Crusher, Powerhouse Plant, Roller (Under 4 ton), Stone Crusher, Sweeper, Turbo JetBurner or Similar, Sheer Excavator, Skid Steer/Bobcat, Well Drilling Machine.

GROUP IV-A: Service Person (Grease Truck).

GROUP IV-B: Conveyor Belt Machine, Heater all types, Lighting Unit (Portable & Generator), Mechanic's Helper, Pilot/Assistant Engineer/2 seated, Pumps-Pump Station-Water-Sewer-Gypsum-Plaster, etc., Pump Truck(Sewer Jet or Similar), Stock Room Attendant, Welding Machine Steel Erection Excavation), Well Point System, Welder's Helper,

GROUP V-A: Engineer-All Tower Cranes-All Climbing Cranes and all cranes of 100 ton capacity or greater(3900 Manitowac or similar), Hoist Engineer(Steel), Engineer-Pile Driver, Welder-Certified, Jersey Spreader, Pavement Breaker(Air Ram), Post Hole Digger.

WAGES: (per hour)

	07/01/2016
Group I	$ 57.33
Group I-A	50.67
Group I-B	53.33
Group II-A	48.56
Group II-B	50.05
Group III	47.73
Group IV-A	43.47
Group IV-B	37.47
Group V-A	
Engineer All Tower,Climbing	
and Cranes of 100 Tons	64.81
Hoist Engineer(Steel)	58.79
Engineer(Pile Driver)	62.57
Jersey Spreader,Pavement Breaker.	
(Air Ram)Post Hole Digger	49.67

SHIFT DIFFERENTIAL:
A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts on all government mandated off-shift work

Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional $2.00 per hour over the rate listed in the Wage Schedule. Engineers operating cranes with booms 149 feet or over in length will be paid an additional $3.00 per hour over the rate listed in the Wage Schedule. Loader and Excavator Operators: over 5 cubic yards capacity $0.50 per hour over the rate listed in the Wage Schedule. Shovel Operators: over 4 cubic yards capacity $1.00 per hour over the rate listed in the Wage Schedule.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday; Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30R; and there must be a dispensation of hours in place on the project. If the PW30R is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS
(Per hour)

Journeyman:	07/01/2016
	$18.75 on all hours paid
	PLUS $8.00 for first 40 hours worked
	PLUS $1.00 on all hours worked

OVERTIME PAY
See (B, E, E2, P, *R, **U) on OVERTIME PAGE

HOLIDAY
Paid:..... See (5, 6, 8, 9, 15, 25) on HOLDIAY PAGE
Overtime..... See (5, 6, 8, 9, 15, 25) on OVERTIME PAGE

* For Holiday codes 8,9,15,25 code R applies
** For Holiday Codes 5 & 6 code U applies
Note: If employees are required to work on Easter Sunday they shall be paid at the rate of triple time.

REGISTERED APPRENTICES
(1)year terms at the following rate.

	07/01/2016
1st term	$ 23.86
2nd term	28.63
3rd term	33.41
4th term	38.18

Supplemental Benefits per hour:

Apprentices:	07/01/2016
	$ 18.75 on all hours paid
	PLUS $1.00 on all hours worked

8-137HH

Operating Engineer - Heavy&Highway **09/01/2016**

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 9

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES
Dutchess: South of the North city line of Poughkeepsie

WAGES
Party Chief - One who directs a survey party
Instrument Man - One who runs the instrument and assists Party Chief
Rodman - One who holds the rod and in general, assists the Survey Crew
Catorgories cover GPS & Underground Surveying

Per Hour:	07/01/2016
Party Chief	$ 71.70
Instrument Man	54.10
Rodman	46.24

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2016
All Catorgories	
Straight Time:	$ 27.45
Premium:	
Time & 1/2	$ 37.73
Double Time	$ 48.00

OVERTIME PAY
See (B, *E, Q) on OVERTIME PAGE
* Doubletime paid on all hours in excess of 8 hours on Saturday

HOLIDAY
Paid: See (5, 6, 7, 11, 12) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

9-15Dh

Operating Engineer - Heavy&Highway - Tunnel — 09/01/2016

JOB DESCRIPTION Operating Engineer - Heavy&Highway - Tunnel **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES
Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES
GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane(Crawler, Truck), Dragline, Drill Rig Casa Grande(Cat or Similar), Floating Crane (Crane on Barge-Under 100 Tons), Hoist Engineer (Concrete/Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger, Auto Grader, Dynahoe & Dual purpose & similar machines, Barber Green Loader-Euclid Loader or similar type machine, Boat Captain, Boring Machine(all types), Bull Dozer-all types, Central Mix Plant Operator, Cherry Picker(Cableway or hydraulic), Chipper-all types, Close Circuit T.V., Compactor with Blade, Concrete Portable Hoist, C.M.I. or similar, Conway or similar Mucking Machine, Crane(Crawler or Truck) dragline, Gradall, Shovel Backhoe, etc. Grader, Derrick(Stone-Steel), Elevator & Cage(materials or passengers), Front End Loaders over 1 1/2 yards, Hoist Single, Double, Triple Drum, Hoist Portable Mobile Unit, Hoist Engineer-Concrete(Crane-Derrick-Mine Hoist), Hoist Engineer-Material, Hydraulic Boom, Letourneau or Tournapull(Scrapers over 20 yards struck), Log Skidder, Milling Machine, Moveable Concrete Barrier Transfer & Transport Vehicle, Mucking Machines. Overhead Crane, Paver(concrete), Pulsemeter, Push Button(Buzz Box)Elevator, Raise Boring Machine, Road Mix Machines. Robot Hammer(Brock or similar), Robotic EquipmentRoss Carrier and similar machines, Shovels(Tunnels), Side Boom, Slip Form Machine, Spreader(Asphalt), Scoopmobile-Tractor-Shovel over 1 1/2 yards, Trenching Machines, Telephies-Vermeer Concrete Saw Trencher and/or similar, Tractor type demolition equipment, Whirly.

GROUP I-B: Road Paver(Asphalt).

GROUP II-A: Balast Regulators, Compactor Self-propelled, Cow Tracks, Fusion Machine, Rail Anchor Machines, Roller 4 ton and over, Scrapers (20 yard struck and under), Switch Tampers, Vibratory Roller, etc., Welder.

GROUP II-B: Mechanic(outside) all types.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler (High Pressure), Concrete Breaker, Concrete Pump, Concrete Spreader, Curb Cutter Machine, Farm Tractor(all types), Finishing Machine(Concrete) Fine Grading Machine, Firemen, Forklift(ALL), John Henry Drill or similar, Joy Drill or similar Tractor Drilling Machine, Loader 1 1/2 yards and under, Locomotive(all sizes), Maintenance Engineer, Machine Pulling Sheeps Foot Roller, Material Hopper, Mixer Concrete(21-E & over), Mulching Grass Spreader, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher, Powerhouse Plant, Quarry Master, Roller under 4 ton, Spreading and Fine Grading Machine, Steel Cutting Machine, Stone Crusher, Sweeper, Turbo Jet Burner or similar, Well Drilling Machine, Winch Truck "A' Frame.

GROUP IV-A: Service Person(Fuel Truck), Service Person(Grease Truck).

GROUP IV-B: Bending Machine, Compressor-Compressor Plant-Paint, Compressor-Steel Erection, Compressor Truck Mounted(2-6), Conveyor Belt Machine, Dust Collector, Heater(all types), Lighting Unit(portable & generator), Mixer Concrete under 21-E, Pilot/Assistant Engineer/2 seated, Pumps-Pump Station-Water-Sewer-Gypsum-Plaster, etc., Pump Truck(Sewer Jet or similar), Roller Motorized(Walk behind), Steam Jenny, Stock Room Attendant, Syphon Pump-Air-Stream, Tar Joint Machine, Vibrator(1 to 5), Welding Machine, Welders Helper.

GROUP V-A: Engineer(all Tower Cranes, all Climbing Cranes & all cranes of 100 ton capacity or greater),Hoist Engineer(Steel-Sub Structure), Engineer-Pile Driver, Jersey-Spreader, Pavement breaker, Post Hole Digger

WAGES: (per hour)

	07/01/2016
GROUP I	$ 57.33
GROUP I-A	50.67
GROUP I-B	53.33
GROUP II-A	48.56
GROUP II-B	50.05
GROUP III	47.78
GROUP IV-A	43.47
GROUP IV-B	37.47
GROUP V-A	
Engineer-Cranes	64.81
Engineer-Pile Driver	62.62
Hoist Engineer	58.79
Jersey Spreader	49.67
Pavement Breaker	49.67
Post Hole Digger	49.67

SHIFT DIFFERENTIAL:
A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts on all government mandated off-shift work

An additional 20% to wage when required to wear protective equipment on hazardous/toxic waste projects. Operators required to use two buckets pouring concrete on other than road pavement shall receive $0.50 per hour over scale. Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional $2.00 per hour. Engineers operating cranes with booms 149 feet or over in length will be paid an additional $3.00 per hour. Operators of shovels with a capacity over (4) cubic yards shall be paid an additional $1.00 per hour. Operators of loaders with a capacity over (5) cubic yards shall be paid an additional $0.50 per hour.

SUPPLEMENTAL BENEFITS

Per hour:
Journeyworker:

07/01/2016
$ 18.75 on all hours paid
PLUS $8.00 limited to first 40 hours worked
PLUS $1.00 for all hours worked

OVERTIME PAY

See (D, O, *U, V) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 7, 8, 11, 12) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 8, 11, 12) on HOLIDAY PAGE

* Note: For Holiday codes 5 & 6, code U applies.

Note: If employees are required to work on Easter Sunday, they shall be paid at the rate of triple time.

REGISTERED APPRENTICES

(1)year terms at the following rates.

	07/01/2016
1st year	$ 23.86
2nd year	28.63
3rd year	33.41
4th year	38.18

Supplemental Benefits per hour:

$ 18.75 for all hours paid
+$1.00 for all hours worked

8-137Tun

Operating Engineer - Marine Dredging **09/01/2016**

JOB DESCRIPTION Operating Engineer - Marine Dredging **DISTRICT** 4

ENTIRE COUNTIES

Albany, Bronx, Cayuga, Chautauqua, Clinton, Columbia, Dutchess, Erie, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Niagara, Orange, Orleans, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

WAGES

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for barge mounted cranes and other equipment are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour:	
DREDGING OPERATIONS	07/01/2016
CLASS A	
Operator, Leverman, Lead Dredgeman	$ 35.63
CLASS A1	To conform to Operating Engineer
Dozer,Front Loader Operator	Prevailing Wage in locality where work is being performed including benefits.
CLASS B	
Spider/Spill Barge Operator, Tug Operator(over1000hp), OperatorII, Fill Placer, Derrick Operator, Engineer, Chief Mate, Electrician, Chief Welder, Maintenance Engineer	$ 30.81
Certified Welder, Boat Operator(licensed)	$ 29.01
CLASS C	
Drag Barge Operator, Steward, Mate, Assistant Fill Placer,	$ 28.22
Welder (please add)	$ 0.06
Boat Operator	$ 27.30
CLASS D	
Shoreman, Deckhand, Rodman, Scowman, Cook, Messman, Porter/Janitor	$ 22.68
Oiler(please add)	$ 0.09

SUPPLEMENTAL BENEFITS

Per Hour:
THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

	07/01/2016
All Classes A & B	$ 9.99 plus 8% of straight time wage, Overtime hours add $ 0.63
All Class C	$ 9.69 plus 8% of straight time wage, Overtime hours add $ 0.48
All Class D	$ 9.39 plus 8% of straight time wage, Overtime hours add $ 0.33

OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

Operating Engineer - Survey Crew - Consulting Engineer — 09/01/2016

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES
Dutchess: That part in Duchess County lying South of the North City line of Poughkeepsie.

WAGES
Feasibility and preliminary design surveying, any line and grade surveying for inspection or supervision of construction.

Per hour:	07/01/2016
Survey Classifications	
Party Chief	$ 38.18
Instrument Man	31.47
Rodman	27.24

SUPPLEMENTAL BENEFITS
Per Hour:

All Crew Members: $ 20.20

OVERTIME PAY
OVERTIME:.... See (B, E*, Q, V) ON OVERTIME PAGE.
*Doubletime paid on the 9th hour on Saturday.

HOLIDAY
Paid: See (5, 6, 7, 11, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 16) on HOLIDAY PAGE

9-15dconsult

Painter — 09/01/2016

JOB DESCRIPTION Painter **DISTRICT** 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2016
Brush	$ 46.85
Abatement/Removal of lead based or lead containing paint on materials to be repainted.	46.85
Spray & Scaffold	49.85
Fire Escape	49.85
Decorator	49.85
Paperhanger/Wall Coverer	48.72

SUPPLEMENTAL BENEFITS

Per hour worked:	07/01/2016
Paperhanger	$ 25.79
All others	22.47
Premium*	24.97*

*Applies only to "All others" catergory,not paperhanger journeyman.

OVERTIME PAY
See (A, H) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Indentured after 5/31/93 (1) year terms at the following wage rate.
(per hour)

	07/01/2016
Appr 1st term...	$ 17.85
Appr 2nd term...	23.26
Appr 3rd term...	28.14
Appr 4th term...	37.52

Supplemental benefits:
(per Hour worked)

Appr 1st term...	$ 11.73
Appr 2nd term...	14.42
Appr 3rd term...	16.70
Appr 4th term...	21.20

8-NYDC9-B/S

Painter — 09/01/2016

JOB DESCRIPTION Painter **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Suffolk, Westchester

PARTIAL COUNTIES
Nassau: All of Nassau except the areas described below: Atlantic Beach, Ceaderhurst, East Rockaway, Gibson, Hewlett, Hewlett Bay, Hewlett Neck, Hewlett Park, Inwood, Lawrence, Lido Beach, Long Beach, parts of Lynbrook, parts of Oceanside, parts of Valley Stream, and Woodmere. Starting on the South side of Sunrise Hwy in Valley Stream running east to Windsor and Rockaway Ave., Rockville Centre is the boundary line up to Lawson Blvd. turn right going west all the above territory. Starting at Union Turnpike and Lakeville Rd. going north to Northern Blvd. the west side of Lakeville road to Northern blvd. At Northern blvd. going east the district north of Northern blvd. to Port Washington Blvd. West of Port Washington blvd.to St.Francis Hospital then north of first traffic light to Port Washington and Sands Point, Manor HAven, Harbour Acres.

WAGES

Per hour:	07/01/2016
Drywall Taper	$ 46.85

SUPPLEMENTAL BENEFITS

Per hour worked:	07/01/2016
Journeyman	$ 22.47

OVERTIME PAY
See (A, H) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages(per Hour)	07/01/2016

1500 hour terms at the following wage rate:

1st term	$ 17.85
2nd term	$ 23.26
3rd term	$ 28.14
4th term	$ 37.52

Suppemental Benefits per hour:
One year term (1500 hours)at the following dollar amount.

1st year	$ 11.73
2nd year	$ 14.42
3rd year	$ 16.70
4th year	$ 21.20

8-NYDCT9-DWT

Painter - Bridge & Structural Steel — 09/01/2016

JOB DESCRIPTION Painter - Bridge & Structural Steel **DISTRICT** 8

ENTIRE COUNTIES
Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES
Per Hour Worked:
STEEL:

Bridge Painting:	07/01/2016
From May 1st to Nov. 15th -	
	$ 49.00
	+ 6.13*
From Nov. 16th to April 30th -	
	$ 49.00
	+ 6.13*

*Not subject to overtime and limited to first 40 hours
NOTE: All premium wages are to be calculated on $48.00 or $49.00 per hour only.

EXCEPTION: During the period of May 1st to November 15th, for the first and last week of employment on the project, and for the weeks of Memorial Day, Independence Day and Labor Day, this rate shall be paid for the actual number of hours worked.

Power Tool/Spray is an additional $6.00 per hour above hourly rate, whether straight time or overtime

NOTE: Generally, for Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

SUPPLEMENTAL BENEFITS
Per Hour Worked:

Journeyworker:	07/01/2016
From May 1st to Nov. 15th -	
Hourly Rate up to 40 hours	$ 29.95
Hourly Rate after 40 hours	7.50
From Nov. 16th to April 30th -	
Hourly Rate up to 50 hours	29.70
Hourly Rate after 50 hours	7.50

EXCEPTION: During the period of May 1st to November 15th, for the first and last week of employment on the project, and for the weeks of Memorial Day, Independence Day and Labor Day, this rate shall be paid for the actual number of hours worked.

OVERTIME PAY
See (A, F, R) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (4, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
(Wage per hour Worked):

Apprentices: (1) year terms

	07/01/2016
1st 90 days	$ 22.05
1st year after 90 days	22.05
2nd year	33.08
3rd year	44.10

Supplemental Benefits per hour worked:

	07/01/2016
1st 90 days	$ 9.23
1st year after 90 days	11.98
2nd year	17.97
3rd year	23.96

8-DC-9/806/155-BrSS

Painter - Line Striping — 09/01/2016

JOB DESCRIPTION Painter - Line Striping **DISTRICT** 8

ENTIRE COUNTIES
Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES
Per hour:

	07/01/2016
Painter (Striping-Highway):	
Striping-Machine Operator*	$ 27.11
Linerman Thermoplastic	$ 32.37

Note: * Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work Schedule,' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30R; and there must be a dispensation of hours in place on the project. If the PW30R is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

	07/01/2016
Per hour paid:	
Journeyworker:	
Striping-Machine operator	$ 14.18
Linerman Thermoplastic	$ 14.55

OVERTIME PAY
See (B, E, E2, F, S) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 20) on HOLIDAY PAGE
Overtime: See (5, 8, 11, 12, 15, 16, 17, 20, 21, 22) on HOLIDAY PAGE

8-1456-LS

Painter - Metal Polisher — 09/01/2016

JOB DESCRIPTION Painter - Metal Polisher **DISTRICT** 8

ENTIRE COUNTIES
Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2016	06/01/2017
Metal Polisher	$ 28.88	$ 29.73
Metal Polisher**	29.83	30.68
Metal Poilsher***	32.38	33.23

**Note: Applies on New Construction & complete renovation
*** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2016	06/01/2017
Journeyworker:		
All classification	$ 9.26	$ 9.41

OVERTIME PAY
See (B, E, E2, P, T) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 9, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

One (1) year term at the following wage rates:

	07/01/2016
1st year	$ 11.75
2nd year	13.00
3rd year	15.75

Supplentals benefits:
Per hour paid:

1st year	$ 6.26
2nd year	6.37
3rd year	6.51

8-8A/28A-MP

Plumber **09/01/2016**

JOB DESCRIPTION Plumber **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES
Per hour:

	07/01/2016	11/01/2016
Plumber and Steamfitter	$ 53.16	$ 54.16

SHIFT WORK:
When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 27.43 Per hour paid +$2.73 per hr. worked**	$ 27.43 + $ 2.73 hr worked**

** Not Subject to Overtime.

OVERTIME PAY
See (B, E, E2, Q, V) on OVERTIME PAGE
OVERTIME:... See on OVERTIME PAGE.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1)year terms at the following wages.

1st Term	$ 19.61	$ 20.00
2nd Term	22.55	22.99
3rd Term	26.00	26.52
4th Term	37.27	37.98
5th Term	40.01	40.77

Supplemental Benefits per hour:
Apprentices

1st term	$11.58 per hour paid + 1.16 per hour worked	$11.58 per hour paid + 1.16 per hour worked
2nd term	12.82 per hour paid + 1.30 per hour worked	12.82 per hour paid + 1.30 per hour worked
3rd term	15.28 per hour paid + 1.60 per hour worked	15.28 per hour paid + 1.60 per hour worked

4th term	19.58 per hour paid + 2.36 per hour worked	19.58 per hour paid + 2.36 per hour worked
5th term	20.85 per hour paid + 2.36 per hour worked	20.85 per hour paid + 2.36 per hour worked

8-21.1-ST

Plumber - HVAC / Service — 09/01/2016

JOB DESCRIPTION Plumber - HVAC / Service **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Putnam, Westchester

PARTIAL COUNTIES
Delaware: Only the townships of Middletown and Roxbury
Ulster: Entire County(including Wallkill and Shawangunk Prisons) except for remainder of Town of Shawangunk and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES
Per hour: 07/01/2016

HVAC Service $ 41.10

SUPPLEMENTAL BENEFITS
Per hour worked:
07/01/2016

Journeyworker HVAC Service
$ 19.19 per hour worked
+ 1.10 per hour worked**

** Not subject to overtime

OVERTIME PAY
See (B, *E, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
HVAC SERVICE

REGISTERED APPRENTICES
(1)year terms at the following wages.

	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
07/01/2016	$ 19.23	$ 22.47	$ 28.05	$ 34.31	$36.94

Supplemental Benefits per hour worked:

Apprentices	07/01/2016
1st term	$ 15.63 per hour worked + 1.10 per hour worked**
2nd term	$ 16.25 per hour worked + 1.10 per hour worked**
3rd term	$ 16.99 per hour worked + 1.10 per hour worked**
4th term	$ 17.89 per hour worked + 1.10 per hour worked**
5th term	$ 18.57 per hour worked + 1.10 per hour worked**

** Not subject to overtime

8-21.1&2-SF/Re/AC

Plumber - Jobbing & Alterations — 09/01/2016

JOB DESCRIPTION Plumber - Jobbing & Alterations **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Putnam, Ulster, Westchester

WAGES
Per hour:

	07/01/2016	11/01/2016
Journeyworker:	$ 41.15	$ 41.95

Repairs, replacements and alteration work is any repair or replacement of a present plumbing system that does not change existing roughing or water supply lines.

SHIFT WORK:
When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker

	$ 22.91 per hour paid	$ 22.91
	+2.73 per hour worked**	+ 2.73

**Not subject to overtime

OVERTIME PAY
See (B, *E, E2, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1) year terms at the following wages.

1st year	$ 18.06	$ 18.37
2nd year	20.00	20.35
3rd year	21.48	21.89
4th year	30.26	30.83
5th year	31.90	32.51

Supplemental Benefits per hour:

Apprentices	
1st year	$ 7.38 per hour paid + 0.50 per hour worked
2nd year	8.48 per hour paid + 0.93 per hour worked
3rd year	11.84 per hour paid + 1.05 per hour worked
4th year	15.72 per hour paid + 1.46 per hour worked
5th year	16.87 per hour paid + 1.90 per hour worked

8-21.3-J&A

Roofer — 09/01/2016

JOB DESCRIPTION Roofer **DISTRICT** 9

ENTIRE COUNTIES
Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

WAGES

Per Hour:	07/01/2016
Roofer/Waterproofer	$ 42.20

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

SUPPLEMENTAL BENEFITS

Journeyworker $ 28.93

OVERTIME PAY

See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following percentage of Journeyworkers hourly wage.

1st	2nd	3rd	4th
35%	50%	60%	75%

Supplements per hour paid at the following rates:

1st	2nd	3rd	4th
$ 2.70	$ 14.76	$ 17.59	$ 21.85

9-8R

Sheetmetal Worker — 09/01/2016

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

	07/01/2016
SheetMetal Worker	$ 43.16

SHIFT WORK

For all NYS D.O.T. and other Governmental mandated off-shift work:
10% increase for additional shifts for a minimum of five (5) days

SUPPLEMENTAL BENEFITS

Journeyworker $ 37.87

OVERTIME PAY

OVERTIME:.. See (B, E, Q,) on OVERTIME PAGE.

*Note: For Sundays or Holidays worked, HOURLY WAGE is double the total of the hourly wage plus the hourly benefit paid all in wages. (Benefits are included in the wages).

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE

REGISTERED APPRENTICES

1st	2nd	3rd	4th	5th	6th	7th	8th
$15.97	$17.96	$ 19.96	$ 21.95	$ 23.94	$ 25.95	$ 28.42	$ 30.88

Supplemental Benefits per hour:

Apprentices	
1st term	$ 16.00
2nd term	18.11
3rd term	20.18
4th term	22.26
5th term	24.38
6th term	26.46
7th term	28.08
8th term	29.70

Sheetmetal Worker — 09/01/2016

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 4

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES
Per Hour: 07/01/2016

Sign Erector $ 46.85

NOTE: Structurally Supported Overhead Highway Signs(See STRUCTAL IRON WORKER CLASS)

SUPPLEMENTAL BENEFITS
Per Hour: 07/01/2016

Sign Erector $ 42.34

OVERTIME PAY
See (A, F, S) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
Per Hour:
6 month Terms at the following percentage of Sign Erectors wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
35%	40%	45%	50%	55%	60%	65%	70%	75%	80%

SUPPLEMENTAL BENEFITS
Per Hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$11.78	$13.35	$14.93	$16.49	$23.12	$25.13	$27.87	$29.95	$32.04	$34.11

4-137-SE

Sprinkler Fitter — 09/01/2016

JOB DESCRIPTION Sprinkler Fitter **DISTRICT** 1

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES
Per hour

	07/01/2016
Sprinkler Fitter	$ 41.47

SUPPLEMENTAL BENEFITS
Per hour worked

Journeyman $ 21.30

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES
Wages per hour

For Apprentices HIRED PRIOR TO 04/01/2010:

One Half Year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
50%	50%	55%	60%	65%	70%	75%	80%	85%	90%

Supplemental Benefits per hour worked

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 8.15	$ 8.15	$ 15.12	$ 15.12	$21.30	$21.30	$21.30	$21.30	$21.30	$21.30

For Apprentices HIRED ON OR AFTER 04/01/2010:

One Half Year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
45%	50%	55%	60%	65%	70%	75%	80%	85%	90%

Supplemental Benefits per hour worked

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 8.68	$ 8.74	$ 15.52	$ 15.58	$ 16.04	$ 16.20	$ 16.26	$ 16.31	$ 16.37	$ 16.43

For Apprentices HIRED ON OR AFTER 04/01/2013:

One Half Year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
45%	50%	55%	60%	65%	70%	75%	80%	85%	90%

Supplemental Benefits per hour worked

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 7.90	$ 7.90	$ 15.12	$ 15.12	$ 15.37	$ 15.37	$ 15.37	$ 15.37	$ 15.37	$ 15.37

1-669.2

Teamster - Building / Heavy&Highway — 09/01/2016

JOB DESCRIPTION Teamster - Building / Heavy&Highway **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES
GROUP A: Straight Trucks (6-wheeler and 10-wheeler), A-frame, Winch, Dynamite Seeding, Mulching, Agitator, Water, Cement (all types), Suburban, Station Wagons, Cars, Pick Ups, any vehicle carrying materials of any kind.

GROUP B: Tractor & Trailers (all types).

GROUP BB: 14 Wheeler

GROUP C: Low Boy (carrying equipment).

GROUP CC: Light Tower, Attenuator Trucks

GROUP D: Fuel Trucks, Tire Trucks.

GROUP E: Off-road Equipment (over 40 tons): Athey Wagons, Belly Dumps, Articulated Dumps, Trailer Wagons.

GROUP F: Off-road Equipment (over 40 tons) Euclid,DJB.

GROUP G: Off-road Equipment (under 40 tons) Athey Wagons, Belly Articulated Dumps, Trailer Wagons.

GROUP H: Off-road Equipment(under 40 tons), Euclid.

GROUP HH: Off-road Equipment(under 40 tons)D.J.B.

GROUP I: Off-road Equipment(under 40 tons)Darts.

GROUP II: Off-road Equipment(under 40 tons)RXS.

WAGES:(per hour)

	07/01/2015	07/01/2016
GROUP A	$ 39.52*	+ Additional $ 1.75
GROUP B	40.14*	
GROUP BB	39.64*	
GROUP C	42.27*	
GROUP CC	39.52*	
GROUP D	39.97*	
GROUP E	40.52*	
GROUP F	41.52*	
GROUP G	40.27*	
GROUP H	40.89*	
GROUP HH	41.27*	
GROUP I	41.02*	
GROUP II	41.39*	

* To calculate premium wage, subtract $ .20 from the hourly wage.

Note: Fuel truck operators on construction sites addit. $5.00 per day.
For work on hazardous/toxic waste site addit. 20% of hourly rate.

Shift Differential:NYS DOT or other Governmental Agency contracts shall receive a shift differential of Fifteen(15%)percent above the wage rate

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Fridays and Saturdays may be used as make-up days at straight time when a day during the work week has been lost due to inclement weather.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30R; and there must be a dispensation of hours in place on the project. If the PW30R is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS
Per hour paid:
Journeyworker

First 40 hours	$25.32
41st-45th hours	10.13
Over 45 hours	0.25

NOTE: Employees entitled to 1 week of paid vacation based on group classification after 90 days of employment.

OVERTIME PAY
See (B, E, P, R) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 9, 15, 25) on HOLIDAY PAGE

8-456

Welder **09/01/2016**

JOB DESCRIPTION Welder **DISTRICT** 1

ENTIRE COUNTIES
Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES
Per hour 07/01/2016

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY

HOLIDAY

1-As Per Trade

Westchester County Residential

Carpenter - Residential — 09/01/2016

JOB DESCRIPTION Carpenter - Residential **DISTRICT** 11

ENTIRE COUNTIES
Putnam, Rockland, Westchester

WAGES
Per hour:

	07/01/2016
Carpenter	$ 35.49

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyworker	$ 24.48

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 10, 16) on HOLIDAY PAGE

REGISTERED APPRENTICES
(1)year terms at the following wages.

1st	2nd	3rd	4th
$17.57	$ 20.51	$23.45	$26.40

Supplemental Benefits per hour worked:

Apprentice all terms	$ 12.48

11-279.1r

Insulator - Heat & Frost - Residential — 09/01/2016

JOB DESCRIPTION Insulator - Heat & Frost - Residential **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Rockland, Westchester

WAGES
WAGES:(per hour)

	07/01/2016
Asbestos Worker	$ 40.14
Apprentices	25.79
Fire Stop Work*	
Asbestos Worker	25.79

* Applies on all exclusive Fire Stop Work (when contract is for Fire Stop Work only). No apprentices on these contracts only.

Note: Additional $0.50 per hour for work 30 feet or more above floor or ground level.

SUPPLEMENTAL BENEFITS
(Per hour paid)

Journeyworker	$ 25.68
Apprentice	16.07
Fire Stop Work:	
Journeyworker	16.07

OVERTIME PAY
OVERTIME: See (B, E, Q, T*, V) on OVERTIME PAGE.

HOLIDAY
HOLIDAY:
Paid:..... See (1) on HOLIDAY PAGE.
Overtime:.. See (2*, 4, 6, 16, 25) on HOLIDAY PAGE.
*Note: Labor Day triple time if worked.

8-91R

Laborer - Residential — 09/01/2016

JOB DESCRIPTION Laborer - Residential **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

WAGES

	07/01/2016
Laborer	$ 30.85

SUPPLEMENTAL BENEFITS
(per hour worked)

Journeyworker	$ 17.65

OVERTIME PAY
OVERTIME: See (B, E, Q, V*) on OVERTIME PAGE.
*Note: For Sundays and Holidays worked benefits are at the same premium as wages.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES
(hourly) terms at the following wage.

Level A	Level B	Level C	Level D	Level E
0-1000	1001-2000	2001-3000	3001-4000	4001+
$19.20	22.69	26.18	29.67	30.85

Supplemental Benefits

Level A	$ 9.85
Level B	11.64
Level C	13.43
Level D	15.22
Level E	17.65

8-235r

Operating Engineer - Residential — 09/01/2016

JOB DESCRIPTION Operating Engineer - Residential **DISTRICT** 8

ENTIRE COUNTIES
Putnam, Westchester

PARTIAL COUNTIES
Dutchess: South of a West/East line through Dutchess County starting at the Northern Boundary of the City of Poughkeepsie.

WAGES
Usage: On Private Residential and Private Commercial projects where the aggregate amount of the Building is $12 million or less.

Building Construction will begin from the pouring of the footing.

GROUP I:
Cranes(All Types up to 49 tons), Boom Trucks, Cherry Pickers, Clamshell Crane, Derrick, Dragline, Franki Pile Rig or similar, High Lift (Lull or similar) with crane attachment and winch used for hoisting or lifting, Pile Drivers, Potain and similar.

Cranes (All types 50-99 tons), Conventional and Hydraulic.

Cranes (All types 100 tons and over), Tower, Climbing, Conventional, Hydraulic.

GROUP I-A: Barber Green Loader-Euclid Loader, Bulldozer, Carrier-Trailer Horse, Concrete Cleaning Decontamination Machine Operator,Concrete-Portable Hoist, Conway or Similar Mucking Machines, Elevator & Cage, Excavators all types, Front End Loaders, Gradall, Shovel, Backhoe, etc.(Crawler or Truck), Heavy Equipment Robotics Operator/Mechanic, Hoist Engineer-Material, Hoist Portable Mobile Unit, Hoist-Single, Double or Triple Drum, Horizontal Directional Drill Locator, Horizontal Directional Drill Operator,and Jersey Spreader, Letourneau or Tournapull(Scrapers over 20 yards Struck), Lift Slab Console, etc., Lull HiLift or Similar, Maintenance Engineer, Master Environmental Maintenance Mechanics, Mucking Machines Operator/Mechanic or Similar Type, Overhead Crane, Pavement Breaker(Air Ram), Paver(Concrete), Post Hole Digger, Power House Plant, Road Boring Machine, Road Mix Machine, Ross Carrier and Similar Machines, Rubber tire double end backhoes and similar machines, Scoopmobile Tractor-Shovel Over 1.5 yards, Shovel (Tunnels Side Boom, Spreader (Asphalt Telephies(Cableway), Tractor Type Demolition Equipment, Trenching Machines Vermeer Concrete Saw Trencher and Similar, Ultra High Pressure Waterjet Cutting Tool System, Vacuum Blasting Machine operator/mechanic, Winch Truck A Frame).

GROUP I-B: Compressor (Steel Erection), Mechanic (Outside All Types, Negative Air Machine (Asbestos Removal), Pulse Meter, Push Button (Buzz Box), Elevator, Welder.

GROUP II: Bulldozer D6 and Under, Compactor Self-Propelled, Grader, Machines Pulling Sheep's Foot Roller, Roller 4 ton and over, Scrapers-20 yards Struck and Under, Vibratory Rollers, etc.

GROUP III-A: Asphalt Plant, Boiler (High Pressure), Concrete Mixing Plants, Concrete Pump, Fireman, Forklift, Forklift (Electric) Joy Drill or similar Tractor Drilling Machine, Loader-1 1/2 yards and under, Locomotive (All Sizes), MixerConcrete-21E and over, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher, Quarry Master, StoneCrusher, Well Drilling Machine, Well Point System, Concrete Buggy, One Yard and Up Ride on Dumper, Benford or Similar,Bobcat.

GROUP III-B: Compressor Over 125 cu.Feet, Conveyor Belt Machine Regardless of Size, Compressor Plant, Ladder Hoist, Lighting Unit (Portable & Generator), Stud Machine, Welding Machine (Steel Erection & Excavation).

GROUP IV-A: Air Tractor Drill, Batch Plant, Bending Machine, Concrete Breaker, Concrete Spreader, Curb Cutter Machine, Farm Tractor (all types), Finishing Machine-Concrete, Material Hopper-sand stone-cement, Mixer-Concrete-Under 21E, Mulching Grass Spreader, Pump-Gypsum etc, Fine Grading Machine, Roller under 4 Ton Hepa Vac Clean Air Machine, Spreading and Fine Grading Machine, Steel Cutting Machine, Siphon Pump-air-steam, Tar Joint Machine, Turbo Jet Burner or Similar Equipment, Vibrator (1 to 5), Fine Grading Machine, Roof Joist (Tugger Hoist), Television Cameras for Water, Sewer, Gas etc. Pump-Plaster-Grout Fireproofing.

Group IV-B: Chipper, Mulcher, Compressor, Dust Collector, Heater (All Types), Pump, Pump Station.

Group V: Maintenance Engineer (Crane Only-75 Ton and over), Mechanic's Helper, Stockroom Attendent, Welder's Helper.

Group VI-A: Certified Welder

Group VI-B: Utility Person, Warehouse Person

WAGES:(per hour)

	07/01/2016	03/06/2017
GROUP I		
Cranes (All- up to 75 tons)	$ 59.81	$ 61.70
Cranes (All- 75-99 tons)	61.91	63.86
Cranes (All- 100 tons & over)	70.76	72.99
GROUP I-A	44.79	45.87
GROUP I-B	42.36	43.38
GROUP II	43.18	44.21
GROUP III-A	42.93	43.97
GROUP III-B	40.58	41.55
GROUP IV-A	42.76	43.79
Group IV-B	35.73	36.58
Group V:	40.66	41.63
Group VI-A	47.06	48.19
Group VI-B	37.00	37.89

An additional 20% to the wage when required to wear protective equipment on hazardous/toxic waste projects. Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional $2.00 per hour. Engineers operating cranes with booms 149 feet or over in length will be paid an additional $3.00 per hour. Loader operators over 5 cubic yards capacity additional .50 per hour. Shovel operators over 4 cubic yards capacity additional $1.00 per hour.

SUPPLEMENTAL BENEFITS

(Per hour)

Journeyworker	07/01/2016	03/06/2017
	$ 19.75 Per hour paid + $8.02	$ 20.50 Per hour paid + $ 8.02

Per hour worked Per hour worked

OVERTIME PAY
See (B, E, Q, T, V) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 7, 8, 11, 12) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 8, 11, 12) on HOLIDAY PAGE
* Note: For Holiday codes 5 & 6, code T applies.
Note: If employees are required to work on Easter Sunday they shall be paid at the rate of triple time.

8-137R

Sheetmetal Worker - Residential — 09/01/2016

JOB DESCRIPTION Sheetmetal Worker - Residential **DISTRICT** 8

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES
WAGES: (per hour)

	07/01/2016
Sheetmetal Worker	$ 29.78

SHIFT WORK
For all NYS D.O.T. and other Governmental mandated off-shift work:
10% increase for additional shifts for a minimum of five (5) days

SUPPLEMENTAL BENEFITS
Journeyworker $ 20.87

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE

REGISTERED APPRENTICES
REGISTERED APPRENTICES WAGES: (per hour)
(1/2) year terms at the following rates.

1st	2nd	3rd	4th	5th	6th	7th	8th
15.51	16.96	18.44	19.84	21.65	23.26	25.16	26.72

REGISTERED APPRENTICES WAGES: (per hour)
Supplemental Benefits

1st	$ 12.36
2nd	13.42
3rd	14.50
4th	15.62
5th	16.35
6th	17.25
7th	17.92
8th	18.87

8-38r

Sprinkler Fitter - Residential — 09/01/2016

JOB DESCRIPTION Sprinkler Fitter - Residential **DISTRICT** 1

ENTIRE COUNTIES
Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES
IMPORTANT NOTE: "Residential fire protection work" is applicable to one or two family dwellings, all multiple family dwelling units which are permitted to have a single exterior up to and including four stories, townhouses with units stacked vertically up to and including four stories and group residential care facilities and protective care homes (sheltered housing), not to include nursing homes or ambulatory care facilities.

Per hour

	07/01/2016
Sprinkler	$ 31.10

Fitter

SUPPLEMENTAL BENEFITS
Per hour worked

Journeyman $ 21.30

OVERTIME PAY
See (B, H) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

1-669r2

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

(AA)	Time and one half of the hourly rate after 7 and one half hours per day
(A)	Time and one half of the hourly rate after 7 hours per day
(B)	Time and one half of the hourly rate after 8 hours per day
(B1)	Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday. Double the hourly rate for all additional hours
(B2)	Time and one half of the hourly rate after 40 hours per week
(C)	Double the hourly rate after 7 hours per day
(C1)	Double the hourly rate after 7 and one half hours per day
(D)	Double the hourly rate after 8 hours per day
(D1)	Double the hourly rate after 9 hours per day
(E)	Time and one half of the hourly rate on Saturday
(E1)	Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
(E2)	Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
(E3)	Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
(E4)	Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
(E5)	Double time after 8 hours on Saturdays
(F)	Time and one half of the hourly rate on Saturday and Sunday
(G)	Time and one half of the hourly rate on Saturday and Holidays
(H)	Time and one half of the hourly rate on Saturday, Sunday, and Holidays
(I)	Time and one half of the hourly rate on Sunday
(J)	Time and one half of the hourly rate on Sunday and Holidays
(K)	Time and one half of the hourly rate on Holidays
(L)	Double the hourly rate on Saturday
(M)	Double the hourly rate on Saturday and Sunday
(N)	Double the hourly rate on Saturday and Holidays
(O)	Double the hourly rate on Saturday, Sunday, and Holidays
(P)	Double the hourly rate on Sunday
(Q)	Double the hourly rate on Sunday and Holidays
(R)	Double the hourly rate on Holidays
(S)	Two and one half times the hourly rate for Holidays, if worked

(S1)	Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
(T)	Triple the hourly rate for Holidays, if worked
(U)	Four times the hourly rate for Holidays, if worked
(V)	Including benefits at SAME PREMIUM as shown for overtime
(W)	Time and one half for benefits on all overtime hours.

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

(1)	None
(2)	Labor Day
(3)	Memorial Day and Labor Day
(4)	Memorial Day and July 4th
(5)	Memorial Day, July 4th, and Labor Day
(6)	New Year's, Thanksgiving, and Christmas
(7)	Lincoln's Birthday, Washington's Birthday, and Veterans Day
(8)	Good Friday
(9)	Lincoln's Birthday
(10)	Washington's Birthday
(11)	Columbus Day
(12)	Election Day
(13)	Presidential Election Day
(14)	1/2 Day on Presidential Election Day
(15)	Veterans Day
(16)	Day after Thanksgiving
(17)	July 4th
(18)	1/2 Day before Christmas
(19)	1/2 Day before New Years
(20)	Thanksgiving
(21)	New Year's Day
(22)	Christmas
(23)	Day before Christmas
(24)	Day before New Year's
(25)	Presidents' Day
(26)	Martin Luther King, Jr. Day
(27)	Memorial Day

SECTION 40
W-9 REQUEST FOR TAXPAYER IDENTIFICATION NUMBER AND CERTIFICATION

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

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

Print or type
See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____

Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

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

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

Social security number

			–			–				

or

Employer identification number

		–							

Part II Certification

Under penalties of perjury, I certify that:

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

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

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

General Instructions

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

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

Purpose of Form

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

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

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

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

By signing the filled-out form, you:

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

Note. If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States:

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* above.

What is FATCA reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code* on page 3 and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of $50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a $500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account, list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note. ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C Corporation, or S Corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

Limited Liability Company (LLC). If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the "Limited Liability Company" box and enter "P" in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the "Limited Liability Company" box and in the space provided enter "C" for C corporation or "S" for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the "Limited Liability Company" box; instead check the first box in line 3 "Individual/sole proprietor or single-member LLC."

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)

2—The United States or any of its agencies or instrumentalities

3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over $600 required to be reported and direct sales over $5,000[1]	Generally, exempt payees 1 through 5[2]
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

[1] See Form 1099-MISC, Miscellaneous Income, and its instructions.

[2] However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note. You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on this page), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at *www.ssa.gov*. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/businesses* and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: *A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.*

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account[1]
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor[2]
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee[1] The actual owner[1]
5. Sole proprietorship or disregarded entity owned by an individual	The owner[3]
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	**Give name and EIN of:**
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity[4]
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

[4] List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 2.

*Note. Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov*. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: *spam@uce.gov* or contact them at *www.ftc.gov/idtheft* or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

PART THREE
TECHNICAL SPECIFICATIONS

TOWN OF YORKTOWN
SERVICES AND PUBLIC WORKS CONTRACTS BID

PART THREE

Technical Specifications

Section 0101 Site Preparation and Removals

Section 0102 Survey and Stakeout

Section 0103 Erosion and Sediment Control

Section 0201 Earthwork

Section 0202 Unclassified Excavation

Section 0203 Select Fill Material

- 0203.1 Borrow Material
- 0203.2 Select Granular Fill
- 0203.3 Granular Fill

Section 0204 Crushed Stone Fill

Section 0205 Nature Trail

Section 0206 Gravel Parking Area

Section 0301 Asphalt Pavement

- 0301.1 Asphalt Driveway & Parking Pavement
- 0301.2 Asphalt Pavement – 2" Thick
- 0301.3 Asphalt Pavement – Pickleball Court Expansion
- 0301.4 Asphalt Overlay – 2" Thick
- 0301.5 Asphalt Replacement – Basketball Court

Section 0401 Cast-In-Place Concrete

Section 0402 Cast-In-Place Concrete Curbs

Section 0501 Water Main

- 0501.1 Watermain
- 0501.2 CLSM/Flowable Fill

Section 0502 Force Main

Section 0503 Copper Service

Section 0601 Drainage Conveyance System

- 0601.1 24" Dia. HDPE Drainage Pipe
- 0601.2 18" Dia. HDPE Drainage Pipe
- 0601.3 Shoulder Drain - 4" Diameter
- 0601.4 Swale – Grass / Rip-Rap

Section 0602 Furnish and Install Sanitary Sewers

Section 0701 Precast Concrete Catch Basins

Section 0702 Precast Concrete Manholes

Section 0703 Sewage Pumping Station

Technical Specifications Continued

Section 0704 Stormwater Management System Basins (Pocket Wetlands)

Section 0801 Site Lighting

Section 0802 Building Services – General Plumbing & Electrical Work

Section 0803 Athletic Field Lighting

Section 0901 Synthetic Turf Fields

Section 0902 Outdoor Equipment

Section 0903 Dugouts

Section 0904 Metal Fence & Gates

- 0904.1 Backstop Fence
- 0904.2 4' High Fence
- 0904.3 6' High Fence

Section 0905 Pavement Markings

Section 0906 Site Restoration

- 0906.1 Reconstruction of the Basketball Courts
- 0906.2 Rehabilitation of the Handball Courts
- 0906.3 Topsoil & Seeding
- 0906.4 Landscape Plantings
- 0906.5 Tree Planting
- 0906.6 Stone Retaining Wall
- 0906.7 Brick Pavers
- 0906.8 Grass Pavers
- 09906.9 Gravel Path
- 0906.10 Pickleball Courts – Playing Surface

Section 0907 Traffic Signs

Section 0908 Timber Guard Rail

Section 1001 Site Mobilization & Demobilization

Section 1002 Additional Miscellaneous Work

SECTION 0101

SITE PREPARATION AND REMOVALS

PART 1: WORK

1.01 DESCRIPTION

Under this Work, the Contractor shall furnish all labor, materials and equipment necessary to perform clearing, grubbing and removals within the proposed construction area as required to complete the work. This shall include and not be limited to such work as removing shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, masonry, large boulders, concrete rubble, jersey barriers, signs, posts, wood, old athletic equipment, chain link fencing, rubbish, asphalt pavement and other objectionable materials as directed by the Engineer or Town. Work shall include but not be limited to the following:

A. The Contractor shall carefully protect all trees and shrubs and other landscape vegetation to remain in accordance with the Section 0906 Site Restoration. The Engineer or Town shall have the final authority on the removal of all trees and existing features to remain. The Contractor at his expense in accordance with Section 0906 Site Restoration and the General Conditions shall replace any trees removed contrary to the orders of the Engineer or Town. The Contractor shall be responsible for any and all damages to property caused by the removals operations. All damaged trees and plants or improvements shall be replaced or restored to their original condition to the satisfaction of the Engineer and Town. Further, any new or existing improvements to remain shall also be protected throughout the construction of the project. The Contractor will be responsible at his expense to replace any improvements damaged by his company workers and those of any subcontractors.

B. All materials removed under this item, which are not to be reset, shall be promptly and legally disposed of offsite by the Contractor. Burning material shall not be allowed. No removed trees, shrubs, stumps, roots, wood chips, branches, stone, concrete debris etc. may be used as backfill.

C. The Engineer or Town at their discretion may require additional work under this section if they deem this work necessary to comply with the intent of this project. Any work not included under this specification but required for the successful completion of project work shall be performed by the Contractor as directed by the Engineer or Town and paid for under Item 1002 Additional Miscellaneous Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0102 Survey and Stakeout
B. Section 0103 Erosion and Sediment Control
C. Section 0201 Earthwork
D. Section 0202 Unclassified Excavation
E. Section 0402 Cast-In-Place Concrete Curbs
F. Section 0501 Water Main

G. Section 0502 Force Main
H. Section 0601 Drainage Conveyance System
I. Section 0602 Furnish and Install Sanitary Sewers
J. Section 0704 Stormwater Management System Basins (Pocket Wetlands)
K. Section 0801 Site Lighting
L. Section 0901 Synthetic Turf Preparation
M. Section 0904 Metal Fence & Gates
N. Section 0906 Site Restoration

1.03 REFERENCES

THIS SECTION LEFT BLANK

1.04 DEFINITIONS

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1.05 SUBMITTALS

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1.06 QUALITY ASSURANCE

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PART 2: MATERIALS

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PART 3: METHOD

3.01 DESCRIPTION

Unless otherwise directed, the Contractor shall thoroughly clear, grub and remove all materials specified as well as all objectionable surface material flush with existing grades. Trees, stumps, roots and shrubs will be removed to a depth of two feet below subgrade or as required to provide a suitable subgrade upon which the proposed facilities shall be constructed.

A. Existing topsoil shall be stored on site and protected during the course of construction.

B. Removed signs shall be stored on site and protected during the course of construction.

C. The Contractor shall stockpile all woodchips for later reuse. The wood chips shall be used for construction of the Nature Trail. Unused woodchip mulch can be used for site stabilization during construction.

D. The stone recovered from demolition of the existing stone walls shall be stored for later re-use.
E. The concrete jersey barriers shall be stored and shall become the property of the Town.

3.02 CLEARING AND REMOVALS

From areas to be cleared, the Contractor shall cut or otherwise remove all sapling trees, brush, and other vegetable matter such as snags, bark, shrubbery, shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, masonry, large boulders, concrete rubble, jersey barriers, signs, posts, wood, old athletic equipment, chain link fencing, rubbish, asphalt pavement and other objectionable materials as directed by the Engineer or Town. No debris may be disposed of on premises.

3.03 GRUBBING

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3.04 STRIPPING

A. All stumps, roots, foreign matter, topsoil, loam and unsuitable earth shall be stripped from the ground surface. The topsoil and loam shall be utilized insofar as possible, for finished surfacing unless otherwise directed by the Engineer. Only excess or unsuitable soils shall be taken from the site unless otherwise directed by the Engineer or Town.

B. Strip topsoil to depths encountered in a manner that prevents intermingling of topsoil with underlying subsoil or other objectionable material. The Contractor shall not strip topsoil from within the drip line of any tree to remain.

3.05 STOCKPILING

The Contractor shall stockpile topsoil and excavated soile suitable for reuse in storage piles where approved by the Engineer or Town and construct stockpiles so that surface water drains freely. Additionally, the Contractor shall stockpile woodchips from the tree mulching operation for reuse. No additional payment will be made to the contractor for importing woodchips.

3.06 DISPOSAL

The Contractor shall protect topsoil piles if required by the work. Silt fencing around the perimeter shall be installed to prevent soil erosion and sedimentation. All material resulting not scheduled for reuse or stockpiling shall become the property of the Contractor and shall be suitably disposed of off site in accordance with all applicable laws, ordinances, rules and regulations, unless otherwise directed by the Engineer or Town.

All removed trees, shrubs, stumps, roots, wood chips or branches, concrete debris, asphalt debris, remains of utilities or other structures, or any debris remaining from site preparation or excavation must be disposed of off-site. No woody debris must be used as fill or backfill or embankments or dikes.

Such disposal shall be performed as promptly as possible after removal of the material and shall not be left until the final period of cleaning up. It is the Contractor's responsibility to properly dispose of any materials to be removed off-site as per all sections of these specifications. The Contractor is responsible to find a legitimate disposal site and must obtain any permits or licenses required for proper disposal. The Contractor is responsible for any fees or fines associated with the proper disposal of any materials outline in all sections of these specifications.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary to clear, grub and remove all material specified and required by the work within the limits shown on the Contract Drawings and as directed by the Engineer or Town.

The Work shall include but not be limited to clearing surface material such as removing shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, masonry, large boulders, stone, concrete rubble, jersey barriers, signs, posts, wood, old athletic equipment, chain link fencing, rubbish, asphalt pavement and other objectionable materials as determined and directed by the Engineer or Town.

END OF SECTION

SECTION 0102

SURVEY AND STAKEOUT

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall perform all necessary land surveying required to construct all elements of the project as shown on the Contract Drawings and described in the Specifications. The Contractor is to protect all boundary and survey markers that are either shown on the plans or discovered on the project site. This work shall include but not be limited to stakeout, layout, elevations, cross sections as required and markers for all aspects of the project, as shown and as required. Work shall be performed by a NYS Licensed Land Surveyor and experienced personnel. This work shall include three (3) copies and a digital copy of the project "As-Built" including underground utilities and structures (water service, electric, drainage).

1.02 RELATED WORK SPECIFIED ELSEWHERE

THIS SECTION LEFT BLANK

1.03 REFERENCES

THIS SECTION LEFT BLANK

1.04 DEFINITIONS

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1.05 SUBMITTALS

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PART 2: MATERIALS

THIS SECTION LEFT BLANK

PART 3: METHOD

3.01 DESCRIPTION

All work performed and materials utilized for Survey and Stakeout shall be as specified in Sections 625-1.01, 625-1.02, 625-1.03, 625-1.04, 625-1.05, 625-2.01, 625-2.02, 615-2.03, 625-2.04, 625-3.01, 625-3.02, 625-3.03, 625-3.04, 625-3.05 of the New York State Department of Transportation Standard Specifications of January 1, 2017 and shall be done to the satisfaction of the Engineer.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for all Work under this item, shall be at the **Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary for Survey, Construction Stakeout and As-Built Drawings.

END OF SECTION

SECTION 0103

EROSION AND SEDIMENT CONTROL (E&SC)

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall provide all materials, equipment, and labor to install and maintain the measures which are required to prevent erosion and control sediment as specified on the Contact Drawings and/or direction of the Engineer or Town. The Contractor shall be responsible to continuously maintain, reinstall or relocate the erosion and sediment controls (E&SC) throughout the duration of the project and until such time as the site is stable and so directed to remove such practices by the Engineer or Town. The Contractor shall understand that the transport of sediment off the site in any form is fully his responsibility and he shall clean, repair damage, and pay imposed fines at the Contractor's expense.

1.02 RELATED WORK SPECIFIED ELSEWHERE

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1.03 REFERENCE

New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC), November 2016 or latest edition.

1.04 DEFINITIONS

THIS SECTION LEFT BLANK

1.05 SUBMITTALS

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PART 2: MATERIALS

2.01 STABILIZED CONSTRUCTION ENTRANCE

A. Stabilized construction entrances if directed by the Engineer or Town shall be provided at all construction site traffic entrance/exit points, as specified in the Standard Specifications for Stabilized Construction Entrance included in the NYSSSESC. A stabilized construction entrance shall be provided, location as shown on the Contract Drawings. The Contractor's actual plans to enter and exit the construction site may require additional installations; these will be provided as required to provide complete site access coverage, at no cost to the Town.

The symbols shown on the Contract Drawings are schematic only and do not precisely indicate locations of the stabilized construction entrances. These stabilized entrances shall be provided as close to paved-surface roadways as practicable.

B. The stabilized construction entrances shall be provided to any activity on the site; maintained throughout construction and removed, and area restored, following construction, unless incorporated as part of the work.

2.02 SILT FENCE

A. Silt fences, as specified in the Standard Specifications for Silt Fence included in the NYSSSESC shall be installed and maintained to control and prevent sediment movement. The silt fence shall be installed in the locations shown on the drawings or any other location deemed necessary by the Engineer and shall meet the specifications as per the standard detail.

Required locations for these fences will at the minimum include the following:

1. All areas down gradient of the construction site; including areas between the construction site and waterways and wetlands.
2. Steeply sloped areas as required.
3. Other areas as shown on the Contract Drawings.

B. Silt fences shall be installed prior to site disturbance that requires such protection, and maintained throughout the period of disturbance.

C. Silt fences shall be removed following establishment of sufficient vegetation to control and prevent erosion.

2.03 SOIL STOCKPILE

Areas are provided for temporary stockpiling of delivered soil material for the construction. These areas will be contained with sediment fence to prevent the movement of sediment. The stockpiles, if not active for more than seven (7) days, will be seeded and mulched. The stockpile areas were placed to best suit the proposed construction activity. The stockpile will be installed as per the drawings.

2.04 TEMPORARY VEGETATIVE COVER

This stabilization measure may be temporary and in other cases permanent vegetative cover is used. The vegetative cover specifications are based on the NYSSSESC Manual. On the Constructions Plans are notes, locations, and specifications as to the vegetative cover requirements. In the notes, there are specific situations and time constraints related to stabilization of disturbed areas. The specifications give seed and fertilizer mixes as well as placement. Any disturbed area expected to remain exposed for more than seven (7) days shall receive temporary vegetative cover.

2.05 TEMPORARY SEDIMENT TRAP

The Erosion and Sediment Control Plan provides the location for temporary sediment traps. The sediment traps are to be placed in the location of the point of concentration of runoff and therefore the logical place to collect sediment or as directed by the Engineer. This practice can be relocated or additional traps may be installed to accommodate the current construction phase. Within the Erosion Control Notes and Construction Sequence, there are specific requirements for the installation and maintenance during construction. These can be found in the Construction Plans. Upon stabilization of the site, the sediment trap will be removed. The size of the sediment trap shall be determined by the Engineer if needed.

2.06 STORM DRAIN INLET PROTECTION

The inlet protection is specified to provide a permeable barrier around drainage inlets to reduce sediment content in runoff before entering the storm drain system. These shall be installed over each drainage inlet and shall be replaced as necessary based on sediment accumulation and at the direction of the Engineer.

2.07 EROSION BLANKETS

Erosion blankets and seeding shall be used for the stabilization of slopes 3:1 or greater or as otherwise specified. The blankets shall be installed as per the Plans and Details, and the manufacturer's specifications. They shall be stapled or staked in place as per the manufacturer's specifications. The blankets may be installed at locations other than those shown on the Plans as directed by the Engineer or Town.

2.08 SOIL RESTORATION

The Contractor shall provide Soil restoration which is a practice for construction projects where soil compaction occurs to soils which will be permanently vegetated. This compaction is typically a result of heavy vehicle traffic, cutting or filling, and areas which may receive heavy surcharges. Soil restoration can be done by tilling or aerating the soil to a depth of 12-inches. In heavy traffic areas, 3-inches of compost shall be placed over the compacted areas prior to the tilling. After the restoration, a 3/8" metal bar should be able to be hand pushed into the soil. Areas within the drip-line of trees should not be tilled. This work will be done at the direction of the Engineer or Landscape Architect.

2.09 WATER BARS

Where designated on the plan or as directed by the Engineer the Contractor shall install water bars. Water bars shall be used for diversion of surface runoff to limit the accumulation of erosive velocities of water. The water bars shall be installed as per the Plans and Details. The water bars may be installed at locations other than those shown on the Plans as directed by the Engineer.

2.10 WASTE DISPOSAL

The Contractor is responsible the proper disposal of all solid, sanitary and toxic waste in accordance with applicable local, state and federal regulations. It is prohibited to burn, bury or pour out onto ground or into the storm sewers any solvents, paints, stains, gasoline, diesel fuel, used motor oil, hydraulic fluid, anti-freeze, cement curing compounds, or other toxic or hazardous wastes. The Contractor shall be responsible for disposal of all waste off site.

2.11 CONCRETE TRUCK WASHOUT

The Contractor is responsible for designating a wash out area for cement trucks. This shall be a diked area where the washings can be collected and disposed of properly when they harden.

2.12 DUST CONTROL

The Contractor shall insure the generation of dust shall be minimized by limiting the extent of exposed soils and re-establishing vegetative cover in these areas as soon as possible. Additional and/or temporary methods to minimize dust may include wetting, mulching, spray adhesives, stone covering and wind barriers. The Contractor shall have the necessary access to water to perform this task.

2.13 STABILIZATION

The Contractor shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instance:

Where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable.

All areas not designated as buildings, roads, driveways, parking lots, walks, or aprons shall be established as lawn or vegetative areas. Permanent planting and vegetation shall be provided per approved the landscaping plan.

2.14 DEWATERING ACTIVITIES SEDIMENT CONTROL

A. All waters which the Contractor pumps from excavations on this Project shall be routed through a portable sedimentation tank or as otherwise directed so as to remove all sediments carried by such water. The tank shall be in accordance with the Standard Specifications for Portable Sediment Tank included in NYSSSESC. The tank(s) shall be provided at any and all excavation locations, as warranted by dewatering activities.

2.15 CLEANING UP

As the work progresses, clean up the streets and rights of way and grade and round the backfill within the limits of the excavation. Mark soft trenches with signs, and adequate lights. Promptly refill, compact and grade all areas which settle subsequent to the initial backfilling.

All streets utilized by or worked on by the Contractor will be swept with approved self-contained mechanical sweeping equipment as directed by the Engineer but at least once every two (2) weeks until acceptance of the work by the Engineer.

Upon completion of the work haul all dirt and rubbish from the work site and leave the site clean to the satisfaction of the Engineer. Remove all surplus material, tools and temporary structures from the site.

PART 3: METHOD

3.01 DESCRIPTION

All work shall be in compliance with the drawings and shall follow the NYSSSESC. The Contractor shall install all E&SC practices as per the plan, details and notes as detailed on the Contract Drawings and these specifications. They shall adhere to the greatest extent possible the construction sequence and when not possible shall notify the Engineer to discuss modifications. Further, the contractor shall insure that at the end of each work day that the site shall be stabilized and the roadway clean of any soil tracked off site. In the event a precipitation event is forecasted, the Contractor shall prepare the site by inspecting and if necessary clean and repair all E&SC, stabilize open areas, place tarps over open soil piles and install temporary diversions to prevent the erosion of soils and possible transport of sediment off site or into the town drainage system. Where necessary if the Contractor shall protect open excavations or trenches during forecasted precipitation event by diverting concentrated surface flows per the means provided on the plans or as directed by the Engineer or Town.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

The work shall include the installation and maintenance of all measures which are required to prevent erosion and control sediment.

END OF SECTION

SECTION 0201

EARTHWORK

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish all labor, materials and equipment necessary to perform all excavation and grading not specifically included in other bid items and required to complete the proposed improvements of the project in the areas designated in the Contract Documents as shown on the Site Plan and specified herein. Work shall include but not be limited to the following:

A. Excavation

B. General grading for all site improvements including all grassed and sourounding areas.

C. Backfilling and compaction as required.

D. Screening of excavated material as required

E. Dewatering or addition of water as required.

F. Stockpiling and reuse of excavated mateial, topsoil and stone. Protection of excavations.

G. Proper disposal of excess and unsuitable materials resulting from earthwork operations.

The Engineer at his discretion may require additional work under this section if he deems this work necessary to comply with the intent of this project. Any work not included under this specification but required for the successful completion of project work, as deemed by the Engineer, shall be performed by the Contractor as directed by the Engineer and paid for under Item 1002 Additional Miscellaneous Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

1. Section 0101 Site Preparation and Removals
2. Section 0102 Survey and Stakeout
3. Section 0103 Erosion and Sediment Control
4. Section 0202 Unclassified Excavation
5. Section 0203 Select Fill Material
6. Section 0204 Crushed Stone Fill
7. Section 0205 Nature Trail
8. Section 0206 Gravel Parking Area
9. Section 0301 Asphalt Pavement
10. Section 0401 Cast-In-Place Concrete
11. Section 0402 Cast-In-Place Concrete Curbs
12. Section 0501 Water Main
13. Section 0502 Force Main
14. Section 0503 Copper Water Service
15. Section 0601 Drainage Conveyance System
16. Section 0602 Furnish and Install Sanitary Sewers

17. Section 0701 Precast Concrete Catch Basins
18. Section 0702 Precast Concrete Manholes
19. Section 0703 Sewage Pumping Station
20. Section 0704 Storm Water Management System Basins (Pocket Wetlands)
21. Section 0802 Building Services – General Plumbing & Electrical Work
22. Section 0901 Synthetic Turf Preparation
23. Section 0903 Dugouts
24. Section 0906 Site Restoration

1.03 REFERENCES

A. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification using the abbreviation shown.

B. American Society for Testing and Materials (ASTM):

1. D 698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft)
2. D 1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
3. D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)(2,700 kN-m/m^3)
4. D 2167 Standard Test Method for Density and Unit Weight of Soil In Place by the Rubber Balloon Method
5. D 2216 Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
6. D 2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
7. D 2922 Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
8. D 2937 Standard Test Methods for Density of Soil in Place by the Drive-Cylinder Method
9. D 3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
10. D 4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

C. New York State Department of Environmental Conservation – 6NYCRR PART 375

1.04 DEFINITIONS

A. Controlled Fill: Controlled fill is fill required in all areas on which final grade is not placed on original excavated soil.

B. Unclassified Excavation: For the purposes of payment, material shall not be classified except for those items specifically listed in the Bid Form.

C. Rock: For the purposes of classified excavation, rock shall be defined as material that cannot be dislodged by a Caterpillar Model No. D-8N, heavy duty track-type tractor, rated at not less than 285 hp flywheel power and equipped with a single shank

hydraulic ripper, capable of exerting not less than 45,000 lbs breakout force. Rock excavation includes up to 6 inches over-excavation below the required excavation depth. Excavated rock shall be quantified by measuring the volume of removed rock and reducing this amount by 35%. This definition of rock does not include materials such as hardpan, loose rock, concrete or other materials that can be removed by means other than drilling and blasting, but which for reasons of economy in excavating the CONTRACTOR chooses to remove by drilling and blasting.

D. Trench Rock: For the purposes of classified excavation, trench rock shall be defined as material encountered in trench excavation that cannot be dislodged by a Caterpillar Model No. 215D-LC track-type hydraulic excavator, equipped with a 42-inch wide short-tip radius rock bucket, rated at not less than 120 hp flywheel power with bucket-curling force of not less than 25,000 lbs and stick-crowd force of not less than 18,000 lbs. Trench rock excavation includes up to 6 inches over-excavation below the required excavation depth. Rock shall be quantified by measuring the extent of rock in the trench, not by measuring the volume of removed rock. This definition of trench rock does not include materials such as hardpan, loose rock, concrete or other materials that can be removed by means other than drilling and blasting, but which for reasons of economy in excavating the CONTRACTOR chooses to remove by drilling and blasting.

E. Unsuitable Material: For the purposes of classified excavation, unsuitable material shall be defined as material below subgrade elevation that exhibits excessive pumping or that does not meet density requirements due to unsatisfactory material as determined by Geotechnical Engineer.

F. Satisfactory Materials: Materials classified by ASTM D 2487 as GW, GP, GM, GC, SW, SP, SM, SC, ML, and CL are satisfactory as fill for overlot grading and are satisfactory in-situ. Materials shall have a minimum compacted density of 95 pounds per cubic foot and a plasticity index in excess of 15.

G. Unsatisfactory Materials: Materials classified by ASTM D 2487 as OL, OH, MH, CH, and PT are unsatisfactory in-situ and as fill. Unsatisfactory materials also include those materials containing roots and other organic matter, trash, debris, frozen materials, and stones larger than 6 inches. Fill materials containing stones larger than 3 inches shall not be used in the uppermost 2 feet.

H. Cohesionless and Cohesive Materials: Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the minus #40 fraction has a plasticity index of zero as classified by ASTM D 4318.

I. Degree of Compaction: Degree of compaction is a percentage of the maximum density obtained by the test procedure presented in ASTM D 698 or ASTM D 1557 as specified, abbreviated below as a percent of laboratory maximum density.

J. Topsoil: Material obtained from excavations, suitable for topsoils shall consist of friable clay loam, free from roots, stones, other undesirable material and shall be capable of supporting a good growth of grass.

K. Native Material: Excavated material that has been stockpiled onsite for later re-use.

L. Geotechnical Engineer: A representative of a commercial geotechnical testing laboratory which will be used by the CONTRACTOR to provide the required quality assurance testing.

1.05 DESIGN REQUIREMENTS

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1.06 SUBMITTALS

A. Product Data: Submit manufacturers' information for the following:

1. Each type of plastic warning tape.
2. Drainage filter fabric.
3. Separation fabric.

B. Samples: For the following:

1. 30-lb (14-kg) samples, sealed in airtight containers, of each proposed soil material from borrow sources.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
2. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.

D. New York State Department of Environmental Conservation – 6NYCRR PART 375

1. Laboratory test results.

1.07 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown, Department of Parks and Recreation regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown, Department of Parks and Recreation regulations are given in this Section, the requirements of this Section shall govern.
2. New York State Department of Environmental Conservation
3. New York State Department of Transportation

1.08 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Owner and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner not less than three days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's written permission.

3. Contact utility-locator service for area where Project is located before the start of work.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Protect material from the elements and from other damage on the site before, during, and after installation.

B. The Contractor shall replace and pay for any material and work damaged to the satisfaction of the Town and Engineer.

PART 2: MATERIALS

2.01 DESCRIPTION

A. General: Imported materials utilized for this Project shall be obtained from a source that has been licensed or permitted for such use by local and state authorities. The Contractor shall be required to submit evidence of such if so requested.

B. All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stockpiled convenient to areas for later re-use or placed within the limits of the Contract or where directed by the Town. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

C. Excavated Material: Excavated material shall be used as backfill under this item unless the Engineer deems the material to be unsuitable. Excavated material used as backfill and grading, shall meet the gradation requirements for Granular Fill. No additional payment will be made for this work.

2.02 BACKFILL MATERIAL

A. All fill materials shall be free Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, construction debris, stones or boulders over 6 inches in greatest dimension, frozen material, and material which, in the opinion of the Engineer is unsuitable shall be immediately removed from the site. Materials from other sources may be used upon approval by the Geotechnical Engineer. Fill materials in the uppermost 2 feet shall not have any rocks larger than 3 inches in diameter.

1. Imported soil or fill materials to the site shall be analyzed for the following chemical parameters using EPA methods. Volatiles, Semi-Volatiles, TAL Metals, Pesticides/Herbicides, PCB's. Concentrations shall be compared to the NYSDEC Technical Assistance Guidance Memorandum (TAGM) and approved by the ENGINEER. Samples shall be taken at a frequency of 1 per 5,000 cubic yards if originating from a natural borrow source and 1 per 1,000 cubic yards if manufactured or recycled.

B. Borrow Material: Where undercutting or construction of embankments are required and the Engineer deems that onsite material is unsuitable, he may require that the Contractor import suitable fill material. Suitable soil materials are defined as those complying with ASTM D2487 soil classification groups SM, SW, and SP or NYSDOT Item 733-09 Select Borrow or as directed by the Engineer. The source shall approved by the Engineer. Borrow Material if ordered by the Engineer will be paid under Item 0203.1. No payment will be made without the prior approval of the Engineer or Town.

C. Select Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials conforming to NYSDOT Item 733-1101 and have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
4 inch	100
No. 40	5 – 70
No.200	0 -15

Select Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.2. No payment will be made without the prior approval of the Engineer or Town.

D. Granular Fill: Material for use as backfill where called for by the Engineer shall be approved by the Engineer and obtained from approved sources. Native material may be used as backfill provided it meets the gradation specified below. Granular fill shall consist of suitable soil materials and shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials having the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

E. Site Stripped Topsoil may be used as fill in landscape areas only.

PART 3: METHOD

3.01 DESCRIPTION

The Contractor shall perform the required work under this section in accordance with the conditions and requirements as specified. The Contractor shall perform and execute all necessary unclassified excavation required to finish the work needed to complete all items or as directed by the Engineer. The Contractor shall supply all labor and equipment to complete the work and will make provisions for sheeting, bracing or trench boxes for deep trench excavations. It is the Contractors obligation to make certain that grades stakes, bench marks, and offset staking are in place and accurately reflect elevations as per the construction drawings.

Excavation shall generally be taken to mean the removal of soil, pavements, curbs, sidewalks, stumps, boulders, concrete and other material of any nature whatsoever that may be encountered. The methods of excavation shall also be defined as the following.

A. Conservation of Topsoil: Topsoil shall be removed as required without contamination with subsoil and stockpiled convenient to areas for later application or at locations specified. Any surplus of topsoil from excavations and grading shall be stockpiled in location approved by the Town. A silt fence shall be installed on the downslope side and the stockpiles seeded.

B. Conservation of Excavated Material: Excavated material shall be removed as required and stockpiled convenient to areas for later re-use or at locations specified. Any surplus of material from excavations and grading shall be stockpiled in location approved by the Town. A silt fence shall be installed on the downslope side and the stockpiles seeded.

C. Conservation of Stone & Rock: Stone and rock shall be removed as required and stockpiled convenient to areas for later application or at locations specified. The existing stone walls within the work area to be demolished shall be stock piled for later re-use. Stone not incorporated into the work shall become the property of the Town.

D. The Contractor shall carefully protect all trees and shrubs and other landscape vegetation to remain shall be protected as per specification "Site Restoration." The Town shall have the final authority on the removal of all trees and existing features to remain. The Contractor at his expense in accordance with the Specification "Site Restoration" and the General Conditions shall replace any trees removed contrary to the orders of the Town. The Contractor shall be responsible for any and all damages to property caused by the removals operations. All damaged trees and plants or improvements shall be replaced or restored to their original condition to the satisfaction of the Town. Further any new or existing improvements to remain shall also be protected throughout the construction of the project. The Contractor will be responsible at his expense to replace any improvements damaged by his company workers and those of any subcontractors under the Contractor.

   All materials removed under this item, which are not to be reset, shall be promptly and legally disposed of offsite by the Contractor. Burning material shall not be allowed. No removed trees, shrubs, stumps, roots, wood chips or branches may be used as backfill.

3.02 PERFORMANCE AND LIMITS

A. General

   All areas subject to earthwork shall be brought to the required elevations and grades by excavating, filling, and grading. Excavated materials found suitable by the Engineer, shall be used in making embankments and filling the low areas of the work, and at such places as the Engineer may direct. Where required embankments shall be constructed as directed by the Engineer. The soil shall be placed in successive horizontal layers not over six (6") inches in depth, extending across the entire fill. It shall be spread and shall then be thoroughly compacted by rolling with a self-propelling roller weighing not less than ten (10) tons to the satisfaction of the Engineer. In places where the use of this roller is impracticable or where subsurface or surface structures may be damaged a lighter weight one may be substituted or the

area shall be compacted by mechanical tamping, all with the approval, and to the satisfaction of the Engineer. Any hollows and/or depressions which may result from rolling and compacting shall be filled with like or acceptable material, and the sub-grade shall again be compacted. This shall be repeated until all depressions are eliminated. Where clay or plastic soils are encountered rolling shall be done in such a manor as to avoid a plastic condition. In all cases these type soils should not be rolled when wet.

The Contractor shall make sure to level the bottoms of all excavations accurately to the limits and levels shown on the plans or as directed by the Engineer to receive the bottom of structures or other work supported on soil. Where the excavation limit has been exceeded by error on the part of the Contractor, the over excavated zone will be filled to the correct grade. At the discretion of the Engineer this zone will be filled with concrete or compacted crushed stone. The Contractor will not receive any additional payment for these corrective measures. Further all soft, wet, clay or other objectionable material below the proposed sub-grade shall be removed to the satisfaction of the Engineer. The excavated zone shall be brought up to sub-grade level with material acceptable to the engineer. Under foundations and structures, 3000 psi concrete will be used. Otherwise Crushed Stone will be used, placed in 6" lifts and fully compacted to the satisfaction of the Engineer. Payment shall be included in the item that requires this fill.

The Contractor shall maintain the banks of excavation in a safe and stable condition. The Contractor shall furnish and install temporary sheet piling or planks, braces and shores of good sound timber of adequate strength, and shall remove such piling or shoring as the foundation work progresses.

When the excavations have been completed to the required depth as shown on the drawings, the Contractor shall do no more work until after inspection by the Engineer, who shall order the foundation or other work to proceed, or further excavation, as the conditions indicate and no foundation or other work shall be done until the excavation therefore have been approved by the Engineer.

3.03 PREPARATION

A. Compaction of the Subgrade - All subgrade materials shall be compacted prior to placement of fill or permeable aggregate base material as follows:

   1. Use a minimum of eight passes with a steel wheel roller having a minimum weight or centrifugal force of 10 tons.

   2. Compact the subgrade a minimum depth of 16 inches below the subgrade surface under all locations where synthetic turf will be installed

   3. Any soft or yielding areas shall be re-compacted or removed and replaced with suitable material to meet required compaction requirements.

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

C. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

D. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

E. Rock: Rock shall be removed to a minimum depth of 12 inches below the subgrade elevation. The excavated area shall be brought up to subgrade with approved material placed and compacted as described herein

3.04 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.05 APPROVAL OF SUBGRADE

A. Notify Engineer when excavations have reached required subgrade.

1. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed by the Engineer. The Contractor shall conduct his operations to allow the Engineer to measure the cross-sections before placing the backfill.

2. Additional excavation and replacement material as ordered by the Engineer will be paid for under the corresponding pay item according to Contract provisions.

3. If unsatisfactory subgrade results from inadequate surface drainage or lack of maintenance, the Contractor shall excavate and replace the unsatisfactory material at his own cost. No additional payment will be made.

B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.

3.06 EXCAVATION - GENERAL

A. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

1. Excavation: Excavation shall be unclassified except for those items specifically indicated in the Itemized Bid Form. After topsoil removal has been completed, excavation of every description, regardless of material encountered, within the grading limits of the project shall be performed to the lines and grades indicated. Satisfactory excavation material shall be transported to and placed in fill areas within the limits of the work. All unsuitable material including any soil which is disturbed by the CONTRACTOR's operations and surplus material shall be disposed of at locations off site secured by CONTRACTOR and approved by the

Town. Excavations carried below the depths indicated, shall, except as otherwise specified, be refilled to the proper grade with satisfactory material as directed. All additional work of this nature shall be at the CONTRACTOR's expense, unless otherwise provided for in the Bid Form. Excavation and filling shall be performed in a manner and sequence that will provide drainage at all times. Excavations shall be kept free from water while construction therein is in progress. If the CONTRACTOR fails to provide adequate drainage and any material becomes soft or otherwise unsuitable as a result, such material shall be removed and replaced with satisfactory on-site material or borrow material from approved sources, or shall be dried and recompacted as directed by the Geotechnical Engineer at no additional cost to the TOWN.

2. Excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.

3. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

4. Rock excavation includes removal and disposal of rock.

5. Do not excavate rock until it has been classified and cross-sectioned by the Contractor's surveyor.

6. Unsuitable and excess material shall be disposed of in designated waste areas or as directed.

B. Unauthorized Excavation:

1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Town or the Geotechnical Engineer.

2. Under footings or foundations, fill unauthorized excavations by extending the indicated bottom elevation of the footing or base to the unauthorized excavation bottom, but in no way altering the required top elevation.

3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed by the Geotechnical Engineer.

C. Trench Excavation

1. Excavation for trenches shall be paid under the individual pay items.

2. Excavation for Trenches: Excavate to widths shown on the Drawings and depths indicated or required to establish indicated slope and invert elevations.

   a. Produce an evenly graded, flat trench bottom at the subgrade elevation required for installation of pipe and bedding material.

   b. Place backfill material directly into trench or excavation in lifts as shown on the Contract Drawings.

3.07 APPROVAL OF SUBGRADE

A. Notify Engineer when excavations have reached required subgrade.

B. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

C. Proof Rolling – The Engineer may require that the subgrade be proof rolled with heavy pneumatic - tired equipment to identify soft pockets and areas of excess yielding.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.

3.08 STORAGE OF SOIL MATERIALS

A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Contain stockpiles with silt fence.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.09 BACKFILL

Upon completion of excavation work and installation of the structures, utilities or other work required under that item the Contractor shall request an inspection prior to backfilling. Work shall not proceed prior to inspection and approval by the Engineer. Structures may; not be backfilled prior to approval by the Engineer. The excavated voids around masonry and other work shall be filled with clean excavated soil and compacted in layers of six (6") inches of depth. No direct payment shall be made for re-handling of excavated materials for backfilling structures, nor for any other purposes necessary to complete the work as shown on the Contract Drawings, but the compensation will be considered as having been included in the base bid for this project. Re-handling of excavated materials shall be incidental to and shall be included in any additional work which resulted as an outcome of a change made to the Contract Drawings, and is ordered in writing by the Engineer. Backfilling inside of sheeting shall be placed before sheeting is removed. After areas and trenches have been excavated and structures constructed therein, the spaces around and above them shall be carefully backfilled with acceptable material. Backfill shall be placed on both sides of structures to approximately the same elevation at the same time. All backfill shall be thoroughly tamped and rammed in place in layers not over six (6) inches in depth, using rammers of a weight acceptable to the Engineer. If directed by the Engineer, the backfill shall be thoroughly saturated with water as it is placed. Backfill adjacent to foundation walls shall be pneumatically compacted only when permitted and under the supervision of the Engineer.

A. Prior to back fill operations the following shall be completed to the satisfaction of the Engineer:

1. Underground utilities shall be surveyed for record documents.

2. All underground utilities shall be tested.

3.10 FILL

A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

C. Place and compact fill material in layers to required elevations.

D. No stones larger than six (6) inches in any dimension shall be placed within two (2) feet of finished subgrade elevations under pavement or walks.

3.11 MOISTURE CONTROL

The Contractor shall furnish all materials, equipment and labor required to keep the site of the work free from water, ice and snow during construction. Shall provide ample means and equipment with which to promptly remove and dispose of all water and drainage during excavation, and keep all excavations dry until the structures to be constructed are completed. Pipe laying or masonry construction will not be permitted if water is in the excavation. Prior to making a connection to an existing manhole or pipe line install a plug in the existing piping to prevent groundwater or drainage from entering. Leave the plug in place until its removal is directed by the Engineer.

Under no circumstances will completed portions of the work be used as a means of dewatering trenches, unless specifically provided for under a Specification Item, no direct payment will be made for dewatering, including the use of deep wells, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 3 percent of optimum moisture content.

   1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

   2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry unit weight.

3.12 COMPACTION OF BACKFILLS AND FILLS

A. Place backfill and fill materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment, and not more than 8 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:

   1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill material at 95 percent.

2. Under walkways, scarify and re-compact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 92 percent.

3. Under lawn or unpaved areas, scarify and re-compact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 85 percent.

3.13 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading; Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances;

1. Lawn or Unpaved Areas; Plus or minus 1 inch (25 mm)

2. Walks: Plus or minus 1 inch (25 mm).

3. Pavements: Plus or minus ½ inch (13 mm).

3.14 FIELD QUALITY CONTROL

A. Testing Agency: The Contractor shall hire a qualified independent geotechnical/environmental engineering testing agency to perform laboratory and field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab, but in no case fewer than three tests.

2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet (30m) or less of wall length, but no fewer than two tests.

3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet (46 m) or less of trench length, but no fewer than two tests.

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

E. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

F. Repair and reestablish grades to the specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

G. Control Survey - Prior to commencement of this work, the Contractor shall check the existing bench marks and reference points located on or out of the site as indicated. The Contractor shall establish newly standard bench marks and control stakes for the work within the site as approved by the Engineer. A single benchmark must be established prior to any work and maintained by a licensed Surveyor of record during the entire construction process.

1. Principal points – Principle points shall be established taking advantage of the existing reference points. Individual principal point posts shall be of wood, 4" x 4" size, with an indicating nail on the top, the surface of the post above the ground shall be painted white.

2. Bench marks - When establishing bench marks within the site, a minimum of one (1) back and forth leveling operation shall be carried out. Establishment of temporary bench marks and stakes shall be determined and performed by the Contractor. Temporary bench mark posts shall be of wood, 2" x 2" in size, with an indicating nail on the top, the surface of the post above ground shall be painted.

3. Grade Verification: A certified survey shall be performed on a 25-foot grid to verify grade and elevation of the subgrade.

H. Finished Grading: The finished surface of the subgrade shall have a finished grade in accordance with the Plans and Specifications. Final subgrade shall be established to within a tolerance of +/ -.5" (.04') of the designed subgrade elevation.

3.15 USE OR DISPOSAL OF EXCAVATED MATERIAL

A. All undesirable material such as excavated boulders larger than 2 cubic feet, concrete, wood, metals, debris or any other deleterious material shall be removed from the site under this item. Stones under 2 cubic feet may be placed back into the excavation but shall be placed at least two (2') feet from the surface and three (3') feet away from pipes, footings or structures. Clean select fill approved by the Engineer shall be used for backfill to replace the removed debris and shall be provided and placed under this item.

B. Any structures to be abandoned shall be broken down and excavated or removed to a depth of four (4') feet below the finished surface. Structures with solid bottoms shall be sufficiently broken to allow for drainage and the void backfilled with suitable materials approved by the Engineer. Any open ends of abandoned pipes shall be plugged to the satisfaction of the Engineer.

C. All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stored or placed within the limits of the Contract, where directed by the Town. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

D. Where service connections for sewer, water, electric or other utility are encountered in the excavations, the service through same shall not be interrupted or disturbed by the

Contractor except on order and direction of the Engineer. In the event that there is a need to disturb or relocate an existing service connection the Contractor is to notify the Engineer and the owner of the service connection and supplier of the service and a plan of action established prior to any such disturbance.

E. Where settling occurs before project acceptance, the Contractor shall remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing. The Contractor shall restore the appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.16 SAFETY COMPLIANCE

All shoring work shall meet or exceed the requirements of the New York State Department of Labor Industrial Code Rule 23 and Title 29 Code of Federal Regulations Part 1926, Safety and Health Regulations for Construction.

Utilities and Services: It is the Contractor's responsibility to detect and protect existing utilities (to remain) from damage during construction. Prior to the start of construction the Contractor is required to notify:

1. UFPO (Underground Facilities Protective Organization) (800) 272-4480 (non-members must be contacted separately)

2. 16 NYCRR Part 753 "Protection of Underground Facilities" mandates that the Contractor notify all underground facility operators in the area no less than two (2) and not more than ten (10) business days before the start of excavation to ensure that utility service lines are properly marked prior to excavation.

The Contractor's obligation to protect utilities is not relieved by calling the One Call Center. The Contractor shall understand that not all utilities may be located and he is responsible to locate other utilities, to the best of his ability, using electronic probes, or other methods, prior to the start of excavation. The Contractor shall then proceed cautiously and perform hand excavation, as necessary, to protect the utility as directed by the Engineer and the operator of the utility, at no extra cost. If a utility is inadvertently damaged, it is the Contractors responsibility to restore that utility to operating condition, equal to that existing prior to damage. The Contractor shall remain at the site with the damaged utility until it has been restored and there is no danger to the public (i.e., exposed live electrical wires, etc.).

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Earthwork will be measured in cubic yards, measured to the nearest whole cubic yard, computed in the final position. The Engineer's estimate of quantity is for comparing bids and is approximate and is based on field measurements. The aforesaid quantity may be adjusted as required by the Work.

Note: In the event of a discrepancy between the estimated quantities and actual measured field quantities, the Contractor shall provide written evidence in the form of an as-built survey including cross sections as specified in Section 3.14C of this specification to the Engineer for verification.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at **Unit Price** bid and shall include the cost of all labor, materials and equipment necessary to complete the work specified under this section within the limits shown on the Contract Drawings and as directed by the Engineer or Town. The Unit Price bid shall include the cost of all labor, materials, including screening of excavated material as required, placement and compaction. Excavation shall include transportation and stockpiling of material, equipment and survey work necessary to complete the work specified. No additional payment will be made for unauthorized work or for work outside the limits shown on the Contract Drawings.

END OF SECTION

SECTION 0202

UNCLASSIFIED EXCAVATION

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall perform all excavation not specifically included in other bid items and required for the completion of the project. All excavated materials deemed unsuitable by the Engineer, shall be removed and disposed of in accordance with the specifications. Where such excavation also includes test pits, extra width or depth of trench, cuts to sub-grade, or where other miscellaneous excavation shall be done at the direction of the Engineer or Town. The work under this section shall not be performed without the prior written authorization of the Engineer or Town.

For bid purposes, **500 cubic yards** of Unclassified Excavation has been assumed for this pay item.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0201 Earthwork
D. Section 0203 Select Fill Material
E. Section 0204 Crushed Stone Fill
F. Section 0206 Gravel Parking Area
G. Section 0402 Cast-In Place Concrete Curbs
H. Section 0501 Water Main
I. Section 0502 Force Main
J. Section 0601 Drainage Conveyance System
K. Section 0602 Furnish and Install Sanitary Sewers
L. Section 0701 Precast Concrete Catch Basins
M. Section 0702 Precast Concrete Manholes
N. Section 0703 Sewage Pumping Station
O. Section 0704 Stormwater Management System Basins (Pocket Wetlands)
P. Section 0906 Site Restoration

1.03 REFERENCES

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1.04 DEFINITIONS

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1.05 SUBMITTALS

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PART 2: MATERIALS

2.01 DESCRIPTION

A. General: Imported materials utilized for this Project shall be obtained from a source that has been licensed or permitted for such use by local and state authorities. The Contractor shall be required to submit evidence of such if so requested.

B. All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stockpiled convenient to areas for later re-use or placed within the limits of the Contract or where directed by the Town. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

C. Backfilling: Should the Engineer require backfilling under this Item, the backfill material type shall be specified by the Engineer and shall be paid under Item 0203.

2.02 BACKFILL MATERIAL

A. All fill materials shall be free Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, construction debris, stones or boulders over 6 inches in greatest dimension, frozen material, and material which, in the opinion of the Engineer is unsuitable shall be immediately removed from the site. Materials from other sources may be used upon approval by the Geotechnical Engineer. Fill materials in the uppermost 2 feet shall not have any rocks larger than 3 inches in diameter.

1. Imported soil or fill materials to the site shall be analyzed for the following chemical parameters using EPA methods. Volatiles, Semi-Volatiles, TAL Metals, Pesticides/Herbicides, PCB's. Concentrations shall be compared to the NYSDEC Technical Assistance Guidance Memorandum (TAGM) and approved by the ENGINEER. Samples shall be taken at a frequency of 1 per 5,000 cubic yards if originating from a natural borrow source and 1 per 1,000 cubic yards if manufactured or recycled.

B. Borrow Material: Where undercutting or construction of embankments are required and the Engineer deems that onsite material is unsuitable, he may require that the Contractor import suitable fill material. Suitable soil materials are defined as those complying with ASTM D2487 soil classification groups SM, SW, and SP or NYSDOT Item 733-09 Select Borrow or as directed by the Engineer. The source shall approved by the Engineer. Borrow Material will be paid under Item 0203.1. No payment will be made without the prior approval of the Engineer or Town.

C. Granular Fill: Material for use as backfill where called for by the Engineer shall be approved by the Engineer and obtained from approved sources. Excavated material may be used as backfill provided it meets the gradation specified below. Granular fill shall consist of suitable soil materials and shall be sound,

durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials having the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.2. No payment will be made without the prior approval of the Engineer or Town.

D. Site Stripped Topsoil may be used as fill in landscape areas only.

PART 3: METHOD

3.01 DESCRIPTION

The Contractor shall perform the required excavation in accordance with the conditions and requirements as specified. The Contractor shall perform and execute all necessary unclassified excavation required to finish the work needed to complete all items or as directed by the Engineer or Town. The Contractor shall supply all labor and equipment to complete the work and will make provisions for sheeting, bracing or trench boxes for deep trench excavations. It is the Contractors obligation to make certain that grades stakes, bench marks, and offset staking are in place and accurately reflect elevations as per the construction drawings.

Excavation shall generally be taken to mean the removal of soil, pavements, curbs, sidewalks, stumps, boulders, concrete and other material of any nature whatsoever that may be encountered. The methods of excavation shall also be defined as the following.

3.02 PERFORMANCE AND LIMITS

All areas subject to earthwork shall be brought to the required elevations and grades by excavating, filling, and grading. Excavated materials found suitable by the Engineer, shall be used in making embankments and filling the low areas of the work, and at such places as the Engineer or Town may direct. Where required embankments shall be constructed as directed by the Engineer or Town. The soil shall be placed in successive horizontal layers not over six (6") inches in depth, extending across the entire fill. It shall be spread and shall then be thoroughly compacted by rolling with a self-propelling roller weighing not less than ten (10) tons to the satisfaction of the Engineer. In places where the use of this roller is impracticable or where subsurface or surface structures may be damaged a lighter weight one may be substituted or the area shall be compacted by mechanical tamping, all with the approval, and to the satisfaction of the Engineer. Any hollows and/or depressions which may result from rolling and compacting, shall be filled with like or acceptable material, and the sub-grade shall again be compacted. This shall be repeated until all depressions are eliminated. Where clay or plastic soils are encountered, rolling shall be done in such a manor as to avoid a plastic condition. In all cases these type soils should not be rolled when wet.

The Contractor shall make sure to level the bottoms of all excavations accurately to the limits and levels shown on the plans or as directed by the Engineer or Town to receive the bottom of structures or other work supported on soil. Where the excavation limit has been exceeded by error on the part of the Contractor, the over excavated zone will be filled to the correct grade. At the discretion of the Engineer this zone will be filled with concrete or compacted crushed stone. The Contractor will not receive any additional payment for these corrective measures. Further all soft, wet, clay or other objectionable material below the proposed sub-grade shall be removed to the satisfaction of the Engineer or Town. The excavated zone shall be brought up to sub-grade level with material acceptable to the engineer. Under foundations and structures, 3000 psi concrete will be used. Otherwise Crushed Stone will be used, placed in 6" lifts and fully compacted to the satisfaction of the Engineer or Town. Payment shall be included in the item that requires this fill.

The Contractor shall maintain the banks of excavation in a safe and stable condition. The Contractor shall furnish and install temporary sheet piling or planks, braces and shores of good sound timber of adequate strength, and shall remove such piling or shoring as the foundation work progresses.

When the excavations have been completed to the required depth as shown on the drawings, the Contractor shall do no more work until after inspection by the Engineer, who shall order the foundation or other work to proceed, or further excavation, as the conditions indicate and no foundation or other work shall be done until the excavation therefore have been approved by the Engineer or Town.

3.03 USE OR DISPOSAL OF EXCAVATED MATERIAL

A. All undesirable material such as excavated boulders larger than 2 cubic feet, concrete, wood, metals, debris or any other deleterious material shall be removed from the site under this item. Stones under 2 cubic feet may be placed back into the excavation but shall be placed at least two (2') feet from the surface and three (3') feet away from pipes, footings or structures. Clean select fill approved by the Engineer or Town shall be used for backfill to replace the removed debris and shall be provided and placed under this item.

   Any structures to be abandoned shall be broken down and excavated or removed to a depth of four (4') feet below the finished surface. Structures with solid bottoms shall be sufficiently broken to allow for drainage and the void backfilled with suitable materials approved by the Engineer. Any open ends of abandoned pipes shall be plugged to the satisfaction of the Engineer.

   All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stored or placed within the limits of the Contract, where directed by the Engineer. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

   Where service connections for sewer, water, electric or other utility are encountered in the excavations, the service through same shall not be interrupted or disturbed by the Contractor except on order and direction of the Engineer or Town. In the event that there is a need to disturb or relocate an

existing service connection the Contractor is to notify the Engineer and the owner of the service connection and supplier of the service and a plan of action established prior to any such disturbance.

3.04 BACKFILLING

Upon completion of excavation work and installation of the structures, utilities or other work required under that item the Contractor shall request an inspection prior to backfilling. Work shall not proceed prior to inspection and approval by the Engineer or Town. Structures may; not be backfilled prior to approval by the Engineer or Town. The excavated voids around masonry and other work shall be filled with clean excavated soil and compacted in layers of six (6") inches of depth. No direct payment shall be made for re-handling of excavated materials for backfilling structures, nor for any other purposes necessary to complete the work as shown on the Contract Drawings, but the compensation will be considered as having been included in the base bid for this project. Re-handling of excavated materials shall be incidental to and shall be included in any additional work which resulted as an outcome of a change made to the Contract Drawings, and is ordered in writing by the Engineer or Town. Backfilling inside of sheeting shall be placed before sheeting is removed. After areas and trenches have been excavated and structures constructed therein, the spaces around and above them shall be carefully backfilled with acceptable material. Backfill shall be placed on both sides of structures to approximately the same elevation at the same time. All backfill shall be thoroughly tamped and rammed in place in layers not over six (6) inches in depth, using rammers of a weight acceptable to the Engineer or Town. If directed by the Engineer or Town, the backfill shall be thoroughly saturated with water as it is placed. Backfill adjacent to foundation walls shall be pneumatically compacted only when permitted and under the supervision of the Engineer or Town.

3.05 DEWATERING

The Contractor shall furnish all materials, equipment and labor required to keep the site of the work free from water, ice and snow during construction. Shall provide ample means and equipment with which to promptly remove and dispose of all water and drainage during excavation, and keep all excavations dry until the structures to be constructed are completed. Pipe laying or masonry construction will not be permitted if water is in the excavation. Prior to making a connection to an existing manhole or pipe line install a plug in the existing piping to prevent groundwater or drainage from entering. Leave the plug in place until its removal is directed by the Engineer or Town.

Under no circumstances will completed portions of the work be used as a means of dewatering trenches.

Unless specifically provided for under a Specification Item, no direct payment will be made for dewatering, including the use of deep wells, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.06 SAFETY COMPLIANCE

All shoring work shall meet or exceed the requirements of the New York State Department of Labor Industrial Code Rule 23 and Title 29 Code of Federal Regulations Part 1926, Safety and Health Regulations for Construction.

UTILITIES AND SERVICES: It is the Contractor's responsibility to detect and protect existing utilities (to remain) from damage during construction. Prior to the start of construction the Contractor is required to notify:

- UFPO (Underground Facilities Protective Organization)
- (800) 272-4480 (non-members must be contacted separately)
- 16 NYCRR Part 753 "Protection of Underground Facilities" mandates that the Contractor notify all underground facility operators in the area no less than two (2) and not more than ten (10) business days before the start of excavation to ensure that utility service lines are properly marked prior to excavation.

The Contractor's obligation to protect utilities is not relieved by calling the One Call Center. The Contractor shall understand that not all utilities may be located and he is responsible to locate other utilities, to the best of his ability, using electronic probes, or other methods, prior to the start of excavation. The Contractor shall then proceed cautiously and perform hand excavation, as necessary, to protect the utility as directed by the Engineer and the operator of the utility, at no extra cost. If a utility is inadvertently damaged, it is the Contractors responsibility to restore that utility to operating condition, equal to that existing prior to damage. The Contractor shall remain at the site with the damaged utility until it has been restored and there is no danger to the public (i.e., exposed live electrical wires, etc.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Unclassified excavation will be measured in cubic yards, measured to the nearest whole cubic yard, computed in the final position.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid, and includes the cost of furnishing all labor, materials, and equipment, removal and disposal of surplus material as necessary to complete the work under this pay item, except where specific costs are designated or included in another pay item of work. Payment for Unclassified Excavation will not be made without prior written approval and certification of the quantities by the Engineer or Town. No additional payment will be made for unauthorized work or for work outside the limits shown on the Contract Drawings.

END OF SECTION

SECTION 0203

SELECT FILL MATERIAL

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall include the cost of furnishing all labor, materials and equipment as necessary to furnish and install select fill material if specified and required to complete the proposed improvements of the project under this section as directed by the Engineer or Town. The work under this section shall not be performed without the prior written authorization of the Engineer or Town. Work shall include but not be limited to the following:

1. Furnish and install select granular fill from off-site sources to extent required and of materials specified as necessitated by or encountered during the course of the work due to field conditions as approved by the Engineer or Town.
2. For work ordered by the Engineer or Town.
3. Grading required to establish subgrades.
4. Compaction as required.
5. Dewatering or addition of water as required.
6. Stockpiling
7. Required Laboratory Testing

Included in this item of work are the following item numbers:

0203.1	**Borrow Material**
0203.2	**Select Granular Fill**
0203.3	**Granular Fill**

Item 0203.1 Borrow Material: the Contractor shall include the cost of furnishing all labor, materials and equipment as necessary to furnish and install borrow material if specified and required to complete the proposed improvements of the project under this section as directed by the Engineer or Town.

Item 0203.2 Select Granular Fill: the Contractor shall include the cost of furnishing all labor, materials and equipment as necessary to furnish and install select granular fill material if specified and required to complete the proposed improvements of the project under this section as directed by the Engineer or Town.

Item 0203.3 Granular Fill: the Contractor shall include the cost of furnishing all labor, materials and equipment as necessary to furnish and install select granular fill material if specified and required to complete the proposed improvements of the project under this section as directed by the Engineer or Town.

The work under this section shall not be performed without the prior authorization of the Engineer or Town. For bid purposes, **500 cubic yards (0203.1, 0203.2 & 0203.3)** have been assumed for this work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0201 Earthwork
D. Section 0204 Crushed Stone Fill
E. Section 0206 Gravel Parking Area
F. Section 0402 Cast-In Place Concrete Curbs
G. Section 0501 Water Main
H. Section 0502 Force Main
I. Section 0601 Drainage Conveyance System
J. Section 0602 Furnish and Install Sanitary Sewers
K. Section 0701 Precast Concrete Catch Basins
L. Section 0702 Precast Concrete Manholes
M. Section 0703 Sewage Pumping Station
N. Section 0704 Stormwater Management System Basins (Pocket Wetlands)
O. Section 0906 Site Restoration

1.03 REFERENCES

A. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification using the abbreviation shown.

B. New York State Department of Transportation

C. American Society for Testing and Materials (ASTM):

1. D 698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft)
2. D 1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
3. D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)(2,700 kN-m/m^3)
4. D 2216 Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
5. D 2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
6. D 3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
7. D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
8. D 4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

D. New York State Department of Environmental Conservation – 6NYCRR PART 375

1.04 DEFINITIONS

THIS SECTION LEFT BLANK

1.05 DESIGN REQUIREMENTS

THIS SECTION LEFT BLANK

1.06 SUBMITTALS

A. Samples: For the following:

1. 10-lb (4.5-kg) samples, sealed in airtight containers, of each proposed soil material from source.

B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each soil material proposed for select fill and backfill.

2. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.

3. Laboratory testing for backfill must meet the requirements of 6 NYCRR 375-6.7(d)

1.07 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: The Contractor shall hire an Independent Testing Agency testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown, Department of Parks and Recreation regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown, regulations are given in this Section, the requirements of this Section shall govern.

2. New York State Department of Environmental Conservation

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect material from the elements and from other damage on the site before, during, and after installation.

B. The Contractor shall replace and pay for any material and work damaged to the satisfaction of the Town and Engineer.

1.09 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Town or others unless permitted in writing by the Town representative and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Town not less than three days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Town's written permission.
3. Contact utility-locator service for area where Project is located before the start of work.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2: MATERIALS

2.01 GENERAL

All materials utilized for this Project shall be obtained from a source that has been licensed or permitted for such use by local and state authorities. The Contractor shall be required to submit evidence of such if so requested.

All fill materials shall be free Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, construction debris, stones or boulders over 1 inches in greatest dimension, frozen material, and material which, in the opinion of the Engineer is unsuitable shall be immediately removed from the site. Materials from other sources may be used upon approval by the Engineer.

Imported soil or fill materials to the site shall be analyzed for the following chemical parameters using EPA methods. Volatiles, Semi-Volatiles, TAL Metals, Pesticides/Herbicides, PCB's. Concentrations shall be compared to the NYSDEC Technical Assistance Guidance Memorandum (TAGM) and approved by the Engineer.

Samples shall be taken at a frequency of 1 per 5,000 cubic yards if originating from a natural borrow source and 1 per 1,000 cubic yards if manufactured or recycled.

A. Borrow Material: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials conforming to materials classified by ASTM D 2487 as GM, GC, SW, SP, SM, SC, materials containing stones larger than 3 inches shall not be used in the uppermost 2 feet or conforming to NYSDOT Item 733-09 Select Borrow and have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
No. 40	0 – 70
No.200	0 -15

B. Select Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials conforming to NYSDOT Item 733-1101 and have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
4 inch	100
No. 40	5 – 70
No.200	0 -15

C. Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials and shall have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

PART 3: METHOD

3.01 DESCRIPTION

The Contractor shall perform the required work under this section in accordance with the conditions and requirements as specified. The Contractor shall perform and execute all necessary unclassified excavation required to finish the work needed to complete all items or as directed by the Engineer. It is the Contractors obligation to make certain that grades stakes, bench marks, and offset staking are in place and accurately reflect elevations as per the construction drawings or as directed by the Engineer.

3.02 PREPARATION

A. All areas subject to earthwork shall be brought to the required elevations and grades by excavating, filling, and grading. The Contractor shall make sure to level the bottoms of all excavations accurately to the limits and levels shown on the plans or as directed by the Engineer to receive the bottom of structures or other work supported on soil. Where the excavation limit has been exceeded by error on the part of the Contractor, the over excavated zone will be filled to the correct grade. At the discretion of the Engineer this zone will be filled with concrete or compacted crushed stone. The Contractor will not receive any additional payment for these corrective measures. Further all soft, wet, clay or other objectionable material below the proposed sub-grade shall be removed to the satisfaction of the Engineer. The excavated zone shall be brought up to sub-grade level with material acceptable to the engineer.

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

C. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

D. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

E. When the excavations have been completed to the required depth as shown on the drawings or as directed by the Engineer, the Contractor shall do no more work until after inspection by the Engineer, who shall order the work to proceed.

3.03 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

C. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

D. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.04 COMPACTION OF BACKFILLS AND FILLS

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 3 percent of optimum moisture content.

1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry unit weight.

A. Place backfill and fill materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment, and not more than 8 inches in loose depth for material compacted by hand-operated tampers.

1. Fill shall be spread and shall then be thoroughly compacted by rolling with a self-propelling roller weighing not less than ten (10) tons to the satisfaction of the Engineer. In places where the use of this roller is impracticable or where subsurface or surface structures may be damaged a lighter weight one may be substituted or the area shall be compacted by mechanical tamping, all with the approval, and to the satisfaction of the Engineer. Any hollows and/or depressions which may result from rolling and compacting shall be filled with like or acceptable material, and the sub-grade shall again be compacted. This shall be repeated until all depressions are eliminated. Where clay or plastic soils are encountered rolling shall be done in such a manor as to avoid a plastic condition. In all cases these type soils should not be rolled when wet.

B. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill material at 95 percent.

2. Under walkways, scarify and re-compact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 92 percent.

3. Under lawn or unpaved areas, scarify and re-compact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 85 percent.

3.05 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes.
Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

E. Site Grading; Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances;

1. Lawn or Unpaved Areas; Plus or minus 1 inch (25 mm).

2. Walks: Plus or minus 1 inch (25 mm).

3. Pavements: Plus or minus ½ inch (13 mm).

3.06 FIELD QUALITY CONTROL

A. Testing Agency: The Contractor shall hire a qualified independent geotechnical/environmental engineering testing agency to perform laboratory and field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 6938, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab, but in no case fewer than three tests.

2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet (30m) or less of wall length, but no fewer than two tests.

3. Trench Backfill: At each compacted; initial and final backfill layer, at least one test for each 150 feet (46 m) or less of trench length, but no fewer than two tests.

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

E. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

F. Repair and reestablish grades to the specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Select Fill Material will be measured in cubic yards, measured to the nearest whole cubic yard, computed in the final compacted position.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall include the cost of furnishing all labor, materials and equipment as necessary to complete the work specified under this section as directed by the Engineer or Town except where specific costs are designated or included in another pay item of work. The work under this item shall be performed only as directed by the Town. No payment will be made for any additional work performed without the prior written authorization of the Town. The unit price bid shall include the cost of placement and compaction, and testing. No additional payment will be made for unauthorized work or for work not authorized by the Engineer or Town.

Included in this item of work are the following item numbers:

0203.1	**Borrow Material**
0203.2	**Select Granular Fill**
0203.2	**Granular Fill**

Item 0203.1 Borrow Material: the Contractor shall include the cost of furnishing all labor, materials and equipment as necessary to furnish and install borrow material if specified and required to complete the proposed improvements of the project under this section as directed by the Engineer or Town.

Item 0203.2 Select Granular Fill: the Contractor shall include the cost of furnishing all labor, materials and equipment as necessary to furnish and install select granular fill material if specified and required to complete the proposed improvements of the project under this section as directed by the Engineer or Town.

Item 0203.3 Granular Fill: the Contractor shall include the cost of furnishing all labor, materials and equipment as necessary to furnish and install select granular fill material if specified and required to complete the proposed improvements of the project under this section as directed by the Engineer or Town.

The work under this section shall not be performed without the prior authorization of the Engineer or Town. For bid purposes, **500 cubic yards (0203.1, 0203.2 & 0203.3)** have been assumed for this work.

END OF SECTION

SECTION 0204

CRUSHED STONE FILL

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall include the cost of furnishing all labor, materials and equipment as necessary to furnish and install crushed stone fill where specified and required to complete the proposed improvements of the project under this section as directed by the Engineer or Town except where specific costs are designated or included in another pay item of work. Work shall include but not be limited to the following:

1. Furnish and install crushed stone fill from off-site sources to extent required and of materials specified as necessitated by or encountered during the course of the work due to field conditions as approved by the Engineer or Town.
2. For work ordered by the Engineer or Town.
3. Grading required to establish subgrades.
4. Compaction as required.
5. Dewatering or addition of water as required.
6. Stockpiling
7. Required Laboratory Testing

The work under this section shall not be performed without the written authorization of the Engineer or Town. For bid purposes, **500 cubic yards** of Crushed Stone Fill has been assumed for this pay item.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0102 Survey and Stakeout
B. Section 0201 Earthwork
C. Section 0301 Asphalt Pavement
D. Section 0402 Cast-In Place Concrete Curbs
E. Section 0501 Water Main
F. Section 0502 Force main
G. Section 0601 Drainage Conveyance System
H. Section 0602 Furnish and Install Sanitary Sewers
I. Section 0701 Precast Concrete Catch Basins
J. Section 0702 Precast Concrete Manholes
K. Section 0703 Sewage Pumping Station
L. Section 0901 Synthetic Turf Preparation
M. Section 0906 Site Restoration

1.03 REFERENCES

A. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification using the abbreviation shown.

B. American Society for Testing and Materials (ASTM):

1. D 2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
2. D 3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
3. D 4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
4. D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

C. New York State Department of Environmental Conservation – 6NYCRR PART 375

D. New Yok State Department of Transportation Standard Specifications

1.04 DEFINITIONS

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1.05 DESIGN REQUIREMENTS

THIS SECTION LEFT BLANK

1.06 SUBMITTALS

A. Samples: For the following:

1. 10-lb (4.5-kg) samples, sealed in airtight containers, of each proposed soil material from source.

B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each soil material proposed for select fill and backfill.
2. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.
3. Laboratory testing for backfill must meet the requirements of 6 NYCRR 375-6.7(d)

1.07 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: The Contractor shall hire an Independent Testing Agency testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown regulations and all applicable regulations of governmental

authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown regulations are given in this Section, the requirements of this Section shall govern.

2. New York State Department of Environmental Conservation

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect material from the elements and from other damage on the site before, during, and after installation.

B. The Contractor shall replace and pay for any material and work damaged to the satisfaction of the Town.

1.09 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Town or others unless permitted in writing by Town and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Town not less than three days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Vilage's written permission.
3. Contact utility-locator service for area where Project is located before the start of work.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2: MATERIALS

2.01 GENERAL

All materials utilized for this Project shall be obtained from a source that has been licensed or permitted for such use by local and state authorities. The Contractor shall be required to submit evidence of such if so requested.

All fill materials shall be free Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, construction debris, stones or boulders over 1 inches in greatest dimension, frozen material, and material which, in the opinion of the Engineer is unsuitable shall be immediately removed from the site. Materials from other sources may be used upon approval by the Geotechnical Engineer.

Imported soil or fill materials to the site shall be analyzed for the following chemical parameters using EPA methods. Volatiles, Semi-Volatiles, TAL Metals, Pesticides/Herbicides, PCB's. Concentrations shall be compared to the NYSDEC Technical Assistance Guidance Memorandum (TAGM) and approved by the Engineer. Samples shall be taken at a frequency of 1 per 5,000 cubic yards if originating from a natural borrow source and 1 per 1,000 cubic yards if manufactured or recycled.

A. Crushed Stone shall conform to NYSDOT Item 703-0201 have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
½ inch	45 to 85
¼ inch	30 to 65
No.10	15 to 45
No.200	0 to 5

PART 3: METHOD

3.01 DESCRIPTION

The Contractor shall perform the required work under this section in accordance with the conditions and requirements as specified. The Contractor shall perform and execute all necessary unclassified excavation required to finish the work needed to complete all items or as directed by the Engineer. It is the Contractors obligation to make certain that grades stakes, bench marks, and offset staking are in place and accurately reflect elevations as per the construction drawings or as directed by the Engineer.

3.02 PREPARATION

A. All areas subject to earthwork shall be brought to the required elevations and grades by excavating, filling, and grading. The Contractor shall make sure to level the bottoms of all excavations accurately to the limits and levels shown on the plans or as directed by the Engineer to receive the bottom of structures or other work supported on soil. Where the excavation limit has been exceeded by error on the part of the Contractor, the over excavated zone will be filled to the correct grade. At the discretion of the Engineer this zone will be filled with concrete or compacted crushed stone. The Contractor will not receive any additional payment for these corrective measures. Further all soft, wet, clay or other objectionable material below the proposed sub-grade shall be removed to the satisfaction of the Engineer. The excavated zone shall be brought up to sub-grade level with material acceptable to the engineer.

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

C. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

D. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

E. When the excavations have been completed to the required depth as shown on the drawings or as directed by the Engineer, the Contractor shall do no more work until after inspection by the Engineer, who shall order the work to proceed.

3.03 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

C. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

D. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.04 COMPACTION OF BACKFILLS AND FILLS

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 3 percent of optimum moisture content.

1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

A. Place backfill and fill materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment, and not more than 8 inches in loose depth for material compacted by hand-operated tampers.

1. Fill shall be spread and shall then be thoroughly compacted by rolling with a self-propelling roller weighing not less than ten (10) tons to the satisfaction of the Engineer. In places where the use of this roller is impracticable or where subsurface or surface structures may be damaged a lighter weight one may be substituted or the area shall be compacted by mechanical tamping, all with the approval, and to the satisfaction of the Engineer. Any hollows and/or depressions which may result from rolling and compacting shall be filled with like or acceptable material, and the sub-grade shall again be compacted. This shall be repeated until all depressions are eliminated. Where clay or plastic soils are encountered rolling shall be done in such a manor as to avoid a plastic condition. In all cases these type soils should not be rolled when wet.

3.05 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes.
Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

E. Site Grading; Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances;

1. Lawn or Unpaved Areas; Plus or minus 1 inch (25 mm).

2. Walks: Plus or minus 1 inch (25 mm).

3. Pavements: Plus or minus ½ inch (13 mm).

3.06 FIELD QUALITY CONTROL

A. Approval - The Engineer will inspect and approve all fill sections as he may deem necessary or as the work may dictate.

B. Allow the Engineer to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after approval is given for previously completed work comply with requirements.

E. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

F. Repair and reestablish grades to the specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Select Fill will be measured in cubic yards, measured to the nearest whole cubic yard, computed in the final compacted position.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall include the cost of furnishing all labor, materials and equipment as necessary to complete the work specified under this section as directed by the Engineer or Town except where specific costs are designated or included in another pay item of work. The work under this item shall be performed only as directed by the Town. No payment will be made for any additional work performed without the prior written authorization of the Town. The unit price bid shall include the cost of placement and compaction, and testing. No additional payment will be made for unauthorized work or for work not authorized by the Engineer or Town.

END OF SECTION

SECTION 0205

NATURE TRAIL

PART 1: WORK

1.01 DESCRIPTION

Under this Work, the Contractor shall furnish all labor, materials and equipment necessary to perform clearing, grubbing, removals, excavation, grading, mulching, and woodchips for the construction of the Nature Trail as shown on the Contract Drawings. This shall include and not be limited to such work as removing shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, large boulders, and other objectionable materials as directed by the Engineer or Town.

A. The Contractor shall carefully protect all trees and shrubs and other landscape vegetation to remain in accordance with the Section 0906 Site Restoration. The Engineer or Town shall have the final authority on the removal of all trees and existing features to remain. The Contractor at his expense in accordance with General Conditions shall replace any trees removed contrary to the orders of the Engineer or Town. The Contractor shall be responsible for any and all damages to property caused by the removals operations. All damaged trees and plants or improvements shall be replaced or restored to their original condition to the satisfaction of the Engineer and Town. Further, any new or existing improvements to remain shall also be protected throughout the construction of the project. The Contractor will be responsible at his expense to replace any improvements damaged by his company workers and those of any subcontractors.

B. All materials removed under this item, which are not to be reset, shall be promptly and legally disposed of offsite by the Contractor. Burning material shall not be allowed. No removed trees, shrubs, stumps, roots, wood chips, branches, stone, concrete debris etc. may be used as backfill.

C. The Engineer or Town at their discretion may require additional work under this section if they deem this work necessary to comply with the intent of this project. Any work not included under this specification but required for the successful completion of project work shall be performed by the Contractor as directed by the Engineer or Town and paid for under Item 1002 Additional Miscellaneous Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

1. Section 0101 Site Preparation and Removals
2. Section 0102 Survey and Stakeout
3. Section 0201 Earthwork
4. Section 0906 Site Restoration

1.03 REFERENCES

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1.04 DEFINITIONS

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1.05 SUBMITTALS

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1.06 QUALITY ASSURANCE

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PART 2: MATERIALS

A. The Contractor shall utilize woodchip or mulched material stockpiled from the tree removal.

PART 3: METHOD

3.01 DESCRIPTION

Unless otherwise directed, the Contractor shall thoroughly clear, grub and remove all materials specified as well as all objectionable surface material flush with existing grades. The trail will be laid as directed by Parks and Recreation. All attempts will be made to meander the trail amongst the existing trees in a comfortable non-abrupt alignment. The woodchips will be laid on the ground surface and only easily removable obstacles will be taken away from the trail such as limbs, logs, rocks or small boulders. The thickness and width will be as per the Contract Drawings.

3.02 CLEARING AND REMOVALS

From areas to be cleared, the Contractor shall cut or otherwise remove all sapling trees, brush, and other vegetable matter such as snags, bark, shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, rubbish and other objectionable materials as directed by the Engineer or Town. No debris may be disposed of on premises.

3.03 GRUBBING

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3.04 STRIPPING

A. All stumps, roots, foreign matter, topsoil, loam and unsuitable earth shall be stripped from the ground surface. The topsoil and loam shall be utilized insofar as possible, for finished surfacing unless otherwise directed by the Engineer. Only excess or unsuitable soils shall be taken from the site unless otherwise directed by the Engineer or Town.

B. Strip topsoil to depths encountered in a manner that prevents intermingling of topsoil with underlying subsoil or other objectionable material. The Contractor shall not strip topsoil from within the drip line of any tree to remain.

3.05 STOCKPILING

The Contractor shall stockpile topsoil in storage piles where approved by the Engineer or Town and construct stockpiles so that surface water drains freely.

3.06 DISPOSAL

The Contractor shall protect topsoil piles if required by the work. Silt fencing around the perimeter shall be installed to prevent soil erosion and sedimentation. All material resulting not scheduled for reuse or stockpiling shall become the property of the Contractor and shall be suitably disposed of off site in accordance with all applicable laws, ordinances, rules and regulations, unless otherwise directed by the Engineer or Town.

All removed trees, shrubs, stumps, roots, wood chips or branches, concrete debris, asphalt debris, remains of utilities or other structures, or any debris remaining from site preparation or excavation must be disposed of off-site. No woody debris must be used as fill or backfill or embankments or dikes.

Such disposal shall be performed as promptly as possible after removal of the material and shall not be left until the final period of cleaning up. It is the Contractor's responsibility to properly dispose of any materials to be removed off-site as per all sections of these specifications. The Contractor is responsible to find a legitimate disposal site and must obtain any permits or licenses required for proper disposal. The Contractor is responsible for any fees or fines associated with the proper disposal of any materials outline in all sections of these specifications.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** bid and shall include the cost to furnish all labor, materials and equipment necessary to perform clearing, grubbing, removals, excavation, grading, mulching, woodchips and for the construction of the Nature Trail as shown on the Contract Drawings and as directed by the Engineer or Town.

END OF SECTION

SECTION 0206

GRAVEL PARKING AREA

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish all labor, materials and equipment necessary to to construct the new parking area as shown on the Site Plan and specified herein. Work shall include but not be limited to the following:

A. Excavation and site preparation - This shall include such work as removing shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, masonry, large boulders, concrete pavement and curbs, concrete rubble, asphalt, rubbish and other objectionable materials.

B. Grading to establish subgrades for the parking area and sourounding areas.

C. Backfilling and compaction as required.

D. Base Material

E. Subgrade Reinforcement

F. Dewatering or addition of water as required.

G. Stockpiling of topsoil

H. Protection of excavations

I. Erosion control required for earthwork

J. Obtaining select fill material from off-site sources to extent required and of materials specified.

K. Proper disposal of excess and unsuitable materials resulting from earthwork operations.

The Engineer at his discretion may require additional work under this section if he deems this work necessary to comply with the intent of this project. Any work not included under this specification but required for the successful completion of project work, as deemed by the Engineer, shall be performed by the Contractor as directed by the Engineer and paid for under Item 1001 Additional Miscellaneous Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0203 Select Fill Material
G. Section 0204 Crushed Stone Fill
H. Section 0301 Asphalt Pavement
I. Section 0402 Cast-In-Place Concrete Curbs

J. Section 0801 Site Lighting
K. Section 0802 Building Services – General Plumbing & Electrical Work
L. Section 0905 Pavement Markings
M. Section 0906 Site Restoration
N. Section 0907 Traffic Signs

1.03 REFERENCES

A. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification using the abbreviation shown.

B. American Society for Testing and Materials (ASTM):

1. D 698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft)
2. D 1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
3. D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)(2,700 kN-m/m^3)
4. D 2167 Standard Test Method for Density and Unit Weight of Soil In Place by the Rubber Balloon Method
5. D 2216 Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
6. D 2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
7. D 2922 Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
8. D 2937 Standard Test Methods for Density of Soil in Place by the Drive-Cylinder Method
9. D 3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
10. D 4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

C. New York State Department of Environmental Conservation – 6NYCRR PART 375

1.04 DEFINITIONS

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1.05 DESIGN REQUIREMENTS

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1.06 SUBMITTALS

A. Product Data: Submit manufacturers' information for the following:

1. Drainage filter fabric.

2. Separation fabric.

3. Subgrade Reinforcement

B. Samples: For the following:

1. 30-lb (14-kg) samples, sealed in airtight containers, of each proposed soil material from borrow sources.

2. 12-by-12-inch (300-by-300-mm) sample of drainage fabric.

3. 12-by-12-inch (300-by-300-mm) sample of separation fabric.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.

2. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.

D. New York State Department of Environmental Conservation – 6NYCRR PART 375

1. Laboratory test results.

1.07 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown, Department of Parks and Recreation regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown, Department of Parks and Recreation regulations are given in this Section, the requirements of this Section shall govern.

2. New York State Department of Environmental Conservation

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect material from the elements and from other damage on the site before, during, and after installation.

B. The Contractor shall replace and pay for any material and work damaged to the satisfaction of the Town and Engineer.

PART 2: MATERIALS

2.01 MANUFACTURERS

A. Advanced Drainage Systems, Inc., Columbus, Ohio, or approved equal.

B. Tensar Corporation, 2500 Northwinds Parkway, Suite 500, Alpharetta, Georgia 30009 or approved equal.

C. TenCate – Mirafi, 365 South Holland Drive, Pendergrass, GA 30567, Tel: 800-685-9990, www.mirafi.com

2.02 MATERIALS

A. General: All materials utilized for this Project shall be obtained from a source that has been licensed or permitted for such use by local and state authorities. The Contractor shall be required to submit evidence of such if so requested.

All fill materials shall be free Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, construction debris, stones or boulders over 6 inches in greatest dimension, frozen material, and material which, in the opinion of the Engineer is unsuitable shall be immediately removed from the site. Materials from other sources may be used upon approval by the Geotechnical Engineer. Fill materials in the uppermost 2 feet shall not have any rocks larger than 3 inches in diameter.

Imported soil or fill materials to the site shall be analyzed for the following chemical parameters using EPA methods. Volatiles, Semi-Volatiles, TAL Metals, Pesticides/Herbicides, PCB's. Concentrations shall be compared to the NYSDEC Technical Assistance Guidance Memorandum (TAGM) and approved by the ENGINEER. Samples shall be taken at a frequency of 1 per 5,000 cubic yards if originating from a natural borrow source and 1 per 1,000 cubic yards if manufactured or recycled.

A. Select Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials conforming to NYSDOT Item 733-1101 and have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
4 inch	100
No. 40	5 – 70
No.200	0 -15

B. Parking Lot Base Material: The Parking Lot Base Material where called for on the drawings shall be approved by the Engineer and shall be obtained from approved source. In general, select granular fill shall be well graded hard, clean, durable particles free from wood, organic matter, roots, debris, vegetation, sod and other deleterious material. Parking Lot Base material shall be in conformance with NYSDOT Standard Specification Section 733.0404 Subbase Course, Type 4.

Sieve Size Max	% Passing by Weight
4 inch	-
3 inch	-
2 inch	100
¼ inch	30-65
No. 40	5-40
No.200	0-10

E. Crushed Stone:

1. Crushed Stone shall consist of hard, durable crushed rock consisting of angular fragments obtained by breaking and crushing solid or shattered natural rock. Material shall be free (one percent maximum) from a detrimental quantity of flat, elongated (where average width exceeds 4 times the average thickness) pieces, or other objectionable pieces.

2. Crushed Stone shall conform to NYSDOT Item 703-0201 have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
½ inch	90 – 100
¼ inch	0 – 15
No.80	-
No.200	0 to 1

F. Soil Separation Fabric: Woven geotextile, specifically manufactured for use as a separation geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
1. Grab Tensile Strength: 325 lbf; ASTM D 4632.
2. Tear Strength: (333 N) 90 lbf, ASTM D 4533.
3. Puncture Resistance: (400 N) II5 lbf, ASTM D 4833.
4. Water Flow Rate: I45 gpm per sq. ft. (2.7 L/s per sq. m); ASTM D 449I.
5. Apparent Opening Size: No. 40 (0.425); ASTM D 4751.

Soil Separation Fabric shall be Mirafi Filterweave 402 Woven Geotextile as manufactured by TC Mirafi www.tcmirafi.com, or approved equal.

G. Erosion Control Materials:
1. Erosion Control Netting: Provide as specified in Section 0103: Soil Erosion & Sediment Control.
2. Other, as approved by the Engineer or Town to suit conditions of use.

H. Subgrade Reinforcement – The sub-base reinforcement shall be Tensar TX5.

I. Site Stripped Topsoil may be used as fill in landscape areas only.

PART 3: METHOD

3.01 DESCRIPTION

The Contractor shall perform the required work under this section in accordance with the conditions and requirements as specified. The Contractor shall perform and execute all necessary unclassified excavation required to finish the work needed to complete all items or as directed by the Engineer. The Contractor shall supply all labor and equipment to complete the work and will make provisions for sheeting, bracing or trench boxes for deep trench excavations. It is the Contractors obligation to make certain that grades stakes, bench marks, and offset staking are in place and accurately reflect elevations as per the construction drawings. Excavation shall generally be taken to mean the removal of soil, pavements, curbs, sidewalks, stumps, boulders, concrete and other material of any nature whatsoever that may be encountered. The methods of excavation shall also be defined as the following.

A. Conservation of Topsoil: Topsoil shall be removed as required without contamination with subsoil and stockpiled convenient to areas for later application or at locations specified. Any surplus of topsoil from excavations and grading shall be stockpiled in location approved by the Town. A silt fence shall be installed on the downslope side and the stockpiles seeded.

B. Conservation of Excavated Material: Excavated material shall be removed as required and stockpiled convenient to areas for later re-use or at locations specified. Any surplus of material from excavations and grading shall be stockpiled in location approved by the Town. A silt fence shall be installed on the downslope side and the stockpiles seeded.

C. Conservation of Stone & Rock: Stone and rock shall be removed as required and stockpiled convenient to areas for later application or at locations specified. The existing stone walls within the work area to be demolished shall be stock piled for later re-use. Stone not incorporated into the work shall become the property of the Town.

D. The Contractor shall carefully protect all trees and shrubs and other landscape vegetation to remain shall be protected as per specification "Site Restoration." The Town shall have the final authority on the removal of all trees and existing features to remain. The Contractor at his expense in accordance with the Specification "Site Restoration" and the General Conditions shall replace any trees removed contrary to the orders of the Town. The Contractor shall be responsible for any and all damages to property caused by the removals operations. All damaged trees and plants or improvements shall be replaced or restored to their original condition to the satisfaction of the Town. Further any new or existing improvements to remain shall also be protected throughout the construction of the project. The Contractor will be responsible at his expense to replace any improvements damaged by his company workers and those of any subcontractors under the Contractor.

All materials removed under this item, which are not to be reset, shall be promptly and legally disposed of offsite by the Contractor. Burning material shall not be allowed. No removed trees, shrubs, stumps, roots, wood chips or branches may be used as backfill.

3.02 PERFORMANCE AND LIMITS

All areas subject to earthwork shall be brought to the required elevations and grades by excavating, filling, and grading. Excavated materials found suitable by the Engineer, shall be used in making embankments and filling the low areas of the work, and at such places as the Engineer may direct. Where required embankments shall be constructed as directed by the Engineer. The soil shall be placed in successive horizontal layers not over six (6") inches in depth, extending across the entire fill. It shall be spread and shall then be thoroughly compacted by rolling with a self-propelling roller weighing not less than ten (10) tons to the satisfaction of the Engineer. In places where the use of this roller is impracticable or where subsurface or surface structures may be damaged a lighter weight one may be substituted or the area shall be compacted by mechanical tamping, all with the approval, and to the satisfaction of the Engineer. Any hollows and/or depressions which may result from rolling and compacting shall be filled with like or acceptable material, and the sub-grade shall again be compacted. This shall be repeated until all depressions are eliminated. Where clay or plastic soils are encountered rolling shall be done in such a manor as to avoid a plastic condition. In all cases these type soils should not be rolled when wet.

The Contractor shall make sure to level the bottoms of all excavations accurately to the limits and levels shown on the plans or as directed by the Engineer to receive the bottom of structures or other work supported on soil. Where the excavation limit has been exceeded by error on the part of the Contractor, the over excavated zone will be filled to the correct grade. At the discretion of the Engineer this zone will be filled with concrete or compacted crushed stone. The Contractor will not receive any additional payment for these corrective measures. Further all soft, wet, clay or other objectionable material below the proposed sub-grade shall be removed to the satisfaction of the Engineer. The excavated zone shall be brought up to sub-grade level with material acceptable to the engineer. Under foundations and structures, 3000 psi concrete will be used. Otherwise Crushed Stone will be used, placed in 6" lifts and fully compacted to the satisfaction of the Engineer. Payment shall be included in the item that requires this fill.
The Contractor shall maintain the banks of excavation in a safe and stable condition. The Contractor shall furnish and install temporary sheet piling or planks, braces and shores of good sound timber of adequate strength, and shall remove such piling or shoring as the foundation work progresses.

When the excavations have been completed to the required depth as shown on the drawings, the Contractor shall do no more work until after inspection by the Engineer, who shall order the foundation or other work to proceed, or further excavation, as the conditions indicate and no foundation or other work shall be done until the excavation therefore have been approved by the Engineer.

3.03 PREPARATION

A. Compaction of the Subgrade - All subgrade materials shall be compacted prior to placement of fill or permeable aggregate base material as follows:

1. Use a minimum of eight passes with a steel wheel roller having a minimum weight or centrifugal force of 10 tons.

2. Compact the subgrade a minimum depth of 16 inches below the subgrade surface under all locations where synthetic turf will be installed.

3. Any soft or yielding areas shall be re-compacted or removed and replaced with suitable material to meet required compaction requirements.

B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

D. The Contractor shall establish control stakes which will be used to determine the amount of excavation and fill.

E. Rock: Rock shall be removed to a minimum depth of 12 inches below the subgrade elevation. The excavated area shall be brought up to subgrade with approved material placed and compacted as described herein.

3.04 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
   1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
   2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.05 EXCAVATION, GENERAL

A. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

   1. Excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
      a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

   2. Rock excavation includes removal and disposal of rock.
      a. Do not excavate rock until it has been classified and cross-sectioned by the Contractor's surveyor.

3.06 APPROVAL OF SUBGRADE

A. Notify Engineer when excavations have reached required subgrade.

B. If required by the Engineer, the subgrade shall be proof rolled using a 2O ton vibratory roller making a minimum of 3 passes. Soft spots and any unsuitable material shall be removed and replaced with compacted with the material specified in NYSDOT Standard Specifications Section 733-1302 Select Granular Subgrade (Typical). If the Engineer determines that additional removal is required, continue excavation and replace with compacted backfill or fill material as directed.

1. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed by the Engineer. The Contractor shall conduct his operations to allow the Engineer to measure the cross-sections before placing the backfill.

2. Additional excavation and replacement material as ordered by the Engineer will be paid for under the corresponding pay item according to Contract provisions.

3. If unsatisfactory subgrade results from inadequate surface drainage or lack of maintenance, the Contractor shall excavate and replace the unsatisfactory material at his own cost. No additional payment will be made.

C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.

3.07 BACKFILL

Upon completion of excavation work and installation of the structures, utilities or other work required under that item the Contractor shall request an inspection prior to backfilling. Work shall not proceed prior to inspection and approval by the Engineer. Structures may; not be backfilled prior to approval by the Engineer. The excavated voids around masonry and other work shall be filled with clean excavated soil and compacted in layers of six (6") inches of depth. No direct payment shall be made for re-handling of excavated materials for backfilling structures, nor for any other purposes necessary to complete the work as shown on the Contract Drawings, but the compensation will be considered as having been included in the base bid for this project. Re-handling of excavated materials shall be incidental to and shall be included in any additional work which resulted as an outcome of a change made to the Contract Drawings, and is ordered in writing by the Engineer. Backfilling inside of sheeting shall be placed before sheeting is removed. After areas and trenches have been excavated and structures constructed therein, the spaces around and above them shall be carefully backfilled with acceptable material. Backfill shall be placed on both sides of structures to approximately the same elevation at the same time. All backfill shall be thoroughly tamped and rammed in place in layers not over six (6) inches in depth, using rammers of a weight acceptable to the Engineer. If directed by the Engineer, the backfill shall be thoroughly saturated with water as it is placed. Backfill adjacent to foundation walls shall be pneumatically compacted only when permitted and under the supervision of the Engineer.

A. Prior to back fill operations the following shall be completed to the satisfaction of the Engineer:

1. Underground utilities shall be surveyed for record documents.

2. All underground utilities shall be tested.

3.08 FILL

A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

C. Place and compact fill material in layers to required elevations.

D. No stones larger than six (6) inches in any dimension shall be placed within two (2) feet of finished subgrade elevations under pavement or walks

3.09 MOISTURE CONTROL

The Contractor shall furnish all materials, equipment and labor required to keep the site of the work free from water, ice and snow during construction. Shall provide ample means and equipment with which to promptly remove and dispose of all water and drainage during excavation, and keep all excavations dry until the structures to be constructed are completed. Pipe laying or masonry construction will not be permitted if water is in the excavation. Prior to making a connection to an existing manhole or pipe line install a plug in the existing piping to prevent groundwater or drainage from entering. Leave the plug in place until its removal is directed by the Engineer.

Under no circumstances will completed portions of the work be used as a means of dewatering trenches, unless specifically provided for under a Specification Item, no direct payment will be made for dewatering, including the use of deep wells, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 3 percent of optimum moisture content.

   1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

   2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry unit weight.

3.10 COMPACTION OF BACKFILLS AND FILLS

A. Place backfill and fill materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment, and not more than 8 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

D. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:

   1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill material at 95 percent.

   2. Under walkways, scarify and re-compact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 92 percent.

   3. Under lawn or unpaved areas, scarify and re-compact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 85 percent.

3.11 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading; Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances;

1. Lawn or Unpaved Areas; Plus or minus 1 inch (25 mm)

2. Walks: Plus or minus 1 inch (25 mm).

3. Pavements: Plus or minus ½ inch (13 mm).

3.12 SUBBASE AND BASE COURSES

A. If specified on plans, install separation fabric on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.

B. Under pavements and walks, place sub-base course on prepared subgrade and as follows:

1. Place base course material over subbase.

2. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3. Shape subbase and base to required crown elevations and cross-slope grades.

4. When thickness of compacted subbase or base course is 6 inches (150 mm) or less, place materials in a single layer.

5. When thickness of compacted subbase or base course exceeds 6 inches (150 mm), place materials in equal layers, with no layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick when compacted.

B. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.13 SUBBASE REINFORCEMENT

A. Prepare the subgrade by compacting and grading the existing subgrade to the required elevation. Install Tensar TX5 geogrid over the prepared subgrade. Place and compact aggregate base as specified in Section 3.06. . The geogrid installation shall be in compliance with Tensar published installation guidelines. A Tensar authorized representative shall inspect the geogrid installation prior to placement of the aggregate base course.

3.14 FIELD QUALITY CONTROL

A. Testing Agency: The Contractor shall hire a qualified independent geotechnical/environmental engineering testing agency to perform laboratory and field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab, but in no case fewer than three tests.

2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet (30m) or less of wall length, but no fewer than two tests.

3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet (46 m) or less of trench length, but no fewer than two tests.

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

E. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

F. Repair and reestablish grades to the specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

G. Control Survey - Prior to commencement of this work, the Contractor shall check the existing bench marks and reference points located on or out of the site as indicated. The Contractor shall establish newly standard bench marks and control stakes for the work within the site as approved by the Engineer. A single benchmark must be established prior to any work and maintained by a licensed Surveyor of record during the entire construction process.

1. Principal points – Principle points shall be established taking advantage of the existing reference points. Individual principal point posts shall be of wood, 4" x 4" size, with an indicating nail on the top, the surface of the post above the ground shall be painted white.

2. Bench marks - When establishing bench marks within the site, a minimum of one (1) back and forth leveling operation shall be carried out. Establishment of temporary bench marks and stakes shall be determined and performed by the Contractor. Temporary bench mark posts shall be of wood, 2" x 2" in size, with an indicating nail on the top, the surface of the post above ground shall be painted.

H. Finished Grading: The finished surface of the subgrade shall have a finished grade in accordance with the Plans and Specifications. Final subgrade shall be established to within a tolerance of +/ -.5" (.04') of the designed subgrade elevation.

I. Grade Verification: A certified survey shall be performed on a 25-foot grid to verify grade and elevation of the subgrade.

3.15 STORAGE OF SOIL MATERIALS

A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Contain stockpiles with silt fence.

B. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.16 USE OR DISPOSAL OF EXCAVATED MATERIAL

A. All undesirable material such as excavated boulders larger than 2 cubic feet, concrete, wood, metals, debris or any other deleterious material shall be removed from the site under this item. Stones under 2 cubic feet may be placed back into the excavation but shall be placed at least two (2') feet from the surface and three (3') feet away from pipes, footings or structures. Clean select fill approved by the Engineer shall be used for backfill to replace the removed debris and shall be provided and placed under this item.

B. Any structures to be abandoned shall be broken down and excavated or removed to a depth of four (4') feet below the finished surface. Structures with solid bottoms shall be sufficiently broken to allow for drainage and the void backfilled with suitable materials approved by the Engineer. Any open ends of abandoned pipes shall be plugged to the satisfaction of the Engineer.

C. All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stored or placed within the limits of the Contract, where directed by the Town. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

D. Where service connections for sewer, water, electric or other utility are encountered in the excavations, the service through same shall not be interrupted or disturbed by the Contractor except on order and direction of the Engineer. In the event that there is a need to disturb or relocate an existing service connection the Contractor is to notify the Engineer and the owner of the service connection and supplier of the service and a plan of action established prior to any such disturbance.

E. Where settling occurs before project acceptance, the Contractor shall remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing. The Contractor shall restore the appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.17 SAFETY COMPLIANCE

All shoring work shall meet or exceed the requirements of the New York State Department of Labor Industrial Code Rule 23 and Title 29 Code of Federal Regulations Part 1926, Safety and Health Regulations for Construction.

A. Utilities and Services: It is the Contractor's responsibility to detect and protect existing utilities (to remain) from damage during construction. Prior to the start of construction the Contractor is required to notify:

1. UFPO (Underground Facilities Protective Organization) (800) 272-4480 (non-members must be contacted separately)

2. 16 NYCRR Part 753 "Protection of Underground Facilities" mandates that the Contractor notify all underground facility operators in the area no less than two (2) and not more than ten (10) business days before the start of excavation to ensure that utility service lines are properly marked prior to excavation.

The Contractor's obligation to protect utilities is not relieved by calling the One Call Center. The Contractor shall understand that not all utilities may be located and he is responsible to locate other utilities, to the best of his ability, using electronic probes, or other methods, prior to the start of excavation. The Contractor shall then proceed cautiously and perform hand excavation, as necessary, to protect the utility as directed by the Engineer and the operator of the utility, at no extra cost. If a utility is inadvertently damaged, it is the Contractors responsibility to restore that utility to operating condition, equal to that existing prior to damage. The Contractor shall remain at the site with the damaged utility until it has been restored and there is no danger to the public (i.e., exposed live electrical wires, etc.).

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Unclassified excavation will be measured in cubic yards, measured to the nearest whole cubic yard, computed in the final position.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall include the cost of all labor, materials and equipment necessary to complete the work specified under this section within the limits shown on the Contract Drawings and as directed by the Engineer or Town. The Unit Price bid shall include the cost of all labor, materials, including base material, placement, compaction and subgrade reinforcement. Excavation shall include transportation and stockpiling of material, equipment and survey work necessary to complete the work specified. No additional payment will be made for unauthorized work or for work outside the limits shown on the Contract Drawings.

END OF SECTION

SECTION 0301

ASPHALT PAVEMENT

PART 1: WORK

1.01 DESCRIPTION

Under this Work, the Contractor shall furnish and install new asphalt pavement including subgrade reinforcement, pavement reinforcement as shown on the typical details contained in the Contract Drawings. This item includes the sub-base material, binder course, tack coat top course to the depths and thicknesses shown. Final grading and preparation of the subgrade including saw cutting, removal of the existing asphalt pavement, sub-base material and binder course shall be included and shall be incidental to this work. No additional payment will be made for the tack coat or any work deemed necessary for completion of this work. The Contractor shall coordinate his work and shall allow ample time and facility for the Work of other Sections to be installed.

All labor and materials for the milling of the existing asphalt pavement, crack repair (greater than ¼" in width), saw cutting, and the proper placement of asphalt pavement overlay or full pavement section as required to complete the work under this Contract shall be included in this item. Final paving will not be permitted until completion of all site work which would no longer require any activity or use of heavy equipment which would cause damage. Included in this item of work are the following item numbers:

Included in this item of work are the following item numbers:

0301.1	**Asphalt Driveway & Parking Pavement**
0301.2	**Asphalt Pavement – 2" Thick**
0301.3	**Asphalt Pavement – Pickleball Court Expansion**
0301.4	**Asphalt Overlay – 2" Thick**
0301.5	**Asphalt Replacement Basketball Court**

Item 0301.1 Asphalt Driveway & Parking Pavement: This work shall include the construction of the Asphalt Driveway including the sub-base material, subgrade reinforcement, binder course (NYSDOT. Item No. 402.09 Binder Coarse) and top course (NYSDOT. Item No. 402.09 Top Coarse) to the depths and thicknesses shown on the Contract Drawings, the removal of surplus material and cleaning up at the locations shown on the Contract Documents and these specifications or as directed by the Engineer or Town.

Item 0301.2 Asphalt Pavement – 2" Thick: This work shall include the construction of the Asphalt Sidewalk including the wearing course (NYSDOT. Item No. 402.09 Top Coarse) and sub-base material to the thickness shown, including detectable warning units on sidewalk curb ramps as indicated on the Contract Drawings, the removal of surplus material and cleaning up at the locations shown on the Contract Documents and these specifications or as directed by the Engineer or Town.

Item 0301.3 Asphalt Pavement – Pickleball Court Expansion: This work shall include the expansion of the Pickleball Court with Asphalt pavement including the sub-base material, subgrade reinforcement, and top course (NYSDOT. Item No. 402.09 Top Coarse) to the depths and thicknesses shown on the Contract Drawings, the removal of surplus material and cleaning up at the locations shown on the Contract Documents and these specifications or as directed by the Engineer or Town.

Item 0301.4 Asphalt Overlay – 2" Overlay: This shall include the Handball Court, Pickleball Court, Pavilion, and adjoin areas shown on the Contract Drawings which includes existing pavement repairs to the existing asphalt pavement, top course overlay to the depths shown and pavement reinforcing system. Final preparation of the existing asphalt pavement and tack coat shall be incidental to this work. No additional payment will be made.

Item 0301.5 Asphalt Replacement Basketball Court: This shall include the Basketball Court, as shown on the Contract Drawings which includes the installation of additional base material as required, top course and the pavement reinforcing system to the depths shown on the Contract Drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0201 Earthwork
D. Section 0301 Asphalt Pavement
E. Section 0402 Cast-In-Place Concrete Curbs
F. Section 0601 Drainage Conveyance System
G. Section 0701 Precast Concrete Catch Basins
H. Section 0702 Precast Concrete Manholes
I. Section 0902 Outdoor Equipment
J. Section 0905 Pavement Markings
K. Section 0906 Site Restoration
L. Section 0907 Traffic Signs
M. Section 0908 Timber Guard Rail

1.03 REFERENCES

In general, all work and materials will conform to the latest revision and addenda to the New York State Department of Transportation Standard Specifications for Construction and Materials, which is referred to herein as NYSDOT Standard Specifications dated January 1, 2017.

1.04 DEFINITIONS

THIS SECTION LEFT BLANK

1.05 DESIGN REQUIREMENTS

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1.06 SUBMITTALS

A. Quality Control Submittals:

1. Plant name and location of asphalt concrete supplier.

2. Delivery receipts and certificates of asphalt product.

3. Geosynthetics – Manufacturer's Specifications.

1.07 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: The Contractor shall hire an Independent Testing Agency testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Field Testing: Asphalt Pavement shall be tested according to NYSDOT Standard Specifications, Section 402.

C. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown regulations are given in this Section, the requirements of this Section shall govern.

2. New York State Department of Environmental Conservation

3. New York State Department of Transportation

1.08 DELIVERY, STORAGE, AND HANDLING

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1.09 PROJECT CONDITIONS

A. Environmental Requirements:

1. Discontinue paving when surface temperatures fall below requirements listed in DOT Table 402-2.

2. Do not place asphalt concrete on wet surfaces, or when weather conditions otherwise prevent the proper handling or finishing of bituminous mixtures as determined by the Engineer.

PART 2: MATERIALS

2.01 MATERIALS

All materials will conform to NYSDOT Standard Specifications.
The temporary and permanent pavement used on all roads, shoulders, driveways and parking areas will be bituminous concrete pavement conforming to NYSDOT Standard Specifications, Section 402.

The base course shall conform to NYSDOT Standard Specifications, Section 733.0404 Subbase Course, Type 4.

2.01A FOUNDATION COURSE FOR ROADWAY - SUBBASE MATERIAL

The foundation course shall consist of placing a compacted layer of New York State D.O.T. Section 733-0404 Subbase Course, Type 4 material of the NYSDOT Standard Specifications, dated January 2017, upon a properly prepared sub-grade to a depth as shown on the Contract Drawings. Prior to placing the foundation course, the finished sub-grade surface shall not extend above the design elevation at any location. The foundation material shall be spread on the grade by a procedure that minimizes particle segregation. The depth of loose spread lifts shall not exceed those permitted by the type and classification of the compactor utilized. Water shall be added in such amounts as the Engineer, or his representative, may consider necessary to secure satisfactory compaction. The final surface of the foundation course shall be fine graded so that, after final compaction and just prior to placement of the binder pavement course, the surface elevation shall not vary more than one-quarter inch above or below the design line and grade shown on the Contract Drawings. The surface shall be completed to the above tolerance and approved by the Engineer, or his representative, prior to placing of the binder course. If, after approval, the foundation course becomes displaced or disturbed in any way for any reason, the Contractor shall repair and re-grade and damaged areas to the satisfaction of the Engineer, or his representative, prior to placing the binder course.

2.01B HOT MIX ASPHALT CONCRETE BINDER

Work under this item shall consist of placing a binder course of hot, plant mixed, asphalt concrete binder NYSDOT Item No. 402.09 Binder Course, in the trench areas as shown on the Contract Drawings, or as required by the Engineer.

A2.01C HOT MIX ASPHALT CONCRETE TOP COURSE
2.01C HOT MIX ASPHALT CONCRETE TOP COURSE

Work under this item shall consist of placing a compacted pavement course of hot, plant mixed asphalt concrete top NYSDOT. Item No. 402.09 Top Course, in accordance with these Specifications and in reasonably close conformity with the required lines, grades, thicknesses and typical sections as shown on the Contract Documents or established by the Engineer.

The pavement shall be so constructed that the final compacted thickness is as near to the nominal thickness as is practical. A tolerance not to exceed one-quarter (1/4") inch from the nominal thickness will be acceptable.

The surface shall be tested with a sixteen (16') foot straight edge or string line placed transversely to the center line of the street on any portion of the street surface. Variations exceeding one-quarter (1/4") inch shall be satisfactorily eliminated or the pavement re-laid at no additional cost to the Town. The mixture shall be transported from the mixing plants to the work site in tight vehicles previously cleaned of all foreign materials and each load shall be covered with canvas or other suitable material of sufficient size and thickness to protect it from weather conditions. The mixture shall be laid upon a clean dry surface, spread and struck off to the established grade and elevation. Approved bituminous pavers shall be used to distribute the mixture either over the entire width or over such partial width as may be practicable.

The bituminous pavers shall be in the charge of an experienced operator.

Placing of the mixture shall be continuous at a desired rate of not less than fifty (50) tons per hour. The Engineer, or his representative, may permit a lesser rate if satisfactory results are achieved. Upon arrival at the site, the mixture shall be dumped into the paver and immediately spread and struck off to the width required, and placed to a loose depth so that when the work is completed, the required compacted thickness of the mixture will be obtained.

Before any rolling is started, the finished surface struck off by the paving machine shall be checked and any surface irregularities adjusted. Immediately after the bituminous mixture has been placed, it shall be thoroughly and uniformly compacted by rolling. The surface shall be rolled when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking and shoving. Under no circumstances will compaction be permitted if the mix temperature drops below 200° F. Said material shall be removed from the site.

The course shall be initially rolled with an approved ten (10) to twelve (12) ton steel wheel tandem roller. During the initial rolling, the roller shall travel parallel to the centerline of the pavement, beginning at each edge and working toward the center, overlapping on successive trips by one-half the width of the roller. Immediately following the initial rolling, the course shall be rolled with a ten (10) to twelve (12) ton steel wheel roller a minimum of eight (8) passes per lane.

Immediately following the above intermediate rolling, the course shall be finished rolled with a ten (10) to twelve (12) steel wheel roller. This final rolling shall be both longitudinal and diagonal as directed by the Engineer, or his representative, and shall remove shallow ruts and ridges and other irregularities from the surface.
Rolling shall be continued until all roller marks are eliminated.

Rollers shall move at a slow and uniform speed not exceeding three (3) miles per hour unless otherwise approved. The roller drive roll shall be nearest the paver.

To prevent adhesion of the bituminous mixture to the rollers, the rollers shall be kept properly moistened with water.

In areas not accessible to the rollers, the mixture shall be thoroughly compacted with approved mechanical tampers as directed by the Engineer, or his representative.

Suitable means shall be provided to keep pavers, and other equipment and tools, free from bituminous accumulations. The surface of the pavement shall be protected from drippings of oil, kerosene, or other materials used in paving and cleaning operations.

The Contractor may be required to adjust and change both the equipment and the compaction procedure as directed by the Engineer, or his representative, if conditions, as determined by the Engineer, so warrant.

In placing and compacting abutting courses of bituminous concrete pavement, joint heater devices shall be used on all joints, both transverse and longitudinal. These joint heater devices shall be of the infrared type or equal. Direct flame heaters shall not be used. The joint heater devices will be so constructed as to permit adjustment of the heat applied to the joints.

The bituminous plant mix shall not be placed on any wet surface, or when the surface temperature is less than 45ºF (7.2ºC), when weather conditions otherwise prevent the proper handling or finishing of the bituminous mixture as determined by the Engineer, or his representative.

The bituminous top course shall only be placed during the period of April 1 to November 15 or as directed by the Engineer.

2.01D TEMPORARY PAVEMENT

Work under this item shall consist of placing temporary asphalt pavement 19 F9 Binder Course HMA, 80 series compaction in accordance with NYSDOT Section 402 Hot Mix Asphalt (HMA) Pavements Recycled asphalt top or binder course in accordance with Section R404 Recycled Asphalt Concrete Pavement Asphalt millings.

Asphalt millings are to be product of milling of existing asphalt concrete pavement. Asphalt millings are to be free of organic materials, gravel, crushed stone or any other material not direct product of milling process.

2.01E ASPHALT TACK COAT

Tack coat material shall be in accordance with NYS DOT Item 702-30, material designation RS-1.

2.01F SUBGRADE REINFORCEMENT

Roadway sub-base reinforcement shall be Tensar TX5 as manufactured by the Tensar Corporation, 2500 Northwinds Parkway, Suite 500, Alpharetta, Georgia 30009 or approved equal.

2.01G PAVEMENT REINFORCEMENT SYSTEM

A. Pavement reinforcement system shall be GlasGrid CG100L as manufactured by the Tensar International, 5883 Glenrudge Drive, Suite 200, Atlanta Georgia or approved equal.

2.02 TRAFFIC LOADING

Traffic shall be diverted away from newly paved areas until such time that the surface is totally cooled and has set to the extent that traffic will cause marks, indentation, or displacement of asphalt. All work shall be done in strict conformance with the requirements of the Town of Croton-On-Hudson and as set forth in the NYSDOT Standard Specifications.

PART 3: METHOD

3.01 DESCRIPTION

All pavements will be constructed in accordance with NYSDOT Standard Specifications unless otherwise specified. The application of the permanent pavement may be done by a paving Contractor accepted by the Engineer.

3.02 SUBBASE AND BASE COURSES

A. If specified on plans, install subgrade reinforcement on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.

B. Under pavements and walks, place sub-base course on prepared subgrade as follows:

1. Place base course material over subbase if required.

2. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3. Shape subbase and base to required crown elevations and cross-slope grades.

4. When thickness of compacted subbase or base course is 6 inches (150 mm) or less, place materials in a single layer.

5. When thickness of compacted subbase or base course exceeds 6 inches (150 mm), place materials in equal layers, with no layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick when compacted.

C. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.03 PERMANENT PAVEMENT

In Town R.O.W., Across Easements, Private Driveways, Roads, etc.: After adequate compaction has been achieved and when directed by the Engineer, the Contractor shall place install the permanent asphalt pavement to the lines, grades and thickness shown on the Contract Drawings.

3.04 TEMPORARY PAVEMENT

The temporary pavement section is to be constructed over trenches and other excavated areas where directed by the Town to maintain vehicular or pedestrian traffic. Temporary pavement section is to be constructed within 24 hours after having received written notice from the Town.
The temporary pavement section may be constructed of asphalt millings when hot mix asphalt material is not available due to weather restrictions and only as approved by Town. The finished surface of any temporary pavement section shall be reasonably smooth, well drained, and free of potholes, bumps, irregularities, and depressions. Proper equipment and personnel shall be available at all times in order to maintain the temporary pavement section surface in a safe and satisfactory condition. Special attention shall be given to the maintenance of all temporary pavement during weekends, holidays, and the winter season.

3.05 ASPHALT TACK COAT

Apply asphalt cement tack coat at the recommended rate between all Asphalt Concrete Paving Courses as required. See Section 3.04.

3.06 SUBBASE REINFORCEMENT

A. Prepare the subgrade by compacting and grading the existing subgrade to the required elevation. Install Tensar TX5 geogrid over the prepared subgrade. Place and compact 722-0404 Subbase Course, Type 4 aggregate base course then pave. The geogrid installation shall be in compliance with Tensar published installation guidelines. A Tensar authorized representative shall inspect the geogrid installation prior to placement of the aggregate base course.

3.07 PAVEMENT REINFORCEMENT SYSTEM

A. Pavement Overlay – The pavement surface shall be thoroughly cleaned to remove all loose aggregate, dirt, debris, or nay substance that can prevent adhesion of the GlasGrid CG100L paving mat. All cracks in the existing pavement that are ¼" or greater in width shall be repaired in accordance with published Tensar GlasGrid CG100L installation guidelines. The surface of the repaired pavement that will receive the GlasGrid CG100L Reinforcement shall be inspected by a Tensar authorized representative prior to installation of the GlasGrid CG100L pavement reinforcement mat. Installation of the GlasGrid CG100L mat shall be in compliance with Tensar published installation guidelines.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Measurement will be made as follows:

0301.1 Asphalt Driveway & Parking Pavement will be measured in square feet of finished asphalt pavement.

0301.2 Asphalt Pavement – 2" Thick will be measured in square feet of finished asphalt pavement.

0301.3 Asphalt Pavement – Pickleball Court Expansion will be measured in square feet asphalt pavement.

0301.4 Asphalt Overlay – 2" Thick will be measured in square feet of finished asphalt pavement.

0301.5 Asphalt Basketball Court will be measured in square feet of finished asphalt pavement.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall include the cost of furnishing all labor, materials and equipment including but not limited to the removal of any pavement, raising of all manhole frames; saw cutting and cleaning of pavement edges; final grading including sub-base material, supplying and applying the tack coat; sub-base reinforcement, pavement reinforcement system, supplying and applying permanent bituminous concrete pavement, and furnishing of all labor, materials, tools, equipment and incidental work and the removal and disposal of surplus material required to complete the work in accordance with the Contract Drawings and Specifications, to the satisfaction of the Engineer or Town.

The Engineer's estimate of quantity of asphalt pavement for comparing bids is approximate. The aforesaid quantity may be adjusted as required by the work.

Included in this work are the following pay items:

0301.1	**Asphalt Driveway & Parking Pavement**
0301.2	**Asphalt Pavement – 2" Thick**
0301.3	**Asphalt Pavement – Pickleball Court Expansion**
0301.4	**Asphalt Overlay – 2" Thick**
0301.5	**Asphalt Replacement Basketball Court**

Payment for all Work under this item shall be **Unit Price** bid and shall include the cost of all labor, materials and equipment necessary to complete the work specified under this section and as listed within the limits shown on the Contract Drawings and as directed by the Engineer or Town. The price bid for the work specified in items (0301.1, 0301.2, 0301.3, 0301.4, 0301.5) shall include the cost of all labor, equipment and materials specified herein in accordance with the Contract Drawings and Specifications.

END OF SECTION

SECTION 0402

CAST-IN-PLACE CONCRETE CURBS

PART 1: WORK

1.01 DESCRIPTION

Under this Work, the Contractor shall furnish all materials, equipment, labor and services required to construct cast-in place Portland cement concrete curbs. Included in this work item shall be the removal of existing curbs or driveways, obstructions, excavation, backfilling, compaction of subgrade, formwork, reinforcement, expansion joints including the disposal of surplus material and cleaning up at the locations as detailed on the Contract Documents and these specifications or as directed by the Engineer or Town. The Contractor shall coordinate his work and shall allow ample time and facility for the Work of other Sections to be installed.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0102 Survey and Stakeout
B. Section 0203 Select Fill Material
C. Section 0204 Crushed Stone Fill
D. Section 0206 Gravel Parking Area
E. Section 0301 Asphalt Pavement
F. Section 0401 Cast-In Place Concrete
G. Section 0701 Precast Concrete Catch Basins
H. Section 0906 Site Restoration
I. Section 0908 Timber Guard Rail

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American Society of Testing and Materials (ASTM) standards, latest editions.

2. American Concrete Institute (ACI) standards, latest editions.
   a. ACI 305R-10: Hot Weather Concreting.
   b. ACI 306R-10: Cold Weather Concreting.
   c. ACI 308.1-11: Standard Specification for Curing Concrete.
   d. ASTM C 94/C 94M – 11b: Standard Specification for Ready- Mixed Concrete.
   e. ASTM C 494/C 494M - 11: Standard Specification for Chemical Admixtures for Concrete.
3. "Placing Reinforcing Bars - CRSI-WCRSI Recommended Practices", latest edition. Concrete Reinforcing Steel Institute.
4. New York State Department of Transportation Standard Specifications

B. In general, all work and materials will conform to the latest revision and addenda to the New York State Department of Transportation Standard Specifications for Construction and Materials, which is referred to herein as NYSDOT Standard Specifications dated January 1, 2017.

4. ACI 304.2R-96: Placing Concrete by Pumping Methods.
5. ACI 305R-10: Hot Weather Concreting.
6. ACI 306R-10: Cold Weather Concreting.
7. ACI 308.1-11: Standard Specification for Curing Concrete.
8. ACI 318 -05 Building Code Requirements for Structural Concrete.
9. ASTM C 94/C 94M – 11b: Standard Specification for Ready- Mixed Concrete.
10. ASTM C 494/C 494M - 11: Standard Specification for Chemical Admixtures for Concrete.

B. In general, all work and materials will conform to the latest revision and addenda to the New York State Department of Transportation Standard Specifications for Construction and Materials, which is referred to herein as NYSDOT Standard Specifications dated January 2017.

1.04 DEFINITIONS

A. ACI 301, Section 1.2 - Definitions:

1. Add the following definitions:
   a. Cementitious Material: Cementitious materials include cement, ground blast furnace slag and fly ash.
   b. Corrosion Inhibitor Admixture: A liquid admixture, calcium nitrite that inhibits corrosion of concrete-embedded steel in the presence of chloride ions.
   c. Pumped Concrete: Concrete that is conveyed by pumping pressure through rigid pipe or flexible hose.
   d. Water-to-Cement Ratio (w/c): An ratio representing quantity in pounds of free moisture available for cement hydration divided by quantity of cementitious materials in pounds per cubic yard concrete.

1.05 DESIGN REQUIREMENTS

A. Performance Characteristics:

1. Walls: Normal weight concrete with a minimum 28 day compressive strength of 4000 psi, air entrained, and a maximum water to cement ratio of 0.45

2. Exterior slabs and pads on grade (pavements, stairs, etc): Normal weight concrete with a minimum 28 day compressive strength of 3500 psi, air entrained, and a maximum water to cement ratio of 0.40.

B. Mix design for concrete with smooth form is to contain a high-range water reducer (super plasticizer).

1.06 SUBMITTALS

A. Submittals Package: Submit product data for design mix(s) and materials for concrete specified below at the same time as a package.

B. Product Data:

1. Mix Design: Submit proposed concrete design mix(s) together with name and location of batching plant at least 28 days prior to the start of concrete work.

a. Include test results of proposed concrete proportions based on previous field experience or laboratory trial batches in accordance with ACI 301, Section 4.

b. Pumped Concrete: Include test results of proposed design mix(s) tested under actual field conditions with the maximum horizontal run and vertical lift required for this project.

2. Portland Cement: Brand and manufacturer's name.

3. Fly Ash: Name and location of source, and DOT test numbers.

4. Air-entraining Admixture: Brand and manufacturer's name.

5. Water-reducing Admixture: Brand and manufacturer's name.

6. High Range Water-reducing Admixture (Superplasticizer): Brand and manufacturer's name.

7. Corrosion Inhibitor Admixture: Brand and manufacturer's name.

8. Accelerating Admixture: Brand and manufacturer's name.

9. Aggregates: Name and location of source, and DOT test numbers.

10. Lightweight Coarse Aggregates: Brand and manufacturer's name.

11. Chemical Hardener (Dustproofing): Brand and manufacturer's name, and application instructions.

12. Chemical Curing and Anti-Spalling Compound: Brand and manufacturer's name, and application instructions.

13. Bonding Agent (Adhesive): Brand and manufacturer's name, and preparation and application instructions.

14. Expansion Joint Fillers: Brand and manufacturer's name.

15. Waterstop: Brand and manufacturer's name, and installation instructions.

16. Emery Aggregate: Brand and manufacturer's name, and application instructions.

17. Integral Water-Repellent Admixture: Brand, manufacturer name, specifications, and application instructions.

C. Quality Control Submittals:

1. Batching Plant Records: At the end of each day of placing concrete, furnish the Director's Representative with a legible copy of all batch records for the concrete placed.

2. Concrete Pumping Equipment Data: Include manufacturer's name and model of principal components, type of pump, and type and diameter of pipe/hose.

2. Minutes of the previous pre-installation conference.

D. LEED Design Submittals:

1. MR Credit 4.1 and MR Credit 4.2: Identify manufacturer's name, the percentage of post-consumer recycled content by weight, the pre-consumer recycled content by weight, and the cost of the product.

3. MR Credit 5.1 and MR Credit 5.2: Identify source, cost, and the fraction by weight that is considered regional.

1.07 QUALITY ASSURANCE

A. Qualifications

1. Concrete Installer: Company specializing in performing the Work of this Section shall have three years minimum experience on successful projects of similar size.

2. Concrete Producer: Company specializing in the production of concrete shall be certified by the National Ready Mixed Concrete Association (NRMCA) and shall have certification acceptable to either the Town or the NYS Department of Transportation. The plant shall use NYSDOT approved trucks and drivers shall be certified by the NRMCA.

3. Truck mixers for concrete shall be currently approved by the New York State Department of Transportation.

4. Pumping equipment for pumped concrete shall be subject to the approval of the Town.

B. Fly ash supplier shall be on the New York State Department of Transportation's current "Approved List of Suppliers of Fly Ash".

C. Source Quality Control: The Town reserves the right to inspect and approve the following items, at his own discretion, either with his own forces or with a designated inspection agency:

1. Batching and mixing facilities and equipment.

2. Sources of materials.

D. ACI 301, Section 1.3 Reference standards and cited publications:

E. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown Regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown regulations are given in this Section, the requirements of this Section shall govern.

2. Industry Standards: The ACI Standards listed under references apply to Work of this Section. Where more severe requirements then those contained in the Standards are given in this Section or the NYSDOT Standard Specifications, the requirements of this Section shall govern.

F. Certifications

Acquire cement and aggregate from same source for all work. If a change in suppliers is required, a new mix submittal must be produced with the new material and submitted for approval.

G. Coordination

Coordinate this work with the work of other Sections so that items to be installed are done so correctly and in proper sequence.

1.08 DELIVERY, STORAGE, AND HANDLING

A. ASTM C 94/C 94M, Article 14 - Batch Ticket Information: In addition to the information required by Paragraph 14.1, also include the following:

1. Type and brand, and amount of cement.

2. Weights of fine and coarse aggregates.

3. Class and brand, and amount of fly ash (if any).

B. Protect material from the elements and from other damage on the site before, during, and after installation. Reinforcement shall be stored in a location to prevent damage and rusting, etc.

C. Insure proper identification of reinforcement after bundles are broken.

D. The Contractor shall replace and pay for any material and work damaged to the satisfaction of the Engineer or Town.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Adequately protect concrete placed during rain, sleet, or snow, or when the mean daily temperature falls below 40°F or rises above 90°F as provided in Article 3.08.

PART 2 PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars: All reinforcing bars shall be of deformed type of new billet steel conforming to current requirements of ASTM A615 Grade 60. No rail or re-rolled steel will be permitted.

B. Supports for Reinforcement: Support for reinforcement supported by ground shall be coated wire bar supports or bar supports made of dielectric material or other acceptable materials or precast concrete block, 4" square minimum, having a compressive strength equal to that of the concrete being placed.

C. Cement: Shall conform to ASTM C150 Type 1 or Type II and shall be of the non-air-entrained type.

D. Admixtures

1. The use of admixtures shall comply with the requirements of all related sections of the NYS DOT Standard Specifications. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed 0.05 at 28 days.

2. Air-entraining admixtures shall conform to ASTM C260.

3. Chemical admixtures shall conform to ASTM C494.

F. Water: Shall be clean potable water free of injurious foreign matter conforming to the requirements of Section 500 and all related sections of the NYS DOT Standard Specifications.

G. Aggregate: Aggregate shall conform to ASTM C33, No.57, No.67 or No.8. Maximum size of coarse aggregate shall conform to paragraph 3.3.2 of ACI 318.

H. Expansion Joint Filler: Closed-Cell Polyurethane or Closed-Cell Expanded polyethylene Joint Filler - Resilient, compressible, semi-rigid; W.R. Meadow's Ceramar; A.C. Horn's Closed Cell Plastic Foam Filler, Code 5401; Sonneborn's Sonoflex F.

I. Expansion Joint Sealant: Type 1A Sealant

1. For Horizontal Joints: Two-part, self-leveling polyurethane sealant for traffic bearing construction; Mameco's Vulkem 255, Pecora's Urexpan NR-200, or Bostik's Chem-Calk 550 or Products Research & Chemical's RC-2SL.

2.02 MIXES

A. General

Cast-in-place concrete shall be air-entrained normal weight concrete except where lightweight concrete is indicated on the drawings.

Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

C. Air-entraining Admixture: ASTM C 260, and on the New York State Department of Transportation's current "Approved List".

D. Water-reducing Admixture: ASTM C 494/C 494M, Type A, and on the New York State Department of Transportation's current "Approved List".

E. High Range Water-reducing Admixture (Superplasticizer): ASTM C 494/C 494M, Type F, and on the New York State Department of Transportation's current "Approved List".

F. Corrosion-Inhibiting Admixture: ASTM C 494/C 494M, for use in resisting corrosion of steel reinforcement.

1. DCI Corrosion Inhibitor by W. R. Grace & Co., - Conn., 62 Whittemore Ave., Cambridge, MA 02140, (617) 876-1400 and Rheocrete CNI by Master Builders/ BASF Building Systems, 23700 Chagrin Blvd., Cleveland, OH 44122, (800) 628-9990.

2. DCI - S Corrosion Inhibitor by W. R. Grace & Co., - Conn., 62 Whittemore Ave., Cambridge, MA 02140, (617) 876-1400.

G. Retarding Admixture: ASTM C 494, Type D, Water-reducing and retarding, for use in hot weather concreting, and on the New York State Department of Transportation's current "Approved List".

H. Accelerating Admixture: Non-corrosive admixture, containing no chloride, complying with ASTM C 494, Type C or E, and on the New York State Department of Transportation's current "Approved List".

I. Fly Ash: ASTM C 618, including Table 1 (except for footnote A), Class F except that loss on ignition shall not exceed 4.0 percent.

J. ACI 301, Section 4.2.1.2 - Aggregates:

1. Add the following paragraph:
   - Fine aggregate for pumped concrete shall meet the requirements of ASTM C 33, except 15 to 30 percent shall pass the No. 50 sieve and 5 to 10 percent shall pass the No. 100 sieve. The fineness modulus of the fine aggregate for pumped concrete shall not vary more than 0.20 from the average value used in proportioning.

2. Change paragraph 7.2.1 to read as follows:
   - Aggregates for lightweight concrete shall meet the requirements of ASTM C 330, except that fine aggregate for lightweight concrete shall meet the requirements of ASTM C 33.

3. Add the following paragraph:
   - Aggregates shall be taken from storage silos or other approved locations that have been tested and approved by the New York State Department of Transportation, unless otherwise approved in writing by the Director.

K. Moisture-Retaining Cover: Waterproof paper, polyethylene film, or polyethylene-coated burlap complying with ASTM C 171.

L. Chemical Curing and Anti-Spalling Compound: ASTM C-309, Type 1D, Class B, with a minimum 18 percent total solids content. No thinning of material allowed.

1. SureCure Emulsion, Kaufman Products, Inc. 3811 Curtis Avenue, Baltimore, MD 21226, (800) 637-6372.

2. Cure & Seal by Symons Corp., 200 East Touhy Ave., PO Box 5018, Des Plaines, IL 60017-5018, (847) 298-3200.

3. Kure-N-Seal by Sonneborn/ BASF Building Systems, 889 Valley Park Dr., Shakopee, MN 55379, (800) 433-9517.

4. Day-Chem Cure & Seal UV 26 percent (J-22 UV) by Dayton Superior Corp., 721 Richard St., Miamisburg, OH 45342, (800) 745-3700.

5. Acrylseal HS by Master Builders/ BASF Building Systems, 23700 Chagrin Blvd., Cleveland, OH 44122, (800) 628-9990.

M. Chemical Hardener (Dustproofing): Colorless aqueous solution of magnesium-zinc fluosilicate.

1. Lapidolith by Sonneborn/ BASF Building Systems, 889 Valley Park Dr., Shakopee, MN 55379, (800) 433-9517.

2. Surfhard by The Euclid Chemical Co., 19218 Redwood Rd., Cleveland, OH 44110, (216) 531-9222.

3. Pena-Lith by W.R. Meadows, Inc., PO Box 543, Elgin, IL 60121, (847) 683-4500.

4. FluoHard by L & M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152, (402) 453-6600.

5. Armortop by Anti Hydro International, Inc., 265 Badger Ave., Newark, NJ 07108, (800) 777-1773.

6. Diamond by Kaufman Products , Inc., 3811 Curtis Avenue, Baltimore, MD 21226, (800) 637-6372.

N. Type 1 Expansion Joint Filler: Preformed, resilient, nonextruding cork units complying with ASTM D 1752, Type II.

O. Type 2 Expansion Joint Filler: Preformed, resilient, nonextruding, self-expanding cork units complying with ASTM D 1752, Type III.

P. Type 3 Expansion Joint Filler: Preformed, resilient, nonextruding bituminous units complying with ASTM D 1751.

Q. Epoxy Bonding Agent (Adhesive): 100 percent solids epoxy-resin-base bonding compound, complying with ASTM C 881, Types I, II, IV and V, Grade 2 (horizontal areas) or Grade 3 (overhead/vertical areas), and Class B (40-60 degrees Fahrenheit) or Class C (60 degree Fahrenheit and above).

1. SurePoxy HM Series by Kaufman Products, Inc., 3811 Curtis Avenue, Baltimore, MD 21226, (800) 637-6372.

2. Sikadur Hi-Mod 32 by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071, (800) 933-7452.

3. Epogrip by Sonneborn/-BASF Building Systems, 889 Valley Park Drive, Shakopee, MN 55379, (800) 433-9517.

R. Emery Aggregate: Natural emery, crushed, polyhedral in shape, with not more than 10 percent flat or elongated pieces, properly screened, graded and packaged in the manufacturer's plant, and delivered to the Site in sealed, labeled packages.

1. Emerundum by Anti Hydro International, Inc., 265 Badger Ave., Newark, NJ 07108, (800) 777-1773.

2. Non-Slip Aggregate by Setcon Industries, Inc., 5 Mathews Ave., Riverdale, NJ 07457-1020, (201) 283-0500.

3. Frictex H by Sonneborn/ BASF Building Systems, 889 Valley Park Dr., Shakopee, MN 55379, (800) 433-9517.

S. Waterstop: Extruded from virgin polyvinyl chloride plastic compound containing no scrap or reclaimed material or pigment.

1. Size: Minimum 6 inches wide by 3/8 inch thick, unless otherwise indicated.

2. Minimum Tensile Strength (ASTM D 412): 2000 psi.

3. Minimum Ultimate Elongation (ASTM D 412): 350 percent.

5. Shore A/10 Durometer Hardness (ASTM D 2240): Minimum 65; Maximum 83.

5. Maximum 24 Hour Water Absorption (ASTM D 570): 0.15.

T. Waterstop: Water swelling sealant; minimum 3/4 inch wide by 3/8 inch thick, unless otherwise indicated; minimum tensile strength (ASTM D 412) 100 psi minimum ultimate elongation (ASTM D 412) 500 percent.

1. MC-2010M by Adeka Ultra Seal Corporation, PO Box 459, Spearfish, SD 57783, (605) 642-3959.

2. Volclay Waterstop RX-101 by Colloid Environmental Technologies Company, Building Materials Division, 1350 W. Shure Drive, Arlington Heights, IL 60004, (708) 392-5800.

U. Expansion Joint Dowels: Smooth steel expansion joint dowel with minimum 5 inch long steel dowel cap, unless otherwise indicated.

V. Integral Water-Repellent Admixture:

1. Hydrocide Powder by Sonneborn/ BASF Building Systems, 889 Valley Park Drive, Shakopee, MN 55379, (800) 433-9517.

2. Darapel by W. R. Grace & Co., - Conn., 62 Whittemore Ave., Cambridge, MA 02140, (617) 876-1400.

2.02 MIXES

A. Cast-in-place concrete shall be air-entrained normal weight concrete except where lightweight concrete is indicated on the drawings.

1. Normal weight concrete, except as otherwise specified, shall have a minimum compressive strength of 3000 psi with a minimum of 564 pounds per cubic yard or 4000 psi, with a minimum of 611 pounds of cement per cubic yard. Slump: Maximum 4 inches; minimum 2 inches before the addition of any water-reducing admixtures or high-range water-reducing admixtures (superplasticizers) at the Site.

2. Normal weight concrete for exterior slabs, pads, ramps and stairs shall have a minimum compressive strength of 4000 psi, with a minimum of 611 pounds of cement per cubic yard. Slump: Maximum 3 inches; minimum 2 inches before the addition of any water-reducing admixtures or high-range water-reducing admixtures (superplasticizers) at the Site.

3. Optional Material: Fly ash may be substituted for (Portland) cement in normal weight and lightweight concrete up to a maximum of 15 percent by weight of the required minimum (Portland) cement. If fly ash is incorporated in a concrete design mix, make necessary adjustments to the design mix to compensate for the use of fly ash as a partial replacement for (Portland) cement.

   a. Adjustments shall include the required increase in air-entraining admixture to provide the specified air content.

   b. Lower early strength of the concrete shall be considered in deciding when to remove formwork.

B. Lightweight concrete shall be air-entrained concrete having a minimum compressive strength of 4000 psi and an air-dry unit weight between 95 and 115 lb/cu ft, with a minimum of 611 pounds of cement per cu yd. Lightweight concrete shall be made with normal fine aggregate; lightweight fine aggregate shall not be used. Slump: Maximum 4 inches; minimum 1 inch before the addition of any water-reducing admixtures or high-range water-reducing admixtures (superplasticizers) at the Site.

C. Slump for Pumped Concrete: When a water-reducing admixture is not used, maximum slump shall be 4 inches. When a water-reducing admixture is used, maximum slump shall be 6 inches and when a high-range water-reducing admixture (superplasticizers) is used, maximum slump shall be 8 inches.

D. Design Air Content: Design air content for concrete shall be 6 percent by volume, with an allowable tolerance of plus or minus 1.5 percent for total air content, except as otherwise specified. Use air-entraining admixture, not air-entrained cement.

E. Water-Cement Ratio: Cast-in-place concrete shall have a maximum water-cement ratio of 0.40.

F. ACI 301, Section 4.2.2.3: Change article to read as follows:

- 4.2.2.3 - Size of Coarse Aggregates:
- 4.2.2.3.a Normal Weight Concrete: Coarse aggregates shall conform to graduation requirements for various sizes as tabulated in Table No. 2 of ASTM C 33. The sizes of coarse aggregates for various classes of Work shall be as follows with all percentages being determined by weight.
- 4.2.2.3.b For concrete floors, floor and roof slabs, reinforced beams and girders, columns and piles, concrete encasing underground electric conduits, and concrete in which the space between restricting objects is 2 inches or less, the course aggregate shall be Size No. 67.
- 4.2.2.3.c For other concrete Work having a minimum cross-sectional dimension of not more than 6 inches, the coarse aggregate shall be a well graded mixture of No. 67 and No. 57, provided that not more than 50 percent nor less than 30 percent shall be Size No. 67 and not more than 70 percent nor less than 50 percent shall be Size No. 57.
- 4.2.2.3.d For other concrete Work having a minimum cross-sectional dimension greater than 6 inches and not more than 12 inches, the coarse aggregate shall consist of a mixture of No. 67, No. 57 and No. 467, providing that not more than 25 percent nor less than 10 percent shall be Size No. 67 and not more than 40 percent shall be Size No. 467.
- 4.2.2.3.e For other concrete Work having a minimum cross-sectional dimension of more than 12 inches, the coarse aggregate shall consist of a mixture of No. 67, No. 57 and No. 357, providing not more than 25 percent nor less than 10 percent shall be Size No. 67 and not more than 40 percent shall be Size No. 357.
- 4.2.2.3.f Lightweight Concrete: Lightweight aggregates shall be graded from 3/4 inch to No. 4 sieve size in conformance with Table No. 1 of ASTM C 330.

G. Application Rate for Corrosion-Inhibiting Admixture: The application rate for the corrosion-inhibiting admixture shall be TBD gallons per cubic yard of concrete for all concrete placements where indicated on the drawings.

H. Admixtures: Do not use admixtures in concrete unless specified or approved in writing by the Director.

I. ACI 301, Section 4.1.2.1 - Mixture Proportions:

1. Add the following to paragraph 4.1.2.1:
   - Proposed design mix(es) for pumped concrete and the pumping equipment shall have been tested under actual field conditions with the maximum horizontal run and vertical lift required for this project.

J. Application Rate for Integral Water Repellent Admixture:
1. Hydrocide Powder, 1 lb. for each 94 lb. of cement

2. Darapel, 3 to 6 oz. for each 100 lb. of cement.

2.03 JOINTS

A. ACI 301, Section 5.3.2.6 - Construction joints and other bonded joints:
1. Delete the following subparagraphs:

- Use an acceptable adhesive applied in accordance with the manufacturer's recommendations;
- Use an acceptable surface retarder in accordance with manufacturer's recommendations;
- Roughen the surface in an acceptable manner that exposes the aggregate uniformly and does not leave laitance, loosened particles of aggregate, or damaged concrete at the surface; or
- Use Portland-cement grout of the same proportions as the mortar in the concrete in an acceptable manner.

2. Add the following in place of the above subparagraph:
   - The use of bonding agent (adhesive).
   - The use of cement grout.

B. ACI 301, Section 10.2.5 – Isolation-joint filler materials:

1. Add the following paragraphs:
   - Except as otherwise shown on the Drawings, expansion joints shall be as follows:
   - In joints required to receive a sealant, the joint filler shall be 1/2 inch thick and recessed as required to form a caulking slot.
   - In joints not required to receive a sealant, the joint filler shall be 1/2 inch thick and extend through the full cross-section of the concrete.
   - Tool edges of concrete with 1/8 inch radius edging tool.

2.04 PRODUCTION OF CONCRETE

A. Provide ready-mixed concrete, either central-mixed or truck-mixed, unless otherwise approved in writing by the Engineer.

B. ACI 301, Section 5.3.2.1 Weather considerations

1. Delete paragraph under 5.3.2.1.c - Hot Weather, and add the following:
   - 5.3.2.1.c Provide adequate controls to insure that the temperature of the concrete when placed does not exceed 90 degrees F., and make every effort to place it at a lower temperature. The temperature of the concrete as placed shall not be so high as to cause difficulty from loss of slump, flash set or cold joints. Ingredients may be cooled before mixing by shading the aggregates, fog spraying the coarse aggregate, chilling the mixing water or other approved means. Mixing water may be chilled with flake ice or well-crushed ice of a size that will melt completely during mixing, providing the water equivalent of the ice is calculated into the total amount of mixing water.

C. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.

1. In cold weather, comply with ACI 306R.

   a. When air temperature is below 40 degrees F (4 degrees C) heat the mixing water and, if necessary, the aggregates to obtain a concrete mixture temperature of not less than 50 degrees F (10 degrees C) and not more than

80 degrees F (27 degrees C) at point of placement. If the mixing water is heated, do not exceed a temperature of 140 degrees F at the time it is added to the cement and aggregates.

2. In hot weather, comply with ACI 305R.

   a. When air temperature is between 85 degrees F (30 degrees C) and 90 degrees F (32 degrees C), reduce mixing and delivery time from 1 1/2 hours to 75 minutes, and when air temperature is above 90 degrees F (32 degrees C), reduce mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Do not use items of aluminum for mixing, chuting, conveying, forming or finishing concrete, except magnesium alloy tools may be used for finishing.

B. Check items of aluminum required to be embedded in the concrete and insure that they are coated, painted or otherwise isolated in an approved manner.

C. Install waterstops in accordance with manufacturer's printed instructions.

D. Hardened concrete, reinforcement, forms, and earth which will be in contact with fresh concrete shall be free from frost at the time of concrete placement.

E. Do not deposit concrete in water. Keep excavations free of water by pumping or by other approved methods.

F. Prior to placement of concrete, remove all hardened concrete spillage and foreign materials from the space to be occupied by the concrete.

G. Prior to placement of a concrete slab-on-grade, insure roof is watertight and install polyethylene or other preventative measures to mitigate exposure to external moisture sources such as rainwater; runoff from adjacent slopes; landscaping water; water from curing; or wet grinding, sawing, and cleaning.

H. Place vapor barrier directly under concrete slab-on-grade with no cushion or blotter layer.

3.02 ADMIXTURE ADDITIONS AT THE SITE

A. Site additions shall be limited to high-range water-reducers, non-chloride accelerators, and corrosion inhibitors. Comply with manufacturers' printed instructions for discharge of admixtures shall be furnished.

B. High-Range Water-Reducers:

1. Concrete shall arrive at a slump of 2 to 4 inches (50 to 100 mm). Water additions at the Site shall be limited to comply with water-to-cementitious ratio requirements.

2. Following addition of high-range water-reduced concrete, a minimum of 70 revolutions or 5 minutes of mixing shall be completed to assure a consistent mixture.

C. All concrete with other admixture additions shall mix a minimum of 70 revolutions or 5 minutes to assure a consistent mixture.

3.03 PLACING

A. ACI 301, Section 5.3.2.3 Conveying equipment:

1. Add the following paragraphs:
   - 5.3.2.3.d When pumping concrete, the lubricating mortar for the delivery line shall not be discharged into an area of concrete placement.
   - 5.3.2.3.e The inside diameter of the delivery lines for pumped concrete shall be the greater of either a minimum of 5 inches or 3 times the maximum size of coarse aggregate.

B. ACI 301, Section 5.3.2.2 - Conveying:

1. Add the following paragraph:
   - Operation of truck mixers and agitators and discharge limitations shall conform to the requirements of ASTM C 94.

C. ACI 301, Section 5.3.2.4 - Depositing:

1. Add the following paragraph:
   - Do not allow concrete to free fall more than 4 feet.

3.04 REPAIRING SURFACE DEFECTS

A. ACI 301, Section 5.3.7 – Repair of surface defects:

1. Add the following paragraph:
   - 5.3.7.1.a Finish patched areas to match the texture of the surrounding surface.

B. ACI 301, Section 5.3.7.2 - Repair of tie holes:

1. Delete last paragraph in 5.3.7.2 and replace with the following:
   - The patch mixture shall consist of a mixture of dry-pack mortar, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for placing and handling. For surfaces exposed to view, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

3.05 FINISHING FORMED SURFACES

A. Finish Schedule: Except where indicated otherwise on the Drawings, provide the finishes below:

1. Rough Form Finish for concrete surfaces not exposed to view.

2. Smooth Form Finish for concrete surfaces exposed to view.

3. Smooth Rubbed Finish for exterior concrete surfaces exposed to view.

4. Grout Cleaned Finish for interior concrete surfaces exposed to view.

B. ACI 301, Section 5.3.3.3 - As-cast Finishes:

1. Add the following to paragraph 5.3.3.3:
   - Fins shall be completely removed on surfaces to receive waterproofing.

3.06 SLABS & PADS

A. Slabs and Pads On Grade: Provide key type joints unless otherwise shown. Tool exposed joints.

B. ACI 301, Section 5.3.4 – Finishing unformed surfaces:

1. Add the following paragraph to section 5.3.4.1 Placement:
   - Provide monolithic finishes on concrete floors and slabs without the addition of mortar or other filler material. Finish surfaces in true planes, true to line, with particular care taken during screeding to maintain an excess of concrete in front of the screed so as to prevent low spots. Screed and darby concrete to true planes while plastic and before free water rises to the surface. Do not perform finishing operations during the time free water (bleeding) is on the surface.

C. Finish Schedule: Except where indicated otherwise on the Drawings, provide the finishes below:

1. Floated Finish for:

   a. Treads and platforms of exterior steps and stairs.

   b. Slabs and fill over which waterproofing, roofing, vapor barrier, insulation, terrazzo, or resin bound flooring is required.

2. Troweled Finish for:

   a. Interior slabs that are to be exposed to view.

   b. Slabs and fill over which resilient wood flooring, resilient tile or sheet flooring, carpet, or thin-film coating system is required.

   c. Slabs and fill over which thin-set ceramic tile is required, except fine-broom finished surface.

   d. Treads and platforms of interior steps and stairs.

3. Broom or Belt Finish for:

   a. Exterior slabs. Texture as approved by the Director's Representative.

4. Scratched Finish for:

   a. Surfaces to be covered with ceramic tile set in a bonded thick mortar bed, except screed to a Class B tolerance.

5. Integral Emery Aggregate Surfacing with Floated Finish for:

   a. Interior pedestrian ramps.

D. ACI 302 Chapter 8.2.8.2 - Tools for jointing; Saw-cutting.

1. Add the following paragraph:
   - Early-entry dry-cut saws are preferred in place of conventional wet-cut saws.

E. ACI 302 Chapter 8.3.12

1. Add the following to Conventional wet-cut saw cutting:
   - Begin saw-cutting as soon as the saw will not dislodge the aggregate or ravel the edge of the saw-cut, but in no case longer than 12 hours after the slab is placed. Saw-cut a minimum of one quarter of the slab depth leaving a clean, sharp edge in the pattern shown on the Contract Documents. Provide sufficient personnel and equipment to complete saw-cutting operations within 18 hours after the slab is placed.

F. Exposed surfaces with fibrous reinforcement: After curing of the concrete, remove any protruding fibers in a manner which will not harm the parent concrete.

G. Floor flatness and levelness tolerances: For flatness and levelness tolerances of floor slabs refer to ACI 302 Chapter 8.15. Floor surface tolerances shall be 1/8 inch over a horizontal distance of 10 feet in any direction, unless otherwise specified by floor profile quality classifications in ACI 302.

1. When flatness or levelness tolerances are not met then the floor shall be ground or scarified and repoured to meet specifications.

3.07 CURING AND PROTECTION

A. Hot Weather Concreting: Comply with ACI 305R whenever the atmospheric temperature or the form surface temperature is at or above 90 degrees F., or climatic conditions of wind and/or low humidity will cause premature drying of the concrete.

B. Curing Temperature: Maintain the temperature of the concrete at 50 degrees F. or above during the curing period. Keep the concrete temperature as uniform as possible and protect from rapid atmospheric temperature changes. Avoid temperature changes in concrete which exceeds 5 degrees F. in any one hour and 50 degrees F. in any 24-hour period.

1. Do not cure slabs by adding water; ponding or wet burlap method.

2. Do not use curing compounds or cure-and-seal materials unless such use is approved in writing by the adhesive and floor covering manufacturers. The curing product manufacturer's conformance to ASTM c 1315 is not a substitute for the adhesive and floor covering manufacturer's approval.

3. Cure the slab by covering with waterproof paper, plastic sheets, or a combination of the two for 3 to 7 days.

3.08 CHEMICAL HARDENER (DUSTPROOFING)

A. Apply chemical hardener to all troweled finished interior floors which are to be left exposed.

B. Do not apply chemical hardener until concrete has cured the number of days recommended in manufacturer's instructions.

C. Prepare surfaces and apply chemical hardener in accordance with manufacturer's printed instructions and recommendations.

3.09 FIELD QUALITY CONTROL

A. ACI 301, Section 1.6.4.2 - Testing Services:

1. Add the following paragraph:
   - 1.6.4.2. j Strength Tests for Pumped Concrete: Prepare strength test specimens and make strength tests from concrete samples obtained at the truck discharge chute and at the end of the pump delivery line in accordance with paragraph 16.3.4.4.

B. ACI 301, Section 1.6.3.3 – Tests required of Contractor's testing agency:

1. Add the following paragraph:
   - 1.6.3.3.c Make available to the Town's Representatives whatever test samples are required to make tests. Furnish shipping boxes for compression test cylinders.

C. Adjustment to Concrete Mixes: Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, at no additional cost to the State and as accepted by the Director. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Director's Representative before using in the work.

D. Test results will be reported in writing to the Town's Representative, Ready-Mix Producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

E. Nondestructive Testing: Impact hammer, Windsor probe, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

F. Additional Tests: The State shall make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Town's Representative. The

testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Pay for such tests when unacceptable concrete is verified, including all inspection and Engineering fees when non-conforming work is verified.

G. Moisture Testing: Test all slabs-on-grade for moisture content that will receive resilient flooring. For a preferred moisture testing method and limits; consult the written instructions of the floor covering manufacturer, the adhesive manufacturer, the patching/underlayment manufacturer, or combination thereof. Test repeatedly until the desired moisture content is obtained.

H. pH Testing: Test concrete floors for pH level prior to the installation of resilient flooring. Do not exceed the recommended pH level of the resilient flooring manufacturer or the adhesive manufacturer, or both.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Cast-In-Place Concrete will be measured in cubic yards, measured to the nearest whole cubic yard, computed in the final position.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall include the cost of furnishing all labor, materials and equipment for construction of cast-in-place concrete including but not limited to excavation, backfilling, removal and disposal of surplus material, concrete, reinforcing, expansion joints, repair or patching, and any incidental work required to complete the work in accordance with the Contract Documents and Specifications, to the satisfaction of the Engineer or Town. The unit price bid shall include the cost of placement and compaction, and testing.

END OF SECTION

SECTION 0402

CAST-IN-PLACE CONCRETE CURBS

PART 1: WORK

1.01 DESCRIPTION

Under this Work, the Contractor shall furnish all materials, equipment, labor and services required to construct cast-in place Portland cement concrete curbs. Included in this work item shall be the removal of existing curbs or driveways, obstructions, excavation, backfilling, compaction of subgrade, formwork, reinforcement, expansion joints including the disposal of surplus material and cleaning up at the locations as detailed on the Contract Documents and these specifications or as directed by the Engineer or Town. The Contractor shall coordinate his work and shall allow ample time and facility for the Work of other Sections to be installed.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0102 Survey and Stakeout
B. Section 0203 Select Granular Fill
C. Section 0204 Crushed Stone Fill
D. Section 0206 Gravel Parking Area
E. Section 0301 Asphalt Pavement
F. Section 0401 Cast-In Place Concrete
G. Section 0701 Precast Concrete Catch Basins
H. Section 0906 Site Restoration
I. Section 0908 Timber Guard Rail

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American Society of Testing and Materials (ASTM) standards, latest editions.

2. American Concrete Institute (ACI) standards, latest editions.
   a. ACI 305R-10: Hot Weather Concreting.
   b. ACI 306R-10: Cold Weather Concreting.
   c. ACI 308.1-11: Standard Specification for Curing Concrete.
   d. ASTM C 94/C 94M – 11b: Standard Specification for Ready- Mixed Concrete.
   e. ASTM C 494/C 494M - 11: Standard Specification for Chemical Admixtures for Concrete.
3. "Placing Reinforcing Bars - CRSI-WCRSI Recommended Practices", latest edition. Concrete Reinforcing Steel Institute.
4. New York State Department of Transportation Standard Specifications

B. In general, all work and materials will conform to the latest revision and addenda to the New York State Department of Transportation Standard Specifications for Construction and Materials, which is referred to herein as NYSDOT Standard Specifications dated January 1, 2017.

1.04 DEFINITIONS

A. NYS DOT Standard Specifications - This shall refer to the New York State Department of Transportation Standard Specifications of January 2017 or latest edition of addendums.

1.05 DESIGN REQUIREMENTS

A. Performance Characteristics:

1. Portland cement concrete curbs shall be Class A concrete with a minimum 28 day compressive strength of 3,000 psi, air entrained, and a maximum water to cement ratio of 0.46.

1.06 SUBMITTALS

A. Product Data

1. Mix Design: Submit proposed concrete design mix(s) together with name and location of batching plant at least 28 days prior to the start of concrete work.

   a. Include test results of proposed concrete proportions based on previous field experience or laboratory trial batches in accordance with ACI 301, Section 4.

   b. Pumped Concrete: Include test results of proposed design mix(s) tested under actual field conditions with the maximum horizontal run and vertical lift required for this project.

2. Portland Cement: Brand and manufacturer's name.

3. Fly Ash: Name and location of source, and DOT test numbers.

4. Air-entraining Admixture: Brand and manufacturer's name.

5. Water-reducing Admixture: Brand and manufacturer's name.

6. High Range Water-reducing Admixture (Superplasticizer): Brand and manufacturer's name.

7. Corrosion Inhibitor Admixture: Brand and manufacturer's name.

8. Accelerating Admixture: Brand and manufacturer's name.

9. Aggregates: Name and location of source, and DOT test numbers.

10. Lightweight Coarse Aggregates: Brand and manufacturer's name.

11. Chemical Hardener (Dustproofing): Brand and manufacturer's name, and application instructions.

12. Chemical Curing and Anti-Spalling Compound: Brand and manufacturer's name, and application instructions.

13. Bonding Agent (Adhesive): Brand and manufacturer's name, and preparation and application instructions.

14. Expansion Joint Fillers: Brand and manufacturer's name.

15. Emery Aggregate: Brand and manufacturer's name, and application instructions.

16. Integral Water-Repellent Admixture: Brand, manufacturer name, specifications, and application instructions.

B. Quality Control Submittals

1. Certificates: Concrete producer's Computer Batch Ticket must be presented at the site before concrete is placed for every load of concrete delivered.

1.07 QUALITY ASSURANCE

A. Qualifications

1. Concrete Installer: Company specializing in performing the Work of this Section shall have three years minimum experience on successful projects of similar size.

2. Concrete Producer: Company specializing in the production of concrete shall be certified by the National Ready Mixed Concrete Association (NRMCA) and shall have certification acceptable to either the Town or the NYS Department of Transportation. The plant shall use NYSDOT approved trucks and drivers shall be certified by the NRMCA.

3. Truck mixers for concrete shall be currently approved by the New York State Department of Transportation.

4. Pumping equipment for pumped concrete shall be subject to the approval of the Town.

B. Fly ash supplier shall be on the New York State Department of Transportation's current "Approved List of Suppliers of Fly Ash".

C. Source Quality Control: The Town reserves the right to inspect and approve the following items, at his own discretion, either with his own forces or with a designated inspection agency:

1. Batching and mixing facilities and equipment.

2. Sources of materials.

D. ACI 301, Section 1.3 Reference standards and cited publications:

E. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown Regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown regulations are given in this Section, the requirements of this Section shall govern.

2. Industry Standards: The ACI Standards listed under references apply to Work of this Section. Where more severe requirements then those contained in the Standards are given in this Section or the NYSDOT Standard Specifications, the requirements of this Section shall govern.

F. Certifications

Acquire cement and aggregate from same source for all work. If a change in suppliers is required, a new mix submittal must be produced with the new material and submitted for approval.

G. Coordination

Coordinate this work with the work of other Sections so that items to be installed are done so correctly and in proper sequence.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect material from the elements and from other damage on the site before, during, and after installation. Reinforcement shall be stored in a location to prevent damage and rusting, etc.

B. Insure proper identification of reinforcement after bundles are broken.

C. The Contractor shall replace and pay for any material and work damaged to the satisfaction of the Engineer or Town.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Adequately protect concrete placed during rain, sleet, or snow, or when the mean daily temperature falls below 40°F or rises above 90°F as provided in Article 3.08.

PART 2: MATERIALS

2.01 MATERIALS

A. Rough Formwork: Shall be Commercial Douglas Fir, DFPA: 5/8" thick minimum.

B. Reinforcing Bars: All reinforcing bars shall be of deformed type of new billet steel conforming to current requirements of ASTM A615 Grade 60. No rail or re-rolled steel will be permitted.

C. Supports for Reinforcement: Support for reinforcement supported by ground shall be coated wire bar supports or bar supports made of dielectric material or other acceptable materials or precast concrete block, 4" square minimum, having a compressive strength equal to that of the concrete being placed.

H. Cement: Shall conform to ASTM C150 Type 1 or Type II and shall be of the non air-entrained type.

E. Admixtures

1. The use of admixtures shall comply with the requirements of all related sections of the NYS DOT Standard Specifications. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed 0.05 at 28 days.

2. Air-entraining admixtures shall conform to ASTM C260.

3. Chemical admixtures shall conform to ASTM C494.

F. Water: Shall be clean potable water free of injurious foreign matter conforming to the requirements of Section 500 and all related sections of the NYS DOT Standard Specifications.

G. Aggregate: Aggregate shall conform to ASTM C33, No.57, No.67 or No.8. Maximum size of coarse aggregate shall conform to paragraph 3.3.2 of ACI 318.

H. Expansion Joint Filler: Closed-Cell Polyurethane or Closed-Cell Expanded polyethylene Joint Filler - Resilient, compressible, semi-rigid; W.R. Meadow's Ceramar; A.C. Horn's Closed Cell Plastic Foam Filler, Code 5401; Sonneborn's Sonoflex F.

I. Expansion Joint Sealant: Type 1A Sealant

1. For Horizontal Joints: Two-part, self-leveling polyurethane sealant for traffic bearing construction; Mameco's Vulkem 255, Pecora's Urexpan NR-200, or Bostik's Chem-Calk 550 or Products Research & Chemical's RC-2SL.

2.02 MIXES

A. General

1. Cast-in-place concrete shall be air-entrained normal weight concrete except where lightweight concrete is indicated on the drawings.

2. Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

1. Concrete shall be Class A and shall have a minimum 28–day compressive strength of 3,000 psi, unless high early strength is specified, in which case required strengths are based on 7-day compressive strength.

C. Method of Proportioning

1. Proportion concrete mix of strength listed in B above in accordance with the requirements of all related sections of the NYS DOT Standard Specifications.

2. Mix designs are specific to material used, concrete producer, and method of placement. Each mix design must be reviewed and accepted by the Engineer.

3. Proportion and produce normal weight concrete to have a maximum slump of 3.5" or less. All concrete shall be approved by the Engineer or Town.

4. Concrete shall be air-entrained and shall meet the requirements specified in NYSDOT Standard Specifications, Section 500, Table 501-3 for Class A Concrete.

2.03 QUALITY CONTROL

A. Tests

1. The Engineer will review the proposed materials for compliance with the Specifications prior to construction.

B. Inspection

1. Concrete work shall be subject to the approval of the Engineer or Town.

2. Contractors Responsibility for Quality Control

a. The Contractor shall be solely responsible for the physical control of the materials and concrete mixes, and shall see that such mix designs, tests, and controls are in accordance with the Specifications. The Contractor's superintendent shall attest that the Work was installed in accordance with the documents.

PART 3: METHOD

3.01 EXAMINATION

A. Prior to placement of concrete, verify that the concrete cover over the reinforcement is that which is specified on Drawings.

B. Verify that reinforcement and all other embedded items are provided and held securely, positioned accurately, and will not be a detriment to concrete placement.

C. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Engineer or Town any condition that prevents the performance of this Work.

3.02 FORMWORK

A. Provide formwork wherever necessary to confine concrete to the required shapes shown on Drawings. Follow all procedures of Section 2 of ACI 301, ACI 347, and Section 500 and all related sections of the NYSDOT Standard Specifications. Formwork, reinforcement, and embedded items shall be clean of all accumulated mortar from previous concreting and other foreign material. Repair or replace any formwork as required.

B. Cover the surfaces of the rough formwork with an approved form release agent that will effectively prevent absorption of moisture, prevent bond with the concrete, and which will not stain the concrete surfaces. Do not apply oil or release agents on formwork for concrete to receive additional concrete (such as at construction joints). Apply at a rate that will help achieve the finish specified below. Follow manufacture's recommendations.

C. Adequately support and substantially brace formwork to hold lines and shape. Securely brace forms against lateral deflection. Formwork shall be tight jointed to prevent leakage of concrete.

D. Chamfer strips shall be placed in the corners of forms to produce beveled edges (chamfers) on permanently exposed surfaces.

E. Provide "Rough Form Finish" for surfaces not exposed to view. Use plywood or metal forms coated with a release agent.

F. Formwork not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations and as required by H below.

G. When repair of surface defects or finishing is required at an early age, remove forms as soon as the concrete has hardened sufficiently to resist damage from removal operations.

3.03 REINFORCEMENT

A. Place reinforcement in accordance with CRSI "Placing Reinforcement Bars," Section 500 and all related sections of the NYSDOT Standard Specifications and Standard Details of Construction, Standard Drawing No. H-1045.

B. Support and fasten together all reinforcement to prevent displacement by construction loads or placing of concrete.

C. Lifting of bars into position during placement of concrete is not permitted.

3.04 PREPARATION

A. Subgrade Preparation

1. The subgrade for curbs shall be formed by excavating to the required depth, and shaped to the proper cross section, and shall be thoroughly compacted by rolling or tamping before placing any concrete to the satisfaction of the Engineer or Town.

   Where tree roots are encountered, they shall be removed to a depth of one foot for the full width of the walk.

   All soft and spongy places shall be removed and all depressions filled with suitable material which shall be thoroughly compacted in layers not exceeding six (6) inches in thickness.

2. Where existing curbs or driveways are to be removed, they shall be removed for their entire depth and disposed of in a satisfactorily manner.

3. Trench for installation of curb is to be as narrow as possible to accomplish work and to minimize disruption to existing tree root systems. Where it is necessary to cut existing tree roots for installation of curb, tree roots are to be cut with sharp cutting tools, and according to current arboricultural standards. Cut tree roots are to be removed and disposed of off-site.

   Remaining tree roots that are exposed are to be re-buried as soon as possible. Until tree roots can be re-buried, exposed tree roots are to be covered with wet burlap to keep tree roots from drying out. Burlap is to be kept wet until tree roots can be re-buried.

4. Curb is to be set true to line and grade, and within continuous concrete cradle. Dry mix concrete is to be used for portion of concrete cradle located under bottom of curb. Wet mix concrete is to be used for portion of concrete cradle located behind curb. Sub-base materials beneath curb are to be thoroughly compacted to provide firm and uniform bearing.

B. Remove excess or standing water, trash, and rubbish from forms. The base material shall be cleaned of deleterious materials prior to pouring of fresh concrete.

C. Remove hardened concrete from inner surfaces of conveying equipment and all formwork, reinforcement, and dowels.

D. Prepare previously placed concrete to be in contact with new concrete in the manner described under "Construction Joints."

E. Sawcut

The sawcut shall be for the full depth of sound concrete or sidewalk to the top of the underlying foundation. The sawcut shall be straight with sharp edges. No cutting or encroachment into adjacent panels or slabs will be permitted. All saw cutting shall be done with a water lubricated diamond blade. No separate payment will be made for saw cutting existing curbs if required. All work must be done in a safe and workmanlike manner, to the satisfaction of the Engineer or Town.

3.05 JOINTS AND EMBEDDED ITEMS

A. Construction Joints

1. Make joints not shown on Drawings at locations that will least impair the strength of the structure and comply with requirements of all related sections of the NYS DOT Standard Specifications. Such location is subject to the approval of the Engineer.

2. Continue reinforcement across joints. Provide longitudinal keys at least $1^1/_2$" deep in walls and provide other keys as required.

3. Thoroughly clean concrete surface of oil, grease, and other contaminants and remove all laitance prior to placement of adjoining concrete. Roughen surface of the concrete in an approved manner that will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate, or damaged concrete at the surface. Dampen surface immediately prior to placement.

4. In constructing concrete curb in areas where existing concrete sidewalks abuts the curb or new concrete sidewalk will be laid immediately behind the curb, curb joints shall be made to coincide with sidewalk expansion joints. All joints between sections of curb shall be filled with preformed expansion joint material.

B. The preformed expansion joints shall be one-quarter (1/4") inch or one-half (1/2") inch thick, at the Contractor's option and shall be placed between all curb sections and adjoining backs of sidewalks and driveways. The maximum distance between transverse expansion joints shall be ten (10) feet. The joint filler shall extend the full depth of the concrete and shall be one-fourth (1/4) of an inch below the finished surface of the sidewalk

C. Expansion Joints

1. The preformed expansion joints shall be one-quarter (1/4") inch or one-half (1/2") inch thick, at the Contractor's option and shall be placed between all curb sections and adjoining backs of sidewalks and driveways. The maximum distance between transverse expansion joints shall be ten (10) feet. The joint filler shall extend the full depth of the concrete and shall be one-fourth (1/4) of an inch below the finished surface of the sidewalk.

D. Embedded items

1. Set all fence sleeves, sockets, shoes, and other embedded items required for the work of other Sections or for their support prior to concreting or as per the manufacturer's installation instructions.

2. Provide ample notice and opportunity for items of other Sections to be introduced and/or furnished for installation before concrete is placed. Coordinate the work of the other Sections so all items are placed in their proper location.

3.06 MIXING AND PLACING CONCRETE

A. General

The general construction details for manufacturing and transporting concrete shall meet the requirements of Portland Cement Concrete Association. Concrete placement operations may be started when the ambient air temperature is 40° F or higher when measured in the shade within an accuracy of ± 2° F. Discontinue placement when the air temperature falls below 40° F. The temperature of the base material must be 40° F or higher.

1. Notify Town or Engineer at least 48 hours in advance of each concrete placement. Do not place concrete without approval of the Engineer or Town.

2. Do not allow rainwater to increase mixing water nor damage surface finish. Do not place concrete in the rain.

3. Production of concrete, including batching and mixing, shall be done in accordance with the requirements of Section 4 of ACI 301 and Section BC 1905.8 of the Building Code.

4. Placement of concrete shall be done in accordance with the requirements of Section 5 of ACI 301 and Section 500 and all related sections of the NYSDOT Standard Specifications. All consolidation shall be done by vibration.

B. Mixing

1. Batch, mix, and transport ready-mixed concrete in accordance with the appropriate sections of ASTM C94 and Section 500 and all related sections of the NYS DOT Standard Specifications. Truck mixers and agitators shall meet the requirements of the Truck Mixers Manufacturer's Bureau or shall comply with Section 8.1.2 of ASTM C94 and shall be NYSDOT approved. All trucks shall have working revolution counters and site gages.

2. Batch and mix other concrete in accordance with subsection 4.3.1 of ACI 301.

3. Use of chemical admixtures must be approved by the Engineer or Town.

4. Unless otherwise approved by the Engineer, concrete shall be deposited within $1^1/_2$ hours or 300 revolutions of the mixing drum, whichever comes first, after introduction of water to the cement or cement to the aggregate. When the ambient temperature rises above 90°F, the time shall be decreased to 1 hour.

5. Tempering and control of mixing water

   a. Mix concrete only in quantities for immediate use. Concrete which has started to set shall not be re-tempered, but shall be discarded. Water shall not be added at the site.

   b. For concrete containing HRWR (Superplasticizer), if loss of slump occurs, HRWR may be re-dosed at the site as long as a "flash set" has not occurred. Re-dosage procedures must be discussed and approved by the Engineer of Record and the admixture manufacturer.

C. Placement

Place concrete in accordance with ACI 304R, ACI 318, and all related sections of the NYS DOT Standard Specifications.

1. Aggregate base material and preparation as per the plans or as given in all related sections of the NYS DOT Standard Specifications.

2. Dampen subgrade or aggregate base immediately prior to placement of concrete.

3. Concrete curb is to be cast in segments having uniform length of approximately ten (10) feet. Segments are to be separated by construction joints, with provisions made at each joint for 1/4 inch expansion. When concrete curb is constructed next to concrete pavement, concrete curb construction joint is to line up with pavement joint.

4. Place the concrete in one course to the full depth shown on the contract documents. Immediately after placement of the concrete thoroughly compact the concrete with internal mechanical vibrating equipment. Internal mechanical vibrators shall be adequately powered, capable of transmitting vibration to the concrete in frequencies of not less than 5,000 vibrations per minute while inserted in concrete and shall produce a vibration of sufficient intensity to consolidate the concrete into place without separation of the ingredients. The vibrating element shall be vertically inserted in the concrete mass at a depth sufficient to vibrate the entire depth. It shall be withdrawn completely from the concrete before being advanced to the next point of application. Vibrate at evenly spaced intervals not farther apart than the radius over which the vibration is visibly effective and at a distance close enough to the forms to effectively vibrate the surface concrete. The time of vibration shall be of sufficient duration to accomplish thorough consolidation, produce dense, smooth surfaces free from aggregate pockets, honeycombing, and air bubbles; and to work the concrete into all angles and corners of the forms. However, over-vibration shall be avoided. Vibration shall be continued in one place until the concrete has become uniformly plastic, but not to the extent that pools of

grout are formed. Vibration shall be supplemented by working or spading by hand in the corners and angles of forms and along form surfaces while the concrete is plastic. Vibrators shall not be used to push or distribute the concrete laterally.

5. Hot Weather Protection: When the mean daily temperature of the atmosphere is over 90°F during concreting, follow the procedures outlined in ACI 305R to protect the concrete.

3.07 FINISHING OF FORMED SURFACES AND REPAIR OF SURFACE DEFECTS

A. General

1. Remove forms as soon as practicable.

2. Repair surface defects, including tie holes and cracks, immediately after form removal. Patches shall be of quality to match the specified finish.

3. Remove oil, grease, compounds, and other contaminants from surfaces and areas to be repaired.

B. Repair of Surface Defects

Repair surface defects in accordance with subsection 5.3.6 of ACI 301. At the Engineers discretion, repair mortars and coatings shall be employed to rectify defects. Materials shall be as selected by the Engineer or Town.

C. Finishing

1. Slope pavements uniformly toward drains. If pitch or elevations are not shown on Drawings, provide a minimum of 1/8" per foot.

2. Upon removal of forms, exposed face of concrete curb is to be immediately rubbed to uniform surface. No plastering will be permitted.

3.08 CURING AND PROTECTION

A. General

1. Begin curing concrete immediately after placement and finishing. Protect all freshly deposited concrete from premature drying and excessively hot or cold temperatures and maintain it with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete. Detailed procedures are given in ACI 308.

B. Procedure

1. Concrete surfaces shall be cured as follows:

a. Minimize moisture loss from forms exposed to heating by the sun by keeping forms wet until they are removed.

b. Continue curing until a total of 7 days has elapsed during which the temperature of the air in contact with concrete has remained above 50°F. Prevent rapid drying during and at the end of the curing period.

C. Hot Weather Curing

1. During the period June 1 to October 1 or when hot weather conditions require it, maintain continuous water curing for a minimum period of twenty-four hours. Provide for wind breaks, shading, and other necessary provisions.

2. After 24 hours, curing shall be as specified above. In all other respects, curing shall conform to applicable provisions of this Specification. Upon termination of the specified moist curing, every effort should be made to reduce the rate of drying by avoiding air circulation.

D. Protect concrete from mechanical disturbances during curing period. Protect adjacent finish materials and previously poured concrete against spatter during concrete placement.

E. Provide and maintain barricades and safeguards around openings, etc. to protect workmen from injury and to comply with all Building Code, OSHA, and other authorities having jurisdiction regulations.

3.09 FIELD QUALITY CONTROL

A. Testing & Inspection

1. Strength Tests
In general, strength tests are not required for Portland cement sidewalks. The Engineer may require testing should the durability or the quality of the concrete not conform to these specifications or be in question.

2. Evaluation and Acceptance of Concrete

The Contractor shall pay for all additional costs including labor and materials required for all damages resulting from improper concrete placement. The Contractor shall remove and replace all concrete work that is not of adequate strength or does not meet weather resistance and cannot be made to work by remedial methods acceptable to the Town at no cost to the Town. The Contractor shall be held responsible for all delays and damages to the work of other Sections that occur as a result of non-conformance.

3.10 PROTECTION AND CLEANING

A. During the curing period, and thereafter as conditions may require, protect the concrete from damaging mechanical disturbances, particularly excessive load stresses, heavy shock, and excess vibration. Protect all finished concrete surfaces from damage caused by construction equipment, materials or methods, and by rain or running water.

3.11 ACCEPTANCE OF CONCRETE WORK

A. The provisions of Subchapter 1.6 of ACI 301 apply to the acceptance of the concrete work.

E. Concrete work judged inadequate by inspection, structural analysis, core test, results of load test or deemed unacceptable due to appearance or durability concerns shall be repaired, reinforced with additional construction if so directed by the Engineer or Town, or be replaced if so directed by the Engineer at the Contractor's expense.

C. Acceptance of Concrete Finish

If the finish produced is not acceptable to the Town, the Contractor shall be responsible for all costs incurred to produce an acceptable finish by whatever means determined by the Town. Remove stains, rust, efflorescence, and other surface deposits to the satisfaction of the Engineer or Town.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Concrete Curb will be measured per linear foot along the face of the curb for the entire length of the work including the portion of curb shaped for handicap ramps and through driveways.

4.02 BASIS OF PAYMENT

The Work under this item shall be at the **Unit Price** bid for concrete curb and shall include the cost of furnishing all labor, materials and equipment including but not limited to excavation, backfilling, sub-base material, removal and disposal of surplus material, concrete, reinforcing, expansion joints, asphalt repair or patching, and any incidental work required to complete the Work in accordance with the Contract Documents and Specifications, to the satisfaction of the Town.

The Engineer's estimate of quantity of concrete curbs for comparing bids is approximate. The aforesaid quantity may be adjusted as required by the work.

END OF SECTION

SECTION 0501

WATER MAIN

PART 1: WORK

1.01 DESCRIPTION

Under this item the Contractor shall furnish and install the Work Items listed below at the location and grades shown on the drawings. All labor, materials and equipment including but not limited to saw cutting asphalt and concrete, excavation including trenching and sheeting, backfilling, screening of excavated material as required, compaction, pipe, fittings, couplings, restraints, concrete trust blocks, pipe sleeve, removal and disposal of material, cleaning up, and any incidental work required to complete the work as specified in the Contract Documents and these Specifications.

Water mains, fire hydrants and appurtenance shall conform to these specifications and shall be selected from the Town of Yorktown's Approved List of Suppliers or as shown on the Contract Drawings.

Included in this item of work are the following Work Items:

0501.1	**Water Main**
0501.2	**CLSM/Flowable Fill (K – Crete)**

Item 0501.1 Water Main - Under this work item, the Contractor shall install water mains, valves, manual air relief valve connection, all appurtenances, sleeving and insulation at the locations and grades shown on the Contract Drawing. This work shall include and not be limited to saw cutting, excavation, trust blocks, backfill piping, fittings, crushed stone, filter fabric, select fill, insulation, removal of surplus material and cleaning up at the location shown on the Contract Documents or as directed by the Engineer or Town.

Item 0501.2 CLSM/Flowable Fill (K – Crete) - Under this work item, the Contractor shall backfill with CLSM/Flowable Fill (K – Crete) as directed by the Engineer. This work shall include and not be limited to removal of surplus material and cleaning up at the location shown on the Contract Drawings or as directed by the Engineer or Town.

The work under this item shall not be performed without the prior authorization of the Engineer or Town. For bid purposes, **100 cubic yards** of CLSM/Flowable Fill (K – Crete) has been assumed for this pay item.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0203 Select Fill Material
G. Section 0204 Crushed Stone Fill
H. Section 0401 Cast-In-Place Concrete
I. Section 0503 Copper Water Service
J. Section 0703 Sewage Pumping Station
K. Section 0802 Building Services – General Plumbing & Electrical Work
L. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. Materials for water systems shall meet the appropriate American Water Works Association (AWWA) Standard C219 and American National Standards Institute (ANSI) specifications, except as modified by these specifications. Asbestos cement pipe or lead tipped gaskets shall not be used. The materials provided shall meet the requirements specified in the "Town Requirements for Water Mains and Appurtenances".
American Society of Testing and Materials (ASTM) standards, latest editions.

B. American Society of Testing and Materials (ASTM) standards, latest editions.

1. ASTM Designation: PS 31-95
Provisional Standard Test Method for Ball Drop on Controlled Low Strength Material to Determine Suitability for Load Application.

2. ASTM Designation: PS 30-95
Provisional Standard Practice for Sampling Freshly Mixed Controlled Low Strength Material.

3. ASTM Designation: PS 28-95
Provisional Standard Test Method for Flow Consistency of Controlled Low Strength Material.

4. ASTM Designation: PS 29-95
Provisional Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Controlled Low Strength Material

5. ASTM Designation: D6103, C939, C143, D6023, C1152, D4380, D1556, D2922, D6024, C403, D4832, D1196, & D4429, ASTM C552.

C. American Concrete Institute: ACI 229 Controlled Low Strength Material

D. National Ready Mixed Concrete Association (NRMCA): Guide Specification for Controlled Low Strength.

E. National Fire Protection Association (NFPA)

F. New York State Department of Transportation Standard Specifications

1.04 DEFINITIONS

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1.05 DESIGN REQUIREMENTS

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1.06 SUBMITTALS

A. Product Data: Manufacturer's specifications including dimensions and coatings.

B. Quality Control Submittals: Statement of compliance with ANSI & AWWA Specifications.

C. Temporary or Permanent Sheeting: The Contractor shall retain a Licensed Professional Engineer to design all excavation methods including temporary or permanent sheeting.

D. Design Data: Submit design mixes for concrete and CLSM/Flowable Fill, including list of admixtures to be used, to the Engineer. After approval and prior to placement, send the approved mix the Engineer.

E. Certificates: Concrete producer's Computer Batch Ticket must be presented at site before CLSM is placed for every load delivered.

1.07 QUALITY ASSURANCE

The Contractor shall disinfect, flush and test the pipeline in accordance with AWWA C-600-99 (except 4.2.2) Standard for Disinfection Water Main.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect material from the elements and from other damage on the site before, during, and after installation.

B. Insure proper identification of materials.

C. The Contractor shall replace and pay for any material and work damaged to the satisfaction of the Engineer.

PART 2: MATERIAL

2.01 DUCTILE IRON PIPE

Ductile iron pipe shall be supplied with push-on joints. The pipe shall conform to the requirements of ANSI Standard A 21.51 (AWWA C-151) Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for water or other liquids.

The thickness class of the pipe shall be Class 52 minimum.

Minimum thickness of linings for pipe and fittings:

Pipe and Fitting Size, inches	Thickness of Linings, inches
3-12	1/16
14-24	3/32
30-64	1/8

Ductile iron fittings shall conform to the requirements of ANSI Standard A 21.10 (AWWA C-110) Ductile Iron and Gray Iron Fittings, 3 Inch through 48 Inch, for water and other liquids.
All ductile iron pipe and fittings shall have a cement mortar lining conforming to the requirements of ANSI Standard A 21.4 (AWWA C-104) Cement-Mortar Lining for Ductile Iron Pipe and Fittings for water. The cement lining shall be given a seal coat of bituminous material.

All pipe and fittings shall have the standard outside bituminous coating of either coal tar or asphalt base and shall be approximately 1 mil thick. Pipes and fittings which will be exposed to the heat of the sun before or during installation shall be coated with whitewash on the exterior to prevent expansion damage to the cement lining.

Special fittings, if required, shall meet the requirements of the above applicable specifications and unless otherwise shown they shall be of corresponding thicknesses and diameters as standard fittings.

2.02 JOINTS

Ductile iron pipe joints shall be mechanical for bends and all other fittings; slip-type for all straight pipe.

A. Mechanical joints shall conform to the applicable sections of ANSI Standard A 21.11 (AWWA C-111) Rubber Gasket joints for Ductile Iron Pressure Pipe and Fittings. Lock type mechanical joints shall be used only where approved by the Engineer or Water Superintendent.

   Bolts and nuts for pipe flanges shall conform to ANSI Standard B 18.21 heavy dimensions, semi-finished bolts with square heads and cold-punched hexagonal nuts. Bolts and nuts shall conform to the applicable sections of the Standard Specification for Low Carbon Steel Externally and internally threaded Standard Fasteners ASTM Designation: A307-Grade B. Threads shall conform to the Course Thread Series, Class 2 fit in accordance with ANSI Standard B 1.1 Unified Standard for Screw Threads.

   Bolt heads and nuts and all unpainted surfaces of the flange, shall e coated with two (2) heavy applications of black asphaltum varnish.

B. Single Rubber Gasket "Slip-Type" Joint: Unless otherwise specified, single rubber gasket joints shall be "Tyton" type joints in accordance with ANSI Standard A 21.11 (AWWA C-111). The single rubber "slip-type" joint shall be made with an elongated grooved rubber gasket which fits into a socket in the bell of the pipe. The gasket shall be wiped clean, flexed and then placed in the socket. Any bulges in the gasket which might interfere with the entry of the plain end of the pipe shall be removed. A thin film of lubricant shall be applied to the gasket surface which will come into contact with the plain end of the pipe. The lubricant shall be as furnished by the pipe manufacturer.

   The plain end of the pipe, which is tapered for ease of assembly, shall be wiped clean and a thin film of lubricant applied to the outside of the plain end about 1" back from the end. The pipe shall be aligned and carefully entered into the socket until it just makes contact with the gasket. The joint assembly shall be completed by inserting the plain end past the gasket until it makes contact with the bottom of the socket. The pipe shall be pulled "home" with an approved jack assembly as recommended by the pipe manufacturer. If assembly is not accomplished with reasonable effort the plain end shall be removed and the adverse condition corrected.

   To insure metal to metal contact of the installed pipe, two serrated bronze wedges or copper jumper strips shall be installed at all joints of the pipe and fittings.

Unless otherwise specified, shown or ordered, pipe shall conform to the following specifications.

In general, fittings, special shapes and connecting pieces shall conform to the same or equal strength and quality specifications as the pipe with which they are used.

Unless otherwise specified in more detail, each piece of pipe shall be so marked or coded that it can be identified at the site of its installation as to its conforming with the specifications and approved shop drawings.

Where the joints are not covered by the specifications or otherwise designated, they shall be equally strong as the pipe itself and shall be such as will be watertight and result in a permanent smooth continuous interior surface across the joint. The joints shall be rubber gasketed similar or equal to those which are specifically required or detailed as a standard. Inferior materials or methods of joining pipe will not be permitted.

2.03 VALVES

A. GATE VALVES: Gate valves shall be iron-body, bronze mounted, non-rising stem, with O-ring stem seal, vertically mounted, conforming to the requirements of AWWA Standard C-509 Resilient-seated Gate Valves, for water supply service. Valves for use with ductile iron pipe shall be furnished with mechanical joint ends. Where shown or specified, valves shall also be furnished with flange ends. Joints shall be as specified in Standard C111.

Valves shall be furnished for working pressure as required; the minimum working pressure for sizes up to 12 inch diameter shall be 200 psi, and 150 psi for 16 inch diameter and larger.

Valves generally shall be furnished with 2 inch square operating nuts which shall be turned counterclockwise (open left) to open the valves.

B. VALVE BOXES: Valve boxes shall be cast-iron of the adjustable telescope Buffalo type, suitable to withstand heavy traffic, 5-1/4" I.D. as manufactured by the Mueller Company or an approved equal. The covers shall be marked "WATER" and bases shall be the round type.

All valve boxes shall be placed so as not to transmit shock or stress to the valve and shall be centered and plum over the operating nut of the valve. The ground in the trench upon which the valve boxes rest shall be thoroughly compacted to prevent settlement. The boxes shall be fitted together securely and set so that the cover is flush with the surface of the ground or street. Before permanent paving is placed, the Contractor shall, if necessary, raise or lower the valve boxes so that the covers shall be even with the final surface or the permanent paving.

2.04 CONTROLLED LOW STRENGTH MATERIAL (CLSM/Flowable Fill)

Where shown on the drawings or as ordered by the Engineer, the trench shall be backfilled with Controlled Low Strength Material (CLSM/Flowable Fill) meeting the following minimum requirements:

Flowable Fill Strengths	
Type of Flowable	Range of psi
Excavatable or Removable Non-excavatable or Non-removable:	100 - 200psi 300 -1200 psi

The Guideline for Excavatable or Removable Flowable Fill	
Materials	Mix design parameters
Cementitious Materials(Portland Cement Type I or II, Fly Ash or Slag)	100 - 300 lb. (Maximum of 200 lbs of straight cement)
Sand	2000-3000 lbs(depends on air, water & cementitious materials)
Water	water to cementitious ratio = 1.0 to 1.5
Air	10-30% (10-15% is common)
Unit Weight	118 f +/- 8

2.05 BACKFILL MATERIAL

A. Excavated Material: Excavated Material shall be used for backfilling of the water main. Excavated material shall meet the gradation specified below. In all instances, backfill shall be approved by the Engineer. Backfill material shall consist of suitable soil materials and shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials having the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

1. If the Engineer deems the excavated material to be unacceptable, Granular Fill shall be to backfill the water main. Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

B. Crushed Stone shall conform to NYSDOT Item 703-0201 have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
½ inch	45 to 85
¼ inch	30 to 65
No.10	15 to 45
No.200	0 to 5

2.06 MISCELLANEOUS MATERIALS

A. Pipe Insulation: Watermain insulation shall be FOAMGLAS and PITTWRAP by Pittsburgh Corning. Installation shall be in accordance with Pittsburgh Corning installation specifications.

PART 3: METHOD

3.01 DESCRIPTION

Earth excavation shall mean the removal from the trench lines of all materials except rock, and shall include topsoil, trees, hedges, shrubs, vegetation and structures above and below ground. The trench excavation will not be plowed, scraped or machine-dug closer than 3 inches to the finished grade. The last 3 inches of depth will be removed with pick and shovel to the exact grade just before placing of the pipe to provide firm bedding. All excavation carried beyond the lines and grades shown on the contract drawing, or established by the Town Engineer, together with the disposal of excavated material, shall be at the contractor's expense.

All unnecessary excavation will be filled with Backfill Material as specified. Backfilling of these specifications by the contractor at his own expense as directed by the Town Engineer.

3.02 ALIGNMENT AND GRADE

Lay and maintain the sewers to the required lines and grades at the required locations. The Contractor will correct any deviation from established lines and grades at his own cost. Wherever obstructions not shown on the Plans are encountered during progress of the work and they interfere to such an extent that an alteration in the Plans is required, the Engineer will have the authority to change the Plans and order a deviation from the line and grade shown on the Plans.

Prior to excavation, mark the location of all underground utilities on the surface of the ground. Caution will be taken in preparing for excavation so that the exact location of the underground structures including pipe lines may be determined.

Excavate test pits to determine the location of existing underground structures and pipe lines as directed by the Engineer. Payment for making test pits will be made under the Specification Item for Unclassified Excavation.

3.03 EXCAVATION AND PREPARATION OF TRENCH

Excavate the trench in open cut from the surface of the ground, except where otherwise indicated on the Plans. The Contractor shall be responsible for the protection of all existing adjacent piping, structures and other utilities and will repair any damage at his own expense.

The trench shall be properly excavated to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between the bell holes. The finished sub-grade shall be prepared accurately by means of hand tools. If the soil conditions at sub-grade are unsuitable, the Contractor shall excavate the trench below the pipe invert, to the limits shown or ordered and place the pipe on foundation material or concrete.

In rock trench, the bedding of the pipe in foundation material or concrete shall be in accordance with the details shown or specified. Special care in handling shall be exercised during delivery and unloading of pipe to avoid damage. Damaged pipe shall be rejected and replaced. The pipe shall be stored in such a manner as to keep the interior free from dirt and foreign matter. Any pipe that becomes contaminated shall be hand cleaned and washed before it is incorporated in the work. (It must be stressed that contamination in the line will prolong and impede the disinfection operation. Flushing, per se, shall not be relied upon for cleaning the pipe.)

Limit the length of trench to be excavated each day to that length which can be backfilled before the completion of work each day. In open field areas, the trench may be excavated ahead of pipe laying, but in no case will be trench excavation be made more than two hundred linear feet in advance of pipe laying. Excavate the trench to the depth required so as to provide a uniform and continuous bearing and support for the compacted bedding and the pipe as detailed on the Plans. Trenches excavated below the specified grade will be brought back to grade by filling with approved concrete, crushed stone bedding or bank run sand and gravel and thoroughly compacted as directed by the Engineer and at no cost to the Town.

Stockpile all excavated material in such a manner so as not to endanger the work or to limit free access to all parts of the work. Maintain access to utility valve boxes, manholes and fire hydrants at all times. Material deemed unsuitable by the Engineer for backfilling, will be removed from the site and disposed of as directed by the Engineer. Stockpile excess material suitable for backfilling about the job site, for use as backfill for any settlement that may occur subsequent to the initial trench backfilling. All excavated unsuitable materials must be replaced by clean fill approved by the Engineer. Surplus excess material, which is suitable for backfill, is the property of the Town and will be disposed of as directed, within two miles of the site of the work or as directed by the Engineer. All disposal areas will be leveled and graded as directed by the Engineer.

3.04 STEEL TRENCH BOXES

Steel trench boxes, (trench shields), may be used in lieu of temporary timber sheeting at the Contractor's option in trenches up to twenty (20') feet in depth, unless prohibited by the Engineer. The use of steel trench boxes and the type and fabrication of the boxes will be subject to applicable State and Federal Codes and Standards. In using trench boxes, the trench sides will be maintained in the placing and removal of the boxes to avoid opening the trench to excessive widths. All bedding and backfill to twenty-four (24") inches above the pipe will be properly tamped in place and maintained in position when the boxes are moved or removed to avoid disturbing the pipe and affecting the alignment and grade of the pipe. In unstable ground additional pea gravel or mixed crushed stone up to size 3/4 inch properly compacted in place will be required from the top of the pipe to twelve (12") inches above the pipe, as directed by the Engineer.

No direct payment will be made for temporary sheeting, compensation will be considered as being included in the unit prices bid for the various items of the Contract.

3.05 TEMPORARY SHEETING

Temporary timber or steel sheeting, except that which has been ordered left in place, may be removed after backfilling has been completed or has been brought up to such an elevation as to permit its safe removal. Sheeting and bracing may be removed before compacting of the trench, but only in such manner as will insure adequate protection of the water mains and/or other existing utilities, adjacent ground and structures. Take extreme care to fill all of the voids left after withdrawal of the sheeting. No direct payment will be made for temporary sheeting, compensation will be considered as being included in the unit prices bid for the various items of the Contract.

3.06 DEWATERING

Provide ample means and equipment with which to promptly remove and dispose of all water and drainage during excavation, and keep all excavations dry until the pipes to be installed are completed. Pipe laying will not be permitted if water is in the excavation. Prior to making a connection to an existing pipe line install a plug in the existing piping to prevent groundwater or drainage from entering. Leave the plug in place until its removal is directed by the Engineer.

Under no circumstances will completed portions of the work be used as a means of dewatering trenches.

Unless specifically provided for under a Specification Item, no direct payment will be made for dewatering, including the use of deep wells, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.07 WATERMAIN INSTALLATION

All pipe and fittings shall be installed to the lines and elevations shown, ordered or specified.

Unless otherwise specified, laying of ductile iron pipe shall comply with the applicable provisions of AWWA Standard C-600 Installation of Ductile-Iron Water Mains and their appurtenances. The laying condition of the ductile iron pipe shall consist of pipe being laid in a flat bottom trench with holes provided for the bells and tamped backfill to 24" over the pipe. The depth of trench in general shall be such as to provide no less than 4 feet and no more than 5 feet of cover over the pipe.

In accordance with the manufacturer's recommendations, proper and suitable tools and equipment shall be used for the safe and convenient handling and laying of pipe and fittings. Deflections at the pipe joints shall be limited to 75% of the maximum amount recommended by the manufacturer. Care shall be taken to prevent the bell and the cement lining from being damaged.

When it is necessary to cut ductile-iron pipe in the field, such cuts shall be made in accordance with AWWA C-600 Standard for Installation of Ductile-Iron Water Mains and their appurtenances. In no instance will torch cutting of pipe be permitted.

At the close of work each day, the end of the pipeline shall be tightly sealed with a cap or plug so that no water, dirt, or other foreign substance may enter the pipeline, and this plug shall be kept in place until pipe laying is resumed.

Slip type joints shall be installed in accordance with the recommendations of the manufacturer. Two serrated bronze wedges shall be supplied and installed in all slip type joints to insure continuous metal to metal contact of the installed pipe. Wedge design shall be of type approved by pipe manufacturer for this purpose.

Bolts on mechanical joints shall be tightened uniformly, using only torque-limiting wrenches to avoid over stressing the bolts.

3.08 JOINT RESTRAINTS AND THRUST BLOCKING

Joints shall be restricted at all fittings and other places and locations where the joints are susceptible to separation. Where rodding is used the bands shall be 2 inch thick by 2 inches wide. The band shall be wrought iron and fabricated to provide a snug fit between pipe and fitting bell. The tie rods shall be 3/4 inch diameter threaded steel rods unless otherwise approved. Before backfilling, all exposed metal shall receive a heavy coat of bitumastic paint.

Where retainer glands are used they shall be installed in accordance with the manufacturer's instructions. Diametrically opposed tee-bolts and set screws shall be tightened together to bring the gland into position evenly. Excessive tightening of the bolts and set screws shall be avoided and torque wrenches shall be used to prevent excessive tightening. Deflections at joints must be made prior to tightening of tee-bolts and set screws and shall be in accordance with these specifications.
Rodding and/or retainer glands are a supplement and shall not reduce the thrust blocking requirements. Concrete thrust blocking shall be provided at plugs, tees, bends, and other locations as may be designated where unbalanced thrust may be developed. The blocking shall be, in general, of such shape and form that the load due to the thrust shall not exceed 2 tons per square foot against earth or 5 tons per square foot against rock when the water pressure in the main is carried at the test pressure. The excavation at such locations shall receive special attention with such hand trimming as may be required to provide a good bearing against undisturbed materials within as short a distance as possible from the pipe or fitting.

Where reactions are in the vertical plane, provisions to restrain the thrust shall be made to meet the existing field conditions by either concrete anchorages, steel dowels grouted into holes drilled in rock, or a combination of both.

The minimum surface bearing area of thrust blocks shall be at least four square feet.

3.09 INSPECTION AND TESTING

The rights to witness any and all tests are reserved. The manufacturer shall furnish a sworn statement that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of the ANSI Standard A 21.51 or AWWA C151.

Each watermain pipe shall be subjected to a hydrostatic test of not less than 500 psi. This test may be made either before or after the standard outside coating has been applied, but shall be made before the application of cement lining. This requirement is not intended to preclude retesting, at the manufacturer's option, after application of a cement lining.

The pipe shall be under the full test pressure for at least 10 seconds. Suitable controls and recording devices shall be provided so that the test pressure and duration may be adequately ascertained. Any pipe that leaks or does not withstand the test pressure shall be rejected.

Testing shall be witnessed by the Engineer and/or the Town Water Department. Before the copper water line, valves or other appurtenances are covered, test to 150 pounds hydrostatic pressure. Protect tubing from movement during test.

3.10 BACKFILLING

A. General

No backfill shall be placed until the pipe has been inspected in place and approved by the Town. All backfilling will consist of approved sound material, free from organic material, rubbish, or other unsuitable materials. No material containing stones having a dimension of greater than 1 inch will be used for backfill. Backfill will be placed in uniform horizontal layers and properly compacted. No stones will be permitted within 2 feet of the pipe. The trench will be backfilled to a depth of 2 feet over the top of the pipe, and tamped solidly in a manner that will not produce unequal pressures or injure the pipe.

Backfilling will be carried out as soon as possible after the pipe has been inspected and approved. The length of pipe trench left open after inspection and approval will not be greater than 100 feet during working hours, and 25 feet at the end of each working day;

and approved temporary fencing around open excavation will be required at night, on week ends, and on holidays or when work is not in progress for any extended period of time. All backfilling will be in conformance with AWWA C-600 Standard for INSTALLATION OF DUCTILE WATER MAINS.

All trenches within the existing pavement areas including driveways will be backfilled with granular material meeting the specifications of New York State Department of Transportation Item 722-04 Subbase Course, Type 4.

Pipe foundations, to a depth of one (1) foot above the pipe, shall be placed in 12-inch layers and thoroughly compacted by approved mechanical methods to ensure firm bedding and side support. The density requirement is 95% minimum compaction in accordance with ASTM Method D1557.

When backfill reaches one (1) foot above the top of the pipe, the entire surface shall be compacted by mechanical means. The remainder of the trench shall be backfilled in layers not exceeding eighteen (18)inches thick and each layer thoroughly compacted with a backhoe mounted hydraulic or vibratory tamper, up to four (4) feet under pavement (below bottom of pavement base). The upper four (4) feet shall be compacted using hand-guided or small self-propelled vibratory or static rollers or pads in layers not exceeding twelve (12) inches in thickness.

The Town may order in-place density tests to ascertain conformance with the compaction requirements. Tests may be ordered for every 200 cubic yards of fill or backfill placed or at 75 linear foot intervals of pipeline backfilled, or frequencies deemed necessary by the Town. The Contractor shall dig test holes at no additional cost to the Town when requested for the purpose of taking an in-place density test below the current fill level. Excavated material in excess of that required for backfill, including material unsuitable for backfill, will be disposed of at the expense of the contractor at a place of disposal approved by the Town Engineer or Water Superintendent.

B. Controlled Low Strength Material (CLSM/Flowable Fill) shall be placed as ordered by the Engineer.

3. 11 PAVEMENT

Cuts for pavement removal will be made with straight paralleled sides with pneumatic cutters or other approved power tools. All cuts and shall be straight and true and follow the limits set in the plans. No payment will be made for additional excavation or pavement for any over cutting.

Refer to Technical Specification 0301Asphalt Pavement.

All trenches in the pavement area will be backfilled with material as specified under 3.10 of these specifications, "Backfilling."

3.12 SAFETY, PUBLIC CONVENIENCE AND TRAFFIC CONTROL

The Contractor will conduct his operations in such a manner as to provide maximum safety for all employees on the work and the public as well. The Contractor will provide suitable bridges, barricades, railings, or other protection about open trenches, and warning signs and flashing lights for any obstructions to the traffic. No driveway entrances will remain blocked overnight. The Contractor will promptly comply with such regulations as may be prescribed by the Town Engineer or Water Superintendent and will, when so directed, properly correct any unsafe conditions created by, or unsafe practices on the part of his employees. In the event of the contractor's failure to comply, the Town Engineer or his representative may take the necessary measures to correct the conditions or practices complained of, and all costs thereto, will be deducted from any

monies due the contractor. Failure of the Town Engineer to direct the correction of unsafe conditions or practices will not relieve the Contractor of his responsibilities thereunder. The Contractor will provide traffic control when required by the Town Engineer or Water Superintendent. The Contractor will fully cooperate at all times regarding traffic control, and will promptly comply with regulations prescribed by the Town Engineer or Water Superintendent. The entire cost of providing traffic control will be included in the unit price bid for this item.

3.13 DISINFECTION, FLUSHING AND TESTING

The Contractor shall disinfect, flush and test the pipeline in accordance with AWWA C-600-99 (except 4.2.2) Standard for Disinfection Water Main.

A. Procedure for Disinfecting: The water injector for introducing the chlorine-bearing water into the pipe should be supplied from a tap on the pressure side of the gate valve controlling the flow into the pipeline extension. Water from the existing distribution system or other source of supply shall be controlled so as to flow slowly into the newly laid pipeline during application of chlorine. The rate of chlorine mixture flow will be in such proportion to the rate of water entering the pipe that the chlorine dose applied to the water entering the newly laid pipe will produce at least 50 PPM residual with a reading of 25 PPM after a 24-hour period.

   Final Flushing and Testing: Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipeline at its extremities until the replacement water throughout its entire length shall, upon test, be proved comparable in quality to the water served the public from the existing water supply system and as approved by the public health authority having jurisdiction. Should the initial treatment fail to result in the conditions specified, the entire procedure shall be repeated until satisfactory results are obtained.

B. Flushing: The Contractor shall flush the pipeline, in sections, governed by the sources of clean water and suitable discharge points. The pipe section shall be flushed until the water runs clear. The contractor is advised that flushing does not create sufficient velocities to clear the pipeline of matter that may cause an unsatisfactory bacteriological test. Permission of the Town Engineer or Water Superintendent to stop flushing or directions to continue flushing shall involve no responsibility for the results of the bacteriological tests.

C. Hydrostatic Tests: The Contractor shall make hydrostatic tests upon all sections of the pipeline, in the presence of the Town Engineer or his representative. The hydrostatic tests shall be at 150% of the maximum working pressure and shall be as described in AWWA Standard C-600-99, except 4.2.2.

   The Contractor shall furnish, install, complete with reaction blocking, necessary plugs and caps required for this operation. Main line valves shall be utilized wherever possible to segregate test sections except as directed by the Town Engineer or his representative.

   The Contractor shall furnish all test equipment, including pumps, and meters. The test equipment shall be approved by the Town Engineer or his representative.

   The line shall be filled with water for a period of no less than two hours; then subjected to a pressure equivalent to 150% of the maximum working pressure. All air shall be purged from the line before testing. During this test, the measured leakage over a period of 2 hours shall comply with the allowable leakage at various pressures as shown in the table below:

Allowable Leakage per 1000 ft of Pipeline – gph Nominal Pipe Diameter – in.						
Avg. Test Pressure psi (bar)	3	4	6	8	10	12
450 (31)	0.48	0.64	0.95	1.27	1.59	1.91
400 (28)	0.45	0.60	0.90	1.20	1.50	1.80
350 (24)	0.42	0.56	0.84	1.12	1.40	1.69
300 (21)	0.39	0.52	0.78	1.04	1.30	1.56
275 (19)	0.37	0.50	0.75	1.00	1.24	1.49
250 (17)	0.36	0.47	0.71	0.95	1.19	1.42
225 (16)	0.34	0.45	0.68	0.90	1.13	1.35
200 (14)	0.32	0.43	0.64	0.85	1.06	1.28
175 (12)	0.30	0.40	0.59	0.80	0.99	1.19
150 (10)	0.28	0.37	0.55	0.74	0.92	1.10
125 (9)	0.25	0.34	0.50	0.67	0.84	1.01
100 (7)	0.23	0.30	0.45	0.60	0.75	0.90

D. Leakage Test: The leakage test requirements shall be in accordance with the AWWA C-600 standard for Installation of Ductile-Iron Water Mains and their appurtenances and shall in no instance, for any length of pipe tested, exceed the amount determined by the formula. All air shall be purged from the pipe before testing. The Contractor shall provide all gauges, pumps, equipment and personnel for the pressure and leakage tests. The gauges shall be of suitable ranges and shall have been recently certified as to accuracy.

E. Bacteriological Tests: The Contractor shall make all arrangements with the Town Engineer for bacteriological tests, and shall make the tests under their direction. The contractor shall furnish all equipment, disinfectants, piping, etc. required for the tests.

The pipelines shall be flushed and re-chlorinated until satisfactory bacteriological sampling has been achieved. The contractor shall obtain certificates of satisfactory bacteriological tests and furnish them to the Water Superintendent before the request is made for acceptance of the work.

F. The Water District shall furnish all water for flushing, testing, and disinfection. The contractor shall furnish all means and apparatus for getting the water into the pipelines and shall furnish, install, and remove any additional temporary blow-off piping required to discharge water used for flushing, testing and disinfection.

Note: The Contractor shall give the Town Engineer or Water Superintendent seventy-two (72) hours' notice prior to their intent to test the new water main. The Westchester County Department of Health (WCDOH) shall witness the pressure test and said test date and time shall be set by the WCDOH.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Measurement will be made as follows:

0501.1 Water Main – will be measured on a per linear foot (LF) along the center line of the pipe.

0501.2 CLSM/Flowable Fill (K – Crete) – CLSM/Flowable Fill (K – Crete) will be measured on a per cubic yard basis in place with a deduction made for the pipe diameter.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be the **Unit Price** bid and shall include the cost of all labor, laboratory testing, materials and equipment necessary to complete the work specified under this section and as listed below within the limits shown on the Contract Drawings and per the manufacturers shop drawing or as directed by the Engineer or Town. All labor, materials and equipment including but not limited to saw cutting asphalt and concrete, excavation including trenching and sheeting, backfilling, screening of excavated material as required, compaction, pipe, fittings, couplings, restraints, concrete trust blocks, pipe sleeve, removal and disposal of material, cleaning up, and any incidental work required to complete the work as specified in the Contract Documents and these Specifications to the satisfaction of the Engineer, Water Superintendent, WCDOH and or Town.

Payment shall be made for the following work Items as listed on the Project Bid Sheet:

0501.1	**Water Main**
0501.2	**CLSM/Flowable Fill (K – Crete)**

Item 0501.1 Water Main - Under this work item, the Contractor shall remove and re-install water mains, valves, manual air relief valve connection, insulation, fittings, couplings, restraints, concrete thrust blocks, connections to other pipes including tees and tapping sleeves and any incidental work required to complete the work as specified in the Contract Documents and Specifications to the satisfaction of the Engineer or Town.

Item 0501.2 CLSM/Flowable Fill (K – Crete) - Under this work item, the Contractor shall backfill with CLSM/Flowable Fill (K – Crete) as specified as directed by the Engineer. This work shall include and not be limited to removal of surplus material and cleaning up at the location shown on the Contract Drawings or as directed by the Engineer or Town. No payment will be made for any work performed without the prior written authorization of the Engineer or Town. The unit price bid shall include the cost of placement and compaction, and testing.

END OF SECTION

SECTION 0502

FORCE MAIN

PART 1: WORK

1.01 DESCRIPTION

Under this item the Contractor shall furnish and install sanitary force main and sanitary sewer manholes at the locations and grades shown on the Contract Drawings and these specifications. This work shall include the cost of all labor, materials and equipment necessary to complete the work including all piping, fittings and sanitary sewer manholes. This work shall not be limited to excavation, saw cutting asphalt and concrete, trenching and sheeting, screening of excavated material as required, backfilling and compaction, connections, temporary pavement, pavement repair or patching, street closure permits, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

A. Tie-In - Included in this item shall be the cost to furnish and install all pipe, valves and appurtenances required to connect the new 4" diameter ductile forcemain into the existing 8" diameter PVC forcemain.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0203 Select Fill Material
G. Section 0204 Crushed Stone Fill
H. Section 0301 Asphalt Pavement
I. Section 0401 Cast-In-Place Concrete
J. Section 0602 Furnish and Install Sanitary Sewers
K. Section 0703 Sewage Pumping Station
L. Section 0802 Building Services – General Plumbing & Electrical Work
M. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. Materials for water systems shall meet the appropriate American Standard Testing Materials (ASTM) Standard:

1. ASTM D-1784 made from Class 12454-B virgin compounds.
2. ASTM F 477, for gaskets ASTM 2855, for solvent-cemented

3. ASTM D-1248, Type 3, Category 3, 4 or 5, P23, P33 or P34, Class C

B. 10 State Standards – Recommended Standards for Wastewater Facilities

C. Rules and Regulations of the Westchester County Department of Health

1.04 SUBMITTALS

A. Product Data: Manufacturer's specifications including dimensions and coatings.

B. Quality Control Submittals: Statement of compliance with ANSI & AWWA Specifications.

PART 2: MATERIAL

2.01 BACKFILL MATERIAL

A. Excavated Material: Excavated material shall be used as backfill under this item unless the Engineer deems the material to be unsuitable. Excavated material used as backfill and grading, shall meet the gradation requirements for Granular Fill. No additional payment will be made for this work but the cost thereof shall be deemed included in the price for the item for which work is being performed.

B. Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials and shall have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

1. If the Engineer deems the excavated material to be unacceptable, Granular Fill shall be to backfill the forcemain. Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

C. Crushed Stone: Shall conform to NYSDOT Item 703-0201 have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
½ inch	45 to 85
¼ inch	30 to 65
No.10	15 to 45
No.200	0 to 5

2.02 PVC FORCEMAIN

All pressure lateral sewer pipe and fittings shall be not less than 1-1/4 inch in diameter PVC or HDPE.

A. Acceptable Materials:

1. Polyvinyl Chloride Pipe (PVC)

a. Minimum diameter and strength - 4" SCH 80

b. Pipe and fittings- ASTM D-1784 made from Class 12454-B virgin compounds

c. Joints - ASTM F 477, for gaskets ASTM 2855, for solvent-cemented

d. Curb Stop - Minimum size: 4" brass ball Ford model B11 555 or equivalent.

3 Curb Box

a . Minimum size: Ford model EA1-50-40-42R or equivalent.

2.03 SEWER

A. Check Valve - Minimum size: 4" PVC full ported passage Way Environment One Corp. or equivalent.

PART 3: METHOD

3.01 DEFINITION

Earth excavation shall mean the removal from the trench lines of all materials except rock, and shall include topsoil, trees, hedges, shrubs, vegetation and structures above and below ground. All excavation carried beyond the lines and grades shown on the contract drawing, or established by the Engineer, together with the disposal of excavated material, shall be at the contractor's expense.

All unnecessary excavation will be filled with Backfill Material as specified in D. Backfilling of these specifications by the contractor at his own expense as directed by the Engineer.

3.02 ALIGNMENT AND GRADE

Lay and maintain the sewers to the required lines and grades at the required locations. The Contractor will correct any deviation from established lines and grades at his own cost. Wherever obstructions not shown on the Plans are encountered during progress of the work and they interfere to such an extent that an alteration in the Plans is required, the Engineer will have the authority to change the Plans and order a deviation from the line and grade shown on the Plans.

Prior to excavation, mark the location of all underground utilities on the surface of the ground. Caution will be taken in preparing for excavation so that the exact location of the underground structures including pipe lines may be determined.

Excavate test pits to determine the location of existing underground structures and pipe lines as directed by the Engineer. Payment for making test pits will be made under the Specification Item for Unclassified Excavation.

3.03 EXCAVATION AND PREPARATION OF TRENCH

Excavate the trench in open cut from the surface of the ground, except where otherwise indicated on the Plans. The Contractor shall be responsible for the protection of all existing adjacent piping, structures and other utilities and will repair any damage at his own expense.

The trench shall be properly excavated to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between the bell holes. The finished sub-grade shall be prepared accurately by means of hand tools. If the soil conditions at sub-grade are unsuitable, the Contractor shall excavate the trench below the pipe invert, to the limits shown or ordered and place the pipe on foundation material or concrete.

In rock trench, the bedding of the pipe in foundation material or concrete shall be in accordance with the details shown or specified. Special care in handling shall be exercised during delivery and unloading of pipe to avoid damage. Damaged pipe shall be rejected and replaced. The pipe shall be stored in such a manner as to keep the interior free from dirt and foreign matter.

Limit the length of trench to be excavated each day to that length which can be backfilled before the completion of work each day. In open field areas, the trench may be excavated ahead of pipe laying, but in no case will be trench excavation be made more than two hundred linear feet in advance of pipe laying. Excavate the trench to the depth required so as to provide a uniform and continuous bearing and support for the compacted bedding and the pipe as detailed on the Plans. Trenches excavated below the specified grade will be brought back to grade by filling with approved concrete, crushed stone bedding or bank run sand and gravel and thoroughly compacted as directed by the Engineer and at no cost to the Owner.

Stockpile all excavated material in such a manner so as not to endanger the work or to limit free access to all parts of the work. Maintain access to utility valve boxes, manholes and fire hydrants at all times. Material deemed unsuitable by the Engineer for backfilling, will be removed from the site and disposed of as directed by the Engineer. Stockpile excess material suitable for backfilling about the job site, for use as backfill for any settlement that may occur subsequent to the initial trench backfilling. All excavated unsuitable materials must be replaced by clean fill approved by the Engineer. Surplus excess material, which is suitable for backfill, is the property of the Owner and will be disposed of as directed, within two miles of the site of the work or as directed by the Engineer. All disposal areas will be leveled and graded as directed by the Engineer.

3.04 STEEL TRENCH BOXES

Steel trench boxes, (trench shields), may be used in lieu of temporary timber sheeting at the Contractor's option in trenches up to twenty (20') feet in depth, unless prohibited by the Engineer. The use of steel trench boxes and the type and fabrication of the boxes will be subject to applicable State and Federal Codes and Standards. In using trench boxes, the trench sides will be maintained in the placing and removal of the boxes to avoid opening the

trench to excessive widths. All bedding and backfill to twenty-four (24") inches above the pipe will be properly tamped in place and maintained in position when the boxes are moved or removed to avoid disturbing the pipe and affecting the alignment and grade of the pipe. In unstable ground additional pea gravel or mixed crushed stone up to size 3/4 inch properly compacted in place will be required from the top of the pipe to twelve (12") inches above the pipe, as directed by the Engineer.

No direct payment will be made for temporary sheeting, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.05 TEMPORARY SHEETING

Temporary timber or steel sheeting, except that which has been ordered left in place, may be removed after backfilling has been completed or has been brought up to such an elevation as to permit its safe removal. Sheeting and bracing may be removed before compacting of the trench, but only in such manner as will insure adequate protection of the water mains and/or other existing utilities, adjacent ground and structures. Take extreme care to fill all of the voids left after withdrawal of the sheeting.

No direct payment will be made for temporary sheeting, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.06 DEWATERING

Provide ample means and equipment with which to promptly remove and dispose of all water and drainage during excavation, and keep all excavations dry until the pipes to be installed are completed. Pipe laying will not be permitted if water is in the excavation. Prior to making a connection to an existing pipe line install a plug in the existing piping to prevent groundwater or drainage from entering. Leave the plug in place until its removal is directed by the Engineer.

Under no circumstances will completed portions of the work be used as a means of dewatering trenches.

Unless specifically provided for under a Specification Item, no direct payment will be made for dewatering, including the use of deep wells, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.07 INSTALLATION

All pipe and fittings shall be installed to the lines and elevations shown, ordered or specified.

Unless otherwise specified, laying of ductile iron pipe shall comply with the applicable provisions of 10 State Standards – Recommended Standards for Wastewater Facilities and the Rules and Regulations of the Westchester County Department of Health. The laying condition of the pipe shall consist of pipe being laid in a flat bottom trench with backfill material consistent with the provided details. The depth of trench in general shall be such as to provide no less than 4 feet and no more than 5 feet of cover over the pipe.

In accordance with the manufacturer's recommendations, proper and suitable tools and equipment shall be used for the safe and convenient handling and laying of pipe and fittings. Deflections at the pipe joints shall be limited to 75% of the maximum amount recommended by the manufacturer.

No water shall be allowed to gather in excavations or trenches. All excavations must be properly refilled to grade in compacted layers and the original type of surface replaced. Streets, sidewalks, parkways and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the Sewer District and any other authority having jurisdiction. Soil or foreign matter shall be kept out of the pipe during construction and damage of pipe shall not be allowed. Open ends of pipes shall be kept plugged or bulk headed during construction.

No defective materials shall be used or installed.

In order to be accepted by the District, all manhole frame sets shall be set to finish grade, all valve boxes and curb boxes shall be set squarely down on the valve or curb stop and shall be centered and plumb over the wrench nut of the valve or operating rod of the curb stop and shall not be over extended. All valves and curb stops shall be suitable marked.

3.08 INSPECTION AND TESTING OF PIPE

Inspection of all sanitary sewer pipe and appurtenances shall fall under the guidelines of the Sewer District Quality Assurance Program.

A. Inspection is considered full time while contractor is doing sanitary work, laying pipe backfilling 2' minimum over pipe, backfilled laterals, setting structures, wet wells, prefabricated pump stations and testing. Bench and trough, frame sets, air release, blow-off, flushing, odor control buildings and laterals, if left open, will be considered periodic inspection.

B. Hydrostatic testing shall be performed on the finished system after it is completely backfilled. Test to Conform to AWWA C600-93 Section 4. Parameters are:

   1. Test Pressure – 120 PSI minimum – Test Duration 2 Hours

   2. Allowable leakage, per thousand feet of pipe:

Pipe Diameter	Leakage	Pipe Diameter	Leakage
1-1/4"	0.20 gallons	4"	0.66 gallons
1-1/2"	0.25 gallons	6"	0.99 gallons
2"	0.25 gallons	8"	I.32 gallons
2-1/2"	0.41 gallons	10"	1.64 gallons
3"	0.55 gallons		

3.09 BACKFILLING (EXCEPT ROAD AREAS)

A. No backfill shall be placed until the pipe has been inspected in place and approved by the Engineer. All backfilling will consist of approved sound material, free from organic material, rubbish, or other unsuitable materials. No material containing stones having a dimension of greater than 10 inches will be used for backfill. Backfill will be placed in uniform horizontal layers and properly compacted. No stones will be permitted within 2 feet of the pipe. The trench will be backfilled to a depth of 2 feet over the top of the pipe, and tamped solidly in a manner that will not produce unequal pressures or injure the pipe.

B. Backfilling will be carried out as soon as possible after the pipe has been inspected and approved. The length of pipe trench left open after inspection and approval will not be greater than 100 feet during working hours, and 25 feet at the end of each working day; and approved temporary fencing around open excavation will be required at night, on week ends, and on holidays or when work is not in progress for any extended period of time. All backfilling will be in conformance with the Contract Drawings.

C. All trenches within the existing pavement areas including driveways will be backfilled with granular material meeting the specifications of New York State Department of Transportation Item 722.04 Type 4.

D. Pipe foundations, to a depth of one (1) foot above the pipe, shall be placed in 12-inch layers and thoroughly compacted by approved mechanical methods to ensure firm bedding and side support. The density requirement is 95% minimum compaction in accordance with ASTM Method D1557.

E. When backfill reaches one (1) foot above the top of the pipe, the entire surface shall be compacted by mechanical means. The remainder of the trench shall be backfilled in layers not exceeding eighteen (18) inches thick and each layer thoroughly compacted with a backhoe mounted hydraulic or vibratory tamper, up to four (4) feet under pavement (below bottom of pavement base). The upper four (4) feet shall be compacted using hand-guided or small self-propelled vibratory or static rollers or pads in layers not exceeding twelve (12) inches in thickness.

F. The Town may order in-place density tests to ascertain conformance with the compaction requirements. Tests may be ordered for every 200 cubic yards of fill or backfill placed or at 75 linear foot intervals of pipeline backfilled, or frequencies deemed necessary by the Owner. The contractor shall dig test holes at no additional cost to the Owner when requested for the purpose of taking an in-place density test below the current fill level. Excavated material in excess of that required for backfill, including material unsuitable for backfill, will be disposed of at the expense of the contractor at a place of disposal approved by the Engineer or Water Superintendent

3.10 PAVEMENT

Cuts for pavement removal will be made with straight paralleled sides with pneumatic cutters or other approved power tools. All cuts and shall be straight and true and follow the limits set in the plans. No payment will be made for additional excavation or pavement for any over cutting.

All trenches in the pavement area will be backfilled with material as specified under 0301 of these specifications, "Backfilling." The backfill in the road trench area will be placed uniformly in layers of one foot and will be firmly compacted by an approved mechanical tamper.

3.11 SAFETY, PUBLIC CONVENIENCE AND TRAFFIC CONTROL

The Contractor will conduct his operations in such a manner as to provide maximum safety for all employees on the work and the public as well. The contractor will provide suitable bridges, barricades, railings, or other protection about open trenches, and warning signs and flashing lights for any obstructions to the traffic. No driveway entrances will remain blocked overnight. The Contractor will promptly comply with such regulations as may be prescribed by the Engineer and will, when so directed, properly correct any unsafe conditions created by, or unsafe practices on the part of his employees. In the event of the contractor's failure to comply, the Engineer or his representative may take the necessary measures to correct the conditions or practices complained of, and all costs thereto, will be deducted from any monies due the contractor. Failure of the Engineer to direct the correction of unsafe conditions or practices will not relieve the contractor of his responsibilities thereunder. The contractor will provide traffic control when required by the Engineer. The contractor will fully cooperate at all times regarding traffic control, and will promptly comply with regulations prescribed by the Engineer. The entire cost of providing traffic control will be included in the unit price bid for this item. Flagmen shall be provided at all times when working within public roads or driveways.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Force main will be measured per linear foot along the centerline of the pipe. All pipe will be measured from the exact beginning of the pipe to the end of the line without deduction for fittings.

4.01 DESCRIPTION

Payment for all Work under this item shall be the **Unit Price** bid and shall include the cost of all labor, materials and equipment necessary to complete the work as shown on the Contract Drawings. All labor, materials and equipment including but not limited to excavation, saw cutting asphalt and concrete, trenching and sheeting, screening of excavated material as required, backfilling and compaction, sub-base material, removal and disposal of surplus material, proposed force main pipe, valves, fittings, couplings, restraints, concrete thrust blocks, laying of pipe, connection to other pipes, temporary pavement, pavement repair or patching, street closure permits, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

END OF SECTION

SECTION 0503

COPPER WATER SERVICE

PART 1: WORK

1.01 DESCRIPTION

The Contractor shall furnish and install copper water services as shown on the Contract Drawings and these specifications and shall include the cost of all labor, materials and equipment necessary to complete the work. The copper tubing shall be provided at the locations shown from the water main to the curb stop and shall include providing all copper tubing, fittings, valves, water main taps, curb stops. This work shall include excavation, saw cutting asphalt and concrete, trenching and sheeting, screening of excavated material as required, backfilling and compaction, copper tubing, valves, fittings, couplings, connection to other pipes, temporary pavement, pavement repair or patching, street closure permits, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

This work shall include the following work areas:

A. Restrooms
B. Concession Stand
C. Maintenance Building

The Engineer at his discretion may require additional work under this section if he deems this work necessary to comply with the intent of this project. Any work not included under this specification but required for the successful completion of project work, as deemed by the Engineer, shall be performed by the Contractor as directed by the Engineer and paid for under Item 1002 Additional Miscellaneous Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0203 Select Fill Material
G. Section 0301 Asphalt Pavement
H. Section 0501 Water Main
I. Section 0502 Force Main
J. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society of Testing and Materials (ASTM)

B. American National Standards Institute (ANSI)

1.04 DEFINITIONS

THIS SECTION LEFT BLANK

1.05 DESIGN REQUIREMENTS

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1.06 SUBMITTALS

A. Manufacturers cut sheets.

1.07 QUALITY ASSURANCE

A. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown regulations are given in this Section, the requirements of this Section shall govern.

1.08 DELIVERY, STORAGE, AND HANDLING

THIS SECTION LEFT BLANK

1.09 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Town or others unless permitted in writing by Town and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Town not less than three days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Vilage's written permission.

3. Contact utility-locator service for area where Project is located before the start of work.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2: MATERIALS

2.01 DESCRIPTION

A. General: Imported materials utilized for this Project shall be obtained from a source that has been licensed or permitted for such use by local and state authorities. The Contractor shall be required to submit evidence of such if so requested.

B. All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stockpiled convenient to areas for later re-use or placed within the limits of the Contract or where directed by the Town. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

C. Excavated Material: Excavated material shall be used as backfill under this item unless the Engineer deems the material to be unsuitable. Excavated material used as backfill and grading, shall meet the gradation requirements for Granular Fill. No additional payment will be made for this work.

2.02 BACKFILL MATERIAL

A. All fill materials shall be free Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, construction debris, stones or boulders over 6 inches in greatest dimension, frozen material, and material which, in the opinion of the Engineer is unsuitable shall be immediately removed from the site. Materials from other sources may be used upon approval by the Geotechnical Engineer. Fill materials in the uppermost 2 feet shall not have any rocks larger than 3 inches in diameter.

1. Imported soil or fill materials to the site shall be analyzed for the following chemical parameters using EPA methods. Volatiles, Semi-Volatiles, TAL Metals, Pesticides/Herbicides, PCB's. Concentrations shall be compared to the NYSDEC Technical Assistance Guidance Memorandum (TAGM) and approved by the ENGINEER. Samples shall be taken at a frequency of 1 per 5,000 cubic yards if originating from a natural borrow source and 1 per 1,000 cubic yards if manufactured or recycled.

B. Borrow Material: Where undercutting or construction of embankments are required and the Engineer deems that onsite material is unsuitable, he may require that the Contractor import suitable fill material. Suitable soil materials are defined as those complying with ASTM D2487 soil classification groups SM, SW, and SP or NYSDOT Item 733-09 Select Borrow or as directed by the Engineer. The source shall approved by the Engineer. Borrow Material if ordered by the Engineer will be paid under Item 0203.1. No payment will be made without the prior approval of the Engineer or Town.

C. Select Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the

Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials conforming to NYSDOT Item 733-1101 and have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
4 inch	100
No. 40	5 – 70
No.200	0 -15

Select Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.2. No payment will be made without the prior approval of the Engineer or Town.

D. Granular Fill: Material for use as backfill where called for by the Engineer shall be approved by the Engineer and obtained from approved sources. Native material may be used as backfill provided it meets the gradation specified below. Granular fill shall consist of suitable soil materials and shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials having the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

E. Site Stripped Topsoil may be used as fill in landscape areas only.

2.03 COPPER SERVICE AND FITTINGS

A. Tubing: ASTM B 88, Type K soft temper unless otherwise noted on the drawings.

B. Fittings: Cast Bronze, Flared Type; ANSI/ASME B16.26.

C. Corporation Stop: Mueller H-15000

D. Curb Stop: Adjustable Curb Box Mueller H-10350 Buffalo Type

PART 3: METHOD

3.01 EXCAVATION AND PREPARATION OF TRENCH

Excavate the trench in open cut from the surface of the ground, except where otherwise indicated on the Plans. The Contractor shall be responsible for the protection of all existing adjacent piping, structures and other utilities and will repair any damage at his own expense. Limit the length of trench to be excavated each day to that length which can be backfilled before the completion of work each day. In open field areas, the trench may be excavated ahead of pipe laying, but in no case will be trench excavation be made more than two hundred linear feet in advance of pipe laying. Excavate the trench to the depth required so as to provide a uniform and continuous bearing and support for the compacted bedding and the pipe as detailed on the Plans. Trenches excavated below the specified grade will be brought back to grade as per the detail by filling with existing soil fill or crushed stone bedding and thoroughly compacted as directed by the Engineer and at no cost to the Owner. The Engineer may specify the method to be used at his discretion based on subsoil conditions.

Stockpile all excavated material in such a manner so as not to endanger the work or to limit free access to all parts of the work. Maintain access to utility valve boxes, manholes and fire hydrants at all times. Material deemed unsuitable by the Engineer for backfilling, will be removed from the site and disposed of as directed by the Engineer. Stockpile excess material suitable for backfilling about the job site, for use as backfill for any settlement that may occur subsequent to the initial trench backfilling. All excavated unsuitable materials must be replaced by clean fill approved by the Engineer. Surplus excess material, which is suitable for backfill, is the property of the Owner and will be disposed of as directed, within two miles of the site of the work or as directed by the Engineer. All disposal areas will be leveled and graded as directed by the Engineer. No additional payment will be made for replacement material.

It is the Contractors responsibility to properly dispose of any materials to be removed off-site as per all sections of these specifications. The Contractor is responsible to find a legitimate disposal site and must obtain any permits or licenses required for proper disposal. The Contractor is responsible for any fees or fines associated with the proper disposal of any materials outline in all sections of these specifications.

3.02 INSTALLATION

A. Laying Tubing:

1. Minimum Depth: 4'-0" (unless otherwise indicated on drawings) measured from finish or existing grade, whichever is lower.

2. Install valves and fittings where indicated. Lay tubing on a continuous slope to a high point where air can be released.

B. Flaring and Assembling Tubing:

1. Cut tube ends square.

2. Remove all burrs and metal chips.

3. Slip coupling nut on tubing.

4. Flare tubing ends, use impact or mechanical type flaring tools in accordance with manufacturers' recommendations.

5. Assemble tubing fittings and tighten coupling nuts with two wrenches, one on the nut and one on the fitting.

C. Protecting Tubing: Securely close all open ends of tubing and fittings with removable plugs whenever directed by the Director's Representative.

D. Testing:

1. Before the tubing, valves or other appurtenances are covered, test to 150 pounds hydrostatic pressure. Protect tubing from movement during test.

2. Remove all defective tubing, valves, and fittings. Replace with sound items and make all leaky joints tight. Repeat the test after the repairs are made until no leaks develop when the line is subjected to the required pressure for a period of 30 minutes.

3. All tests shall be made in such manner as the Director's Representative shall direct and in his presence.

E. Disinfection: After completion of the hydrostatic test, disinfect all piping and fittings in accordance with Section 0501.

PART 4: MEASURE MENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Copper Water Service will be measured per linear foot along the centerline of the pipe. All pipe will be measured from the exact beginning of the pipe to the end of the line without deduction for fittings.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall include the cost of furnishing all labor and materials at locations shown on the Contract Drawings and shall include the cost of furnishing all labor, materials and equipment including but not limited to excavation, saw cutting asphalt and concrete, trenching and sheeting, screening of excavated material as required, backfilling, compaction, sub-base material, removal and disposal of surplus material, proposed copper pipe, laying of pipe, fittings, valves, taps and connections to water main, curb stops, repair or patching, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

END OF SECTION

SECTION 0601

DRAINAGE CONVEYANCE SYSTEM

PART 1: WORK

1.01 DESCRIPTION

A. Under this item the Contractor shall furnish and install High Density Polyethylene (HDPE) drainage pipe and appurtenances. The drainage pipe shall be installed at the locations and grades shown on the Contract Drawings including excavation, backfill, the removal of surplus material and cleaning up at the locations shown on the Contract Documents and these specifications or as directed by the Engineer or Town. The pipe and all fittings shall conform to these Specifications and the Contract Drawings.

B. Under this item the Contractor shall furnish and install vegetated or rip-rap swales. The swales shall be installed at the locations and grades shown on the Contract Drawings including excavation, grading, reinforcing, seeding and mulch, rip-rap, the removal of surplus material and cleaning up at the locations shown on the Contract Documents and these specifications or as directed by the Engineer or Town. The swales shall conform to these Specifications and the Contract Drawings.

Included in this item of work are the following Work Items:

0601.1	**24" Dia. HDPE Drainage Pipe**
0601.2	**18" Dia. HDPE Drainage Pipe**
0601.3	**Shoulder Drain - 6" Diameter**
0601.4	**Swale – Grass / Rip-Rap**

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0201 Earthwork
D. Section 0203 Select Fill Material
E. Section 0206 Gravel Parking Area
F. Section 0301 Asphalt Pavement
G. Section 0402 Cast-In-Place Concrete Curbs
H. Section 0602 Underground Field Drainage
I. Section 0701 Precast Concrete Catch Basins
J. Section 0702 Precast Concrete Catch Manholes
K. Section 0704 Stormwater Management System Basins (Pocket Wetlands)
L. Section 0802 Building Services – General Plumbing & Electrical Work
M. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society of Testing and Materials

1. ASTM F2306 Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications
2. ASTM F2736 Joints for Sewer Pipe Standard Specification for 6 to 30 in. (152 To 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe And Double Wall Pipe
3. ASTM F2487 Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High Density Polyethylene and Polypropylene Pipelines.
4. ASTM D3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
5. ASTM D 2321 Underground Installation of Thermoplastic Pipe (non-pressure applications)
6. ASTM F 1668 Construction Procedures for Buried Plastic Pipe

B. American Association of State and Highway Transportation Officials

1. AASHTO M 294 Standard Specification for Corrugated Polyethylene Pipe

1.04 DEFINITIONS

THIS SECTION LEFT BLANK

1.05 DESIGN REQUIREMENTS

THIS SECTION LEFT BLANK

A. Product Data: Manufacturer's specifications (including dimensions, allowable height of cover information, and installation instructions).

1.06 SUBMITTALS

A. Product Data: Manufacturer's specifications (including dimensions, allowable height of cover information, and installation instructions).

1.07 QUALITY ASSURANCE

A. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown, Department of Parks and Recreation regulations and all applicable regulations of governmental authorities having jurisdiction

including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown, Department of Parks and Recreation regulations are given in this Section, the requirements of this Section shall govern.

1.08 DELIVERY, STORAGE, AND HANDLING

THIS SECTION LEFT BLANK

1.09 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Town or others unless permitted in writing by Town and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Town not less than three days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Vilage's written permission.

3. Contact utility-locator service for area where Project is located before the start of work.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2: PRODUCTS AND MATERIALS

2.01 MANUFACTURERS

A. Advanced Drainage Systems, Inc., 3300 Riverside Dr., Columbus, OH 43221; (614) 457-3051;

B. North American Green 5401 St. Wendel-Cynthiana Road- Poseyville, IN 47633 (256) 927-8823 - (256) 927-8824 (Fax) customerservice@nagreen.com

C. MIRAFI 365 South Holland Drive Pendergrass, Georgia 30567
Tel: 706-693-2226 - Fax: 706-693-4400 Email: spec@tencate.com

2.02 BACKFILL MATERIAL

A. General: Imported materials utilized for this Project shall be obtained from a source that has been licensed or permitted for such use by local and state authorities. The Contractor shall be required to submit evidence of such if so requested.

B. All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stockpiled convenient to areas for later re-use or placed within the limits of the Contract or where directed by the Town. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

C. Excavated Material: Excavated material shall be used as backfill under this item unless the Engineer deems the material to be unsuitable. Excavated material used as backfill and grading, shall meet the gradation requirements for Granular Fill. No additional payment will be made for this work.

D. Borrow Material: Where undercutting or construction of embankments are required and the Engineer deems that onsite material is unsuitable, he may require that the Contractor import suitable fill material. Suitable soil materials are defined as those complying with ASTM D2487 soil classification groups SM, SW, and SP or NYSDOT Item 733-09 Select Borrow or as directed by the Engineer. The source shall approved by the Engineer. Borrow Material if ordered by the Engineer will be paid under Item 0203.1. No payment will be made without the prior approval of the Engineer or Town.

E. Select Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials conforming to NYSDOT Item 733-1101 and have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
4 inch	100
No. 40	5 – 70
No.200	0 -15

Select Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.2. No payment will be made without the prior approval of the Engineer or Town.

F. Granular Fill: Material for use as backfill where called for by the Engineer shall be approved by the Engineer and obtained from approved sources. Native material may be used as backfill provided it meets the gradation specified below. Granular fill shall consist of suitable soil materials and shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials having the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

G. Site Stripped Topsoil may be used as fill in landscape areas only.

2.04 RIP RAP

A. Rip Rap material where called for by the Engineer shall be approved by the Engineer and shall be obtained from approved sources. Rip Rap shall consist of sound, durable, stone, free from organic and other deleterious materials having the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

D_{50} 6" Rip-Rap Angular Stone.

2.05 CURTAIN DRAIN STONE

A. Curtain drain stone material where called for by the Engineer shall be approved by the Engineer and shall be obtained from approved sources. Stone shall consist of sound, durable, stone, free from organic and other deleterious materials. It shall be 3/4"-inch double washed stone as determined by ASTM Designation D-422, Particle Size Analysis of Soils.

2.06 DRAINAGE PIPE MATERIALS

A. High Density Polyethylene (HDPE) drainage pipe and appurtenances.

B. Gaskets shall conform to ASTM F 477 having certain dimensions.

C. Geotextile Fabric - The geotextile filter fabric shall be a woven polypropylene geotextile which meets AASHTO M288-96 Specifications for Stabilization and Separation – Class 3.

D. ROLLMAX Erosion Control Blankets - EroNet® DS75® Ultra Short-Term Photodegradable Single-Net Straw Blanket

E. Mirafi TenCate Mirafi® N-Series nonwoven polypropylene geotextile style 140NC

PART 3: METHOD

3.01 EXCAVATION AND PREPARATION OF TRENCH

Excavate the trench in open cut from the surface of the ground, except where otherwise indicated on the Plans. The Contractor will be responsible for the protection of all existing adjacent piping, structures and other utilities and will repair any damage at his own expense.

Limit the length of trench to be excavated each day to that length which can be backfilled before the completion of work each day. In open field areas, the trench may be excavated ahead of pipe laying, but in no case will be trench excavation be made more than two hundred linear feet in advance of pipe laying. Excavate the trench to the depth required so as to provide a uniform and continuous bearing and support for the compacted bedding and the pipe as detailed on the Plans. Trenches excavated below the specified grade will be brought back to grade as per the detail by filling with existing soil fill or crushed stone bedding and thoroughly compacted as directed by the Engineer and at no cost to the Owner. The Engineer may specify the method to be used at his discretion based on subsoil conditions.

Stockpile all excavated material in such a manner so as not to endanger the work or to limit free access to all parts of the work. Maintain access to utility valve boxes, manholes and fire hydrants at all times. Material deemed unsuitable by the Engineer for backfilling, will be removed from the site and disposed of as directed by the Engineer. Stockpile excess material suitable for backfilling about the job site, for use as backfill for any settlement that may occur subsequent to the initial trench backfilling. All excavated unsuitable materials must be replaced by clean fill approved by the Engineer. Surplus excess material, which is suitable for backfill, is the property of the Owner and will be disposed of as directed, within two miles of the site of the work or as directed by the Engineer. All disposal areas will be leveled and graded as directed by the Engineer. No additional payment will be made for replacement material.

It is the Contractors responsibility to properly dispose of any materials to be removed off-site as per all sections of these specifications. The Contractor is responsible to find a legitimate disposal site and must obtain any permits or licenses required for proper disposal. The Contractor is responsible for any fees or fines associated with the proper disposal of any materials outline in all sections of these specifications.

3.02 STEEL TRENCH BOXES

Steel trench boxes, (trench shields), may be used in lieu of temporary timber sheeting at the Contractor's option in trenches up to twenty (20') feet in depth, unless prohibited by the Engineer. The use of steel trench boxes and the type and fabrication of the boxes will be subject to applicable State and Federal Codes and Standards. In using trench boxes, the trench sides will be maintained in the placing and removal of the boxes to avoid opening the trench to excessive widths. All bedding and backfill to twenty-four (24") inches above the pipe will be properly tamped in place and maintained in position when the boxes are moved or removed to avoid disturbing the pipe and affecting the alignment and grade of the pipe. In unstable ground additional pea gravel or mixed crushed stone up to size 3/4 inch properly compacted in place will be required from the top of the pipe to twelve (12") inches above the pipe, as directed by the Engineer.

No direct payment will be made for temporary sheeting, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.03 TEMPORARY SHEETING

Temporary timber or steel sheeting, except that which has been ordered left in place, may be removed after backfilling has been completed or has been brought up to such an elevation as to permit its safe removal. Sheeting and bracing may be removed before compacting of the trench, but only in such manner as will insure adequate protection of the sewers and/or other existing utilities, adjacent ground and structures.
Take extreme care to fill all of the voids left after withdrawal of the sheeting.

No direct payment will be made for temporary sheeting, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.04 DEWATERING

Provide ample means and equipment with which to promptly remove and dispose of all water and drainage during excavation, and keep all excavations dry until the structures to be constructed are completed. Pipe laying or masonry construction will not be permitted if water is in the excavation. Prior to making a connection to an existing manhole or pipe line install a plug in the existing piping to prevent groundwater or drainage from entering. Leave the plug in place until its removal is directed by the Engineer.

Under no circumstances will completed portions of the work be used as a means of dewatering trenches.

Unless specifically provided for under a Specification Item, no direct payment will be made for dewatering, including the use of deep wells, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.05 PIPE LAYING

Proper equipment, tools and facilities, satisfactory to the Engineer will be provided and used by the Contractor for the safe and efficient prosecution of the work.

Handle pipe and all materials used in storm drainage construction so as to prevent damage to the materials and protective coatings or linings.

Carefully clean all pipe and fittings to remove any foreign material which may have fallen into the pipe. Take every precaution to prevent foreign material from entering the pipe while it is being placed in the line.

Do not place tools, clothing or other material and equipment in the pipe during the laying operations. When pipe laying is not in progress, close the open end of the pipe with a watertight plug or other means approved by the Engineer. This provision will apply during the noon hour as well as overnight or any time when pipe laying is not in progress.

If water is in the trench, leaving the plug in place until the trench is pumped completely dry. Do not lay pipe in water or when, in the opinion of the Engineer, trench conditions are unsuitable. Use a laser beam or grade string and batter boards for line and grade, to set the final position of each length of pipe. Keep three batter boards with grade string in place at all times during pipe laying. When the gradient of the pipe line to be constructed is less than 0.40 feet per hundred feet, set the batter boards from reference points by use of an engineer's level. Generally all pipe laying will proceed in an uphill direction with the bell ends of the pipe facing the direction of laying.

Do not use blocking of any sort to support the pipe except as a temporary method of holding the pipe in position for assembly. Remove temporary blocks during initial backfilling and tamping. Secure the pipe in place with backfill material placed as specified. Provide sufficient backfill to prevent flotation of the pipe.

Where pipe is cut to fit into manholes the work will be done in a satisfactory manner so as to leave a smooth end at right angles to the axis of the pipe.

3.06 JOINTING

Provide for and install all joints, couplings, fittings, rings and connections as per manufacturers' instructions and applicable ASTM and AASHTO Standards. Clean joint contact surfaces immediately prior to jointing. Use lubricants, primers, or adhesives as recommended by the pipe or joint manufacturer. Prior to the start of work, pipe layers will be instructed by a representative of the pipe manufacturer in the proper method to be used and the Contractor will insure that these methods are followed. The Contractor will keep on file in his field office, written installation instructions from each manufacturer of pipe used on the Project. These installation instructions will be available to the Engineer at all times.

3.07 CONNECTIONS

1. Make connections to existing pipe by using a galvanized steel "dimple"-type coupling. Remake damaged existing joints.

2. Make connections to existing manholes and drainage structures by cutting into the floor or bench of the manhole or drainage structure and forming a new channel.

3. If the pipe, manholes or other structures with which connections are to be made have not yet been installed, install the pipe to a point directed by the Towns Representative and plug or cap the end in a satisfactory manner.

3.08 BACKFILLING

A. Backfilling Structures

As manholes and the various structures or parts of structures are completed, fill the space outside and around the walls with material excavated from the site and stored for the purpose. Between the structures and the adjacent unexcavated material, place the backfill in twelve (12") inch layers and compact with approved, flat-faced mechanical tampers, to avoid future settlement. Place the fill evenly to such a height as will bring the finished grade up to the required elevations. Manholes set in the pavement shall be backfilled in accordance with the Backfilling Trenches section below.

B. Backfilling Trenches

Upon completion of pipe laying, start backfilling immediately, and continue so that at the end of the working day all pipe is completely backfilled. Where shown on the Plans or required by governmental agencies, backfill all trenches completely so that the construction area is in a passable condition at the end of each working day.

1. Bottom of Trench

Place backfill continuously by hand in layers not exceeding six (6") inches in thickness and carefully and thoroughly consolidate by tamping alternately on both sides of the pipe to a height of twenty-four (24") inches above the top of the pipe with selected material. The selected material will be free from stones larger than three (3") inches in diameter, frozen material, lumber, pavement or rubbish. In no case will material be allowed

to fall directly on a pipe from a bucket, and in all cases the bucket must be lowered so that the shock of the falling earth will not injure the pipe or structure.

2. Upper Trench

Backfill placed more than twenty-four (24") inches above the top of the pipe will be free of stones eight (8") inches in diameter or larger.

C. Backfilling Requirements

Pipe foundations, to a depth of one (1') foot above the pipe, shall be placed in 12-inch layers and thoroughly compacted by approved mechanical methods to ensure firm bedding and side support. The density requirement is 95% minimum compaction in accordance with ASTM Method D1557.

When backfill reaches one (1') foot above the top of the pipe, the entire surface shall be compacted by mechanical means. The remainder of the trench shall be backfilled in layers not exceeding eighteen (18") inches thick and each layer thoroughly compacted with a vibratory tamper, up to four (4) feet under pavement (below bottom of pavement base).

The upper four (4') feet shall be compacted using hand-guided or small self-propelled vibratory or static rollers or pads in layers not exceeding twelve (12') inches in thickness.

1. In Open Areas

Backfilling trenches more than twenty-four (24") inches above the top of pipe in areas where roadways, sidewalks, driveways, utilities, fences or curbing do not exist or will not be constructed may be done with bulldozer or power shovel except as otherwise noted on the Plans. Where backfilling is permitted with bulldozer or power shovel, provide supervision in addition to the machine operator at the point of backfilling to carefully supervise this operation. Backfill material must not be dropped directly in the open trench. Slide the backfill down the inclined face of the material in the trench.

Where sufficient satisfactory backfill material is unavailable at the excavation site, provide such material from stockpiled surplus. If surplus material is not available on the site the Contractor shall furnish suitable fill material. No additional payment will be made for this work.

2. Under Utilities

Utilities crossing or located within the trench will be protected and supported by placing three-quarter (3/4") inch crushed stone bedding below the utility to the subgrade of the trench. The crushed stone bedding will be confined by driving timber sheeting in the trench a minimum of two (2') feet from each side of the utility pipe or conduit. The timber sheeting will be left in place and will be extended to a point two (2') feet below the pipe or conduit. The crushed stone bedding will be placed and compacted to the center of the utility pipe or conduit. The crushed stone bedding will be placed and compacted to the center of the utility pipe or conduit to provide a stable permanent bedding for the utility.

3.09 SWALES

A. The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, or other objectionable material.

B. The cross-section shall be excavated to the neat lines and grades as shown on the plans. Over-excavated areas shall be backfilled with moist soil compacted to the density of the surrounding material.

C. No abrupt deviations from design grade or horizontal alignment shall be permitted.

D. Topsoil shall be placed over swale where grass cover is required. Seed shall be placed and erosion blanket installed as per Contract Drawings.

E. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

F. Rock for the riprap lining may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The rock for riprap shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller rocks and spalls filling the voids between the larger rocks. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

1. End Dumped: End dump riprap to conform to the lines, grades and thicknesses indicated. End dumped riprap shall be a well graded mass of variable size stones with no areas of uniform size material. Rearrange individual stones, if necessary, by hand or with mechanical equipment to obtain the specified results.

2. Hand Placed: Hand place riprap with the largest stones placed at the bottom of slope. Align stones to obtain a close fit and to minimize voids. Fill spaces between stones with spalls of suitable size.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Drainage Pipe will be measured per linear foot along the centerline of the pipe. All pipe will be measured from the exact beginning of the pipe to the end of the line without deduction for fittings.

Swale/Grass Rip Rap will be measured per lineal foot along the centerline of the swale. Vegetation or Rip-Rap shall be included in the per lineal foot price.

4.02 BASIS OF PAYMENT

Item 0601.1 thru 0601.3: Payment for all Work under this item shall be at the **Unit Price** bid installed in place as per the Contract Drawings and shall include the cost of furnishing all labor, materials and equipment including but not limited to saw cutting asphalt and concrete, excavation including trenching and sheeting, backfilling and compaction, washed gravel or stone, removal and disposal of surplus material, proposed drainage pipe, laying of pipe, connection to any structures, fittings and connections, temporary pavement, pavement repair or patching, and any incidental work required to complete the work in accordance with the plans and specifications, to the satisfaction of the Engineer or Town.

Item 0601.4: Payment for all Work under this item shall be at the **Unit Price bid** installed in place as per the Contract Drawings and shall include the cost of furnishing all labor, materials and equipment including but not limited to excavation, grading, reinforcing, seeding and mulch, rip-rap, the removal of surplus material and cleaning up at the locations shown on the Contract Documents and these specifications or as directed by the Engineer or Town. The swales shall conform to these Specifications and the Contract Drawings.

Payment shall be made for the following work Items as listed on the Itemized Proposal & Project Bid Sheet:

0601.1	**24" Dia. HDPE Drainage Pipe**
0601.2	**18" Dia. HDPE Drainage Pipe**
0601.3	**Shoulder Drain - 6" Diameter**
0601.4	**Swale – Grass / Rip-Rap**

END OF SECTION

SECTION 0602

FURNISH AND INSTALL SANITARY SEWERS

PART 1: WORK

1.01 DESCRIPTION

Under this item the Contractor shall furnish and install sanitary sewer laterals. The laterals shall be installed at the locations and grades shown on the Contract Drawings and these specifications. This work shall include the cost of all labor, materials and equipment necessary to complete the work including all piping, cleanouts, bends, and fittings. This work shall not be limited to excavation, saw cutting asphalt and concrete, trenching and sheeting, screening of excavated material as required, backfilling and compaction, crushed stone fill if directed, connections, temporary pavement, pavement repair or patching, street closure permits, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0203 Select Fill Material
G. Section 0204 Crushed Stone Fill
H. Section 0301 Asphalt Pavement
I. Section 0401 Cast-In-Place Concrete
J. Section 0502 Force Main
K. Section 0503 Copper Water Service
L. Section 0703 Sewage Pumping Station
M. Section 0802 Building Services – General Plumbing & Electrical Work
N. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society of Testing and Materials (ASTM)

B. American National Standards Institute (ANSI)

C. The Cast Iron Soil Pipe Institute (CISPI)

1.04 SUBMITTALS

A. Product Data: Manufacturer's specifications with all pertinent information regarding dimensions, fittings and installation instructions.

1.05 HANDLING OF MATERIAL

Furnish, deliver and distribute all materials at the site of the work. Protect all materials from the weather where required. Unload all pipe, precast manholes and other material with proper hoists, loaders or skidding to avoid shock or damage to the materials.
Mark and immediately remove all damaged material from the site of the Work.

1.06 CLEARING AND CARE OF PROPERTY

Prior to removal and excavation, cut all bituminous pavement and sidewalk and/or all concrete sidewalk to the designated limits. Saw cut all concrete pavement to the designated limits, as applicable.

In streets and roadways, maintain a minimum of one (1) lane open at all times for emergency vehicles. Provide and maintain steel plates over trench areas for maintenance of traffic where required and maintain access to driveways at all times.

Prior to the start of work, photograph the work site in public streets and easement areas as directed by the Engineer. In easement areas take photographs along the center line of the easement, at intervals as indicated on the plans to show the general easement and adjacent area. Provide the Engineer with duplicate 8 inch x 10 inch copies of all photographs which are taken. The cost of photographs will be included in the various unit prices Bid for the installation of the sanitary sewers.

1.07 ACCESS TO SITE

Include in the various Unit Prices Bid the cost of all materials and equipment required to permit access to the work site in wooded, swamp and open areas. Access to the work site must be assumed to be available only along the easement areas and public streets shown on the Plans. Any regrading permitted for access roadways or work. Site access will be restored to the condition which existed prior to construction. Any fill or road stone required for access roads will be provided at the Contractor's expense.

PART 2: PRODUCTS AND MATERIALS

2.01 GENERAL

A. Each length of pipe and each fitting shall be marked in accordance with the applicable ASTM Designation.

2.02 BACKFILL MATERIAL

A. Excavated Material: Excavated material shall be used as backfill where called for under this item unless the Engineer deems the material to be unsuitable. Excavated material used as backfill and grading, shall meet the gradation requirements for Granular Fill. No additional payment will be made for this work but the cost thereof shall be deemed included in the price for the item for which work is being performed.

B. Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials and shall have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

1. If the Engineer deems the excavated material to be unacceptable, Granular Fill shall be used as backfill. Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

2.03 CRUSHED STONE BEDDING

A. Generally all sewer pipes shall be laid and covered on a crushed stone bed, as shown on the Contract Drawings. Crushed stone, where required for pipe and under structures, will be a clean well-graded crushed stone three-quarters (3/4") inch in size and shall conform to NYSDOT Item 703-0201 have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
½ inch	45 to 85
¼ inch	30 to 65
No.10	15 to 45
No.200	0 to 5

No additional payment will be made for this work but the cost thereof shall be deemed included in the price for the item for which work is being performed. The number of cubic yards installed shall be paid for under the specific pipe or structure pay Item and will not be paid for separately.

2.04 DRAINAGE PIPE AND FITTINGS

A. PVC Sewer Pipe, Building Sewer Connections, and Fittings; (4 inches Diameter and Larger): SDR 35 and ASTM D 3034.

2.05 SOLVENT CEMENTS

A. Solvent cement used for joining plastic pipe and fittings shall meet the following designations for the various types of plastic pipe listed. PVC: ASTM D 2564.

PART 3: METHOD

3.01 ALIGNMENT AND GRADE

Lay and maintain the sewers to the required lines and grades at the required locations. The Contractor will correct any deviation from established lines and grades at his own cost. Wherever obstructions not shown on the Plans are encountered during progress of the work and they interfere to such an extent that an alteration in the Plans is required, the Engineer will have the authority to change the Plans and order a deviation from the line and grade shown on the Plans.

Prior to excavation, mark the location of all underground utilities on the surface of the ground. Caution will be taken in preparing for excavation so that the exact location of the underground structures including pipe lines may be determined.

Excavate test pits to determine the location of existing underground structures and pipe lines as directed by the Engineer. Payment for making test pits will be made under the Section 0201Unclassified Excavation.

3.02 EXCAVATION AND PREPARATION OF TRENCH

Excavate the trench in open cut from the surface of the ground, except where otherwise indicated on the Plans. The Contractor will be responsible for the protection of all existing adjacent piping, structures and other utilities and will repair any damage at his own expense.

Limit the length of trench to be excavated each day to that length which can be backfilled before the completion of work each day. In open field areas, the trench may be excavated ahead of pipe laying, but in no case will be trench excavation be made more than two hundred linear feet in advance of pipe laying. Excavate the trench to the depth required so as to provide a uniform and continuous bearing and support for the compacted bedding and the pipe as detailed on the Plans. Trenches excavated below the specified grade will be brought back to grade by filling with approved concrete, crushed stone bedding or bank run sand and gravel and thoroughly compacted as directed by the Engineer and at no cost to the Owner.

Stockpile all excavated material in such a manner so as not to endanger the work or to limit free access to all parts of the work. Maintain access to utility valve boxes, manholes and fire hydrants at all times. Material deemed unsuitable by the Engineer for backfilling, will be removed from the site and disposed of as directed by the Engineer. Stockpile excess material suitable for backfilling about the job site, for use as backfill for any settlement that may occur subsequent to the initial trench backfilling. All excavated unsuitable materials must be replaced by clean fill approved by the Engineer. No additional payment will be made for replacement material.

It is the Contractors responsibility to properly dispose of any materials to be removed off-site as per all sections of these specifications. The Contractor is responsible to find a legitimate disposal site and must obtain any permits or licenses required for proper disposal. The Contractor is responsible for any fees or fines associated with the proper disposal of any materials outline in all sections of these specifications.

3.03 STEEL TRENCH BOXES

Steel trench boxes, (trench shields), may be used in lieu of temporary timber sheeting at the Contractor's option in trenches up to twenty (20') feet in depth, unless prohibited by the Engineer. The use of steel trench boxes and the type and fabrication of the boxes will be subject to applicable State and Federal Codes and Standards. In using trench boxes, the trench sides will be maintained in the placing and removal of the boxes to avoid opening the trench to excessive widths. All bedding and backfill to twenty-four (24") inches above the pipe will be properly tamped in place and maintained in position when the boxes are moved or removed to avoid disturbing the pipe and affecting the alignment and grade of the pipe. In unstable ground additional pea gravel or mixed crushed stone up to size 3/4 inch properly compacted in place will be required from the top of the pipe to twelve (12") inches above the pipe, as directed by the Engineer.

No direct payment will be made for temporary sheeting, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.04 TEMPORARY SHEETING

Temporary timber or steel sheeting, except that which has been ordered left in place, may be removed after backfilling has been completed or has been brought up to such an elevation as to permit its safe removal. Sheeting and bracing may be removed before compacting of the trench, but only in such manner as will insure adequate protection of the sewers and/or other existing utilities, adjacent ground and structures. Take extreme care to fill all of the voids left after withdrawal of the sheeting.

No direct payment will be made for temporary sheeting, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.05 DEWATERING

Provide ample means and equipment with which to promptly remove and dispose of all water and drainage during excavation, and keep all excavations dry until the structures to be constructed are completed. Pipe laying or masonry construction will not be permitted if water is in the excavation. Prior to making a connection to an existing manhole or pipe line install a plug in the existing piping to prevent groundwater or drainage from entering. Leave the plug in place until its removal is directed by the Engineer.

Under no circumstances will completed portions of the work be used as a means of dewatering trenches.

Unless specifically provided for under a Specification Item, no direct payment will be made for dewatering, including the use of deep wells, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.06 PIPE LAYING

Proper equipment, tools and facilities, satisfactory to the Engineer will be provided and used by the Contractor for the safe and efficient prosecution of the work.

Handle pipe and all materials used in sewer construction so as to prevent damage to the materials and protective coatings or linings.

Carefully clean all pipe and fittings to remove any foreign material which may have fallen into the pipe. Take every precaution to prevent foreign material from entering the pipe while it is being placed in the line.

Do not place tools, clothing or other material and equipment in the pipe during the laying operations. When pipe laying is not in progress, close the open end of the pipe with a watertight plug or other means approved by the Engineer. This provision will apply during the noon hour as well as overnight or any time when pipe laying is not in progress.

If water is in the trench, leaving the plug in place until the trench is pumped completely dry. Do not lay pipe in water or when, in the opinion of the Engineer, trench conditions are unsuitable.

Use a laser beam or grade string and batter boards for line and grade, to set the final position of each length of pipe. Keep three batter boards with grade string in place at all times during pipe laying. When the gradient of the pipe line to be constructed is less than 0.40 feet per hundred feet, set the batter boards from reference points by use of an engineer's level. Generally all pipe laying will proceed in an uphill direction with the bell ends of the pipe facing the direction of laying.

Do not use blocking of any sort to support the pipe except as a temporary method of holding the pipe in position for assembly. Remove temporary blocks during initial backfilling and tamping. Secure the pipe in place with backfill material placed as specified. Provide sufficient backfill to prevent flotation of the pipe.

Where pipe is cut to fit into manholes the work will be done in a satisfactory manner so as to leave a smooth end at right angles to the axis of the pipe.

3.07 PVC PIPE

Each PVC pipe joint should be performed as recommended by the pipe manufacturer. The elastomeric gaskets may be supplied separately in cartons or prepositioned in the bell joint or coupling at the factory. When gaskets are color coded, be sure to consult the pipe manufacturer or his literature for the significance. In all cases, clean the gasket, the bell or coupling interior, especially the groove area (except when gasket is permanently installed) and the spigot area with a rag, brush or paper towel to remove any dirt or foreign material before the assembling. Inspect the gasket, pipe spigot bevel, gasket groove and sealing surfaces for damage or de-formation. When gaskets are separate, use only gaskets which are designed for and supplied with the pipe. Insert them as recommended by the manufacturer.

Lubricant should be applied as specified by the pipe manufacturer. Bacterial growth, damage to the gaskets or the pipe may be promoted by use of non-approved lubricants. Use only lubricant supplied by the pipe manufacturer. Do not lubricate either the gasket or the gasket groove in bells where the gaskets must be field installed. Lubrication of the gasket or groove can cause pushouts ("fish-mouthing") when the spigot is inserted. Lubrication of factory installed, non-removable type gaskets should be performed only if recommended by the pipe manufacturer.

After lubrication, the pipe is ready to be joined. Good alignment of the pipe is essential for ease of assembly. Align the spigot to the bell and insert the spigot into the bell until it contacts the gasket uniformly. Apply firm steady pressure either by hand or by bar and block assembly until the spigot easily slips through the gasket. Often a slight twisting motion applied by hand or with a strap wrench lessens the initial insertion force required to make up the joint. Do not swing or "stab" the joint; that is, do not suspend the pipe and swing it into the bell.

The spigot end of the pipe is marked by the manufacturer to indicate the proper depth of insertion. Gasketed joints four (4") inches and smaller can usually be assembled using only manual force. Larger joints, however, may require mechanical assistance to apply enough insertion force. The bar and block method is recommended as a workman is able to feel the amount of force being used and whether the joint goes together smoothly. Special jointing tools employing ratchets or jacks area available if desired. The use of power equipment, such as backhoe bucket, is specifically not recommended as excessive force may be applied with resulting damage to the gasket or bell.

The temperature of the bell and gasket may affect the insertion force required. Most gasket materials become harder with decreasing temperature which may result in a larger force being required for spigot insertion. Where gaskets are field installed in weather below 40° F, it is suggested that the gaskets be kept warm (between 40° F and 90° F), installed in the gasket groove and the joint made quickly before the gaskets cool to the ambient temperature.

If undue resistance to insertion of the pipe end is encountered or the reference mark does not position properly, disassemble the joint and check the position of the gasket. If it is twisted or pushed out of its seat ("fish-mouthed"), inspect components, repair or replace damaged items, clean the components and repeat the assembly steps. Be sure both pipe lengths are in concentric alignment. If the gasket was not out of position, verify proper location of the reference mark. Relocate the reference mark if it is out of position. Few fittings allow as much spigot insertion length as do pipe bells and couplings. For short-body iron fittings, it may be necessary to remove the beveled PFC spigot end to insure joint tightness.

There are several restrained joint systems commercially available for use with PVC gasketed joint pipe. Any of a number of these systems may be used depending on the specific requirements of the project.

To joint field-cut pipe, it is necessary to first prepare the pipe end. A square cut is essential for proper assembly. The pipe can be easily cut with a hacksaw, handsaw or a power handsaw with a steel blade or abrasive disc. It is recommended that the pipe be marked around its entire circumference prior to cutting to assure a square cut. Use a factory-finished beveled end as a guide for proper bevel angle and depth of bevel plus the distance to the insertion reference mark. The end may be beveled using a pipe beveling tool or a wood rasp which will cut the correct taper. A portable sander or abrasive disc may also be used to bevel the pipe end. Round off any sharp edges on the leading edge of the bevel with a pocket knife or a file. Sharp edges or improper field beveling can result in cut gaskets or gasket posits.

3.07 JOINTING

The methods and materials used in jointing the pipe will be as recommended by the pipe manufacturer. Prior to the start of work, pipe layers will be instructed by a representative of the pipe manufacturer in the proper method to be used and the Contractor will insure that these methods are followed. The Contractor will keep on file in his field office, written installation instructions from each manufacturer of pipe used on the Project. These installation instructions will be available to the Engineer at all times.

A. Push On Joints: On push on joints lubricate the gasket after it is inserted in the socket, and assemble the joint in accordance with the manufacturer's recommendations.

3.08 BUILDING SEWERS

Building sewers will be provided as shown on the Plans or as directed by the Engineer in accordance with the details on the Plans.

In general, the wye or tee fitting will be of the same material as the main sewer pipe. Where building sewer pipe is of a different material from that of the main sewer pipe, an approved adapter will be provided at the end of each building sewer with adequate bracing to withstand pressure during testing.

Lay the building sewer in the same manner as specified for the main sewer except that batter boards are not required.

Mark the terminus of each building sewer with a pressure-treated marker stake extending one (1') foot above the ground surface. The building sewer shall be brought to within three feet of the building foundation at the location designated by the Owner.

3.12 BACKFILLING

A. Backfilling Structures

As manholes and the various structures or parts of structures are completed, fill the space outside and around the walls with material excavated from the site and stored for the purpose. Between the structures and the adjacent unexcavated material, place the backfill in twelve (12") inch layers and compact with approved, flat-faced mechanical tampers, to avoid future settlement. Place the fill evenly to such a height as will bring the finished grade up to the required elevations. Manholes set in the pavement shall be backfilled in accordance with the Backfilling Trenches section below.

B. Backfilling Trenches

Upon completion of pipe laying, start backfilling immediately, and continue so that at the end of the working day all pipe is completely backfilled. Where shown on the Plans or required by governmental agencies, backfill all trenches completely so that the construction area is in a passable condition at the end of each working day.

1. Bottom of Trench

Place backfill continuously by hand in layers not exceeding six (6") inches in thickness and carefully and thoroughly consolidate by tamping alternately on both sides of the pipe to a height of twenty-four (24") inches above the top of the pipe with selected material. The selected material will be free from stones larger than three (3") inches in diameter, frozen material, lumber, pavement or rubbish. In no case will material be allowed to fall directly on a pipe from a bucket, and in all cases the bucket must be lowered so that the shock of the falling earth will not injure the pipe or structure.

2. Upper Trench

Backfill placed more than twenty-four (24") inches above the top of the pipe will be free of stones eight (8") inches in diameter or larger.

C. Backfilling Requirements

Pipe foundations, to a depth of one (1) foot above the pipe, shall be placed in 12-inch layers and thoroughly compacted by approved mechanical methods to ensure firm bedding and side support. The density requirement is 95% minimum compaction in accordance with ASTM Method D1557.

When backfill reaches one (1) foot above the top of the pipe, the entire surface shall be compacted by mechanical means. The remainder of the trench shall be backfilled in layers not exceeding eighteen (18) inches thick and each layer thoroughly compacted with a backhoe mounted hydraulic or vibratory tamper, up to four (4) feet under pavement (below bottom of pavement base).

The upper four (4) feet shall be compacted using hand-guided or small self-propelled vibratory or static rollers or pads in layers not exceeding twelve (12) inches in thickness.

The Engineer may order in-place density tests to ascertain conformance with the compaction requirements. Tests may be ordered for every 200 cubic yards of fill or backfill placed or at 75 linear foot intervals of pipeline backfilled, or frequencies deemed necessary by the Engineer, and shall be at no additional expense to the owner. The Contactor shall dig test holes at no additional cost to the Owner when requested for the purpose of taking an in-place density test below the current fill level.

1. In Open Areas (Easements)

   Backfilling trenches more than twenty-four (24") inches above the top of pipe in areas where roadways, sidewalks, driveways, utilities, fences or curbing do not exist or will not be constructed may be done with bulldozer or power shovel except as otherwise noted on the Plans. Where backfilling is permitted with bulldozer or power shovel, provide supervision in addition to the machine operator at the point of backfilling to carefully supervise this operation. Backfill material must not be dropped directly in the open trench. Slide the backfill down the inclined face of the material in the trench.

   Where sufficient satisfactory backfill material is unavailable at the excavation site, provide such material from stockpiled surplus. If surplus material is not available on the site the Contractor shall furnish suitable fill material. No additional payment will be made for this work.

2. Under Utilities

   Utilities crossing or located within the trench will be protected and supported by placing three-quarter (3/4") inch crushed stone bedding below the utility to the subgrade of the trench. The crushed stone bedding will be confined by driving timber sheeting in the trench a minimum of two (2) feet from each side of the utility pipe or conduit. The timber sheeting will be left in place and will be extended to a point two (2') feet below the pipe or conduit. The crushed stone bedding will be placed and compacted to the center of the utility pipe or conduit. The crushed stone bedding will be placed and compacted to the center of the utility pipe or conduit to provide a stable permanent bedding for the utility.

3.13 PAVEMENT REPLACEMENT

Immediately upon completion of backfilling in roadway areas construct temporary pavement which will be the riding surface until installation of permanent pavement. The temporary pavement will be maintained in a safe usable condition, flush with the existing pavement surfaces by addition of temporary paving material as required until the permanent wearing course is placed over it. Temporary and permanent pavement will be installed in accordance with the details shown on the Plans and Specification Section 0302 "New Asphalt Pavement."

3.14 TESTING

During the progress of construction and/or upon completion of the same, the Contractor will test the sewers and appurtenances. The Contractor will test the sewers and appurtenances. The Engineer will designate which type of test is to be performed, and the manner in which it will be conducted. The Engineer reserves the right to order an air test to confirm a water test. All manholes will be tested separately by the water exfiltration method. All lines will be blocked to withstand internal pressure as required under Paragraph a-2 below.

Where applicable, test sewers and appurtenances in lengths between manholes of more than 1000 feet will not be permitted.

Sewers will not be tested until at least two (2) weeks after installation of building sewers but must be tested prior to extension of the building sewers past the easement line or street property line. Repair sewers and manholes which fail to meet tests until the necessary requirements of this Specification are complied with as evidenced by subsequent tests. Ground water leakage into manholes will be sufficient reason for requiring the Contractor to uncover or expose any portion of the manhole for a thorough examination by the Engineer, after which the manhole will be repaired and again tested by the Contractor

Final acceptance of the entire length of sewer constructed under this Contract will not be issued until leakage has been reduced to rates not exceeding the maximum rates specified as permissible.

A. Water Testing

The maximum allowable infiltration or exfiltration rate is 100 gallons/day/inch diameter/mile of pipe. The duration of the tests will be a minimum of 24 hours, and the procedure to be used for these tests are as follows:

B. Infiltration Test

Furnish all labor, equipment, tools, and materials, including weirs necessary for such tests. Install the weir in such manholes as directed by the Engineer. Where weir measurements are not suitable in the Engineer's opinion, other methods of measurement, as he will determine, may be adopted. In order for infiltration tests to be permitted the Contractor will be required to determine groundwater elevations along the sewer route to ensure the levels are above the level of the sewer which fairly represent actual service conditions as they may vary throughout the year. The rate of infiltration will be measured every four hours, or at other intervals of time as may be directed by the Engineer.

C. Exfiltration Test for Pipe Lines

Supply all water, plugs and all labor and equipment for the test. The exfiltration test will be made by filling the sewer line with water so as to obtain a hydrostatic head, on the top of the pipe in the upstream manhole of the line under test, of at least five (5') feet, but not greater than ten (10') feet. The amount of ex-filtration will be obtained by observing the rate of drop in the water level at the upstream manhole hourly for the two (2) hour test.

D. Low Pressure Air Testing

Low pressure air test procedures shall conform to ASTM C828 except as modified by the UNI-Bell Plastic Pipe Association Publication UNI-B-6-98, for Low Pressure Air Testing of Installed Sewer Pipe.

If at any time during the guarantee period the Engineer determines that a sewer line has excessive infiltration the Contractor will retest that portion of the line and make necessary repairs until the line passes the water test as specified above.

No direct payment will be made for testing, repairing or retesting. The cost for such tests will be included in the unit price bid for pipe.

Should any test of installed pipe disclose leakage greater than that specified, the Contractor will, at his own expense, locate and repair the cause until the leakage is within the specified allowance.

For any section of sewers or for any manhole not meeting the test designated by the Engineer the Contractor will determine the cause of the failure and make any necessary repairs in a manner satisfactory to the Engineer. This will include digging up, repairing or replacing damaged pipe, fittings and manholes, as well as television inspection of the section of sewer.

3.15 FINAL INSPECTION PRECEDING ACCEPTANCE

Final inspection of the work will include a visual inspection of each section of sewer by looking from manhole to manhole with the aid of reflected sunlight or an electric torch. The pipe will be true to both line and grade, will show no leaks, will be free from cracks and from protruding joint materials and contain no deposits of sand, dirt or other materials which will reduce the full cross-sectional area.

Ground water infiltration will not exceed the rates stipulated and will be distributed uniformly throughout the collecting system and not occur through a few joints. All finished work will be neat in appearance and of first-class workmanship. Furnish laborers to assist the Engineer in this inspection.

At the end of the guarantee period as set forth in the contract documents, any sections of sewers that are damaged will be properly repaired or replaced by the Contractor at his expense as directed by the Engineer. The Engineer may require additional testing of those sections of sewer, where repairs are made, or where excess infiltration is observed during this final inspection before release of the Contractor from the guarantee period, and payment of the retainage on the Contract. The cost of this final inspection is included in the testing of the sewers and appurtenances and is paid for under the various pipe items bid unless a unit price for this work is set forth in the proposal.

PART 4: MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Sanitary sewers will be measured in linear foot, measured to the nearest whole foot as measured along the centerline of the pipe. No deductions will be made for fittings.

4.01 PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall include the cost of all labor, materials and equipment necessary to complete the work as shown on the Contract Drawings. All labor, materials and equipment including but not limited to saw cutting asphalt and concrete, excavation including trenching and sheeting, backfilling and compaction, crushed stone fill, sub-base material, removal and disposal of surplus material, proposed drainage sewer pipe, laying of pipe, connection to any structures, fittings and connections, temporary pavement, pavement repair or patching, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

END OF SECTION

SECTION 0701

PRECAST CONCRETE CATCH BASIN

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish and install precast concrete catch basin as indicated on the Drawings and as specified herein. Subsequently, in this Section, these items will be referred to as "precast unit". This shall also include the cost of all labor, materials and equipment necessary to complete the work including all piping, fittings, all frames, covers, traps, steps/rungs, and other miscellaneous items to be fabricated with or installed on the precast units.
This work shall not be limited to excavation, saw cutting asphalt and concrete, trenching and sheeting, screening of excavated material as required, backfilling and compaction, connections, temporary pavement, pavement repair or patching, street closure permits, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

A. Tie-Ins – Included in this work shall be the cost for furnishing and installing all pipes, and appurtenances required to connect pipes, roof drains, existing pipes etc. to drain inlet.

B. Cleaning - Included in this work shall be the cost for cleaning all catch basins and manholes of silt and debris prior to final acceptance of the project by the Town.

The cost for cleaning all catch basins of silt and debris prior to final acceptance of the project by the Town shall be included in this work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0301 Asphalt Pavement
D. Section 0402 Cast-In Place Concrete Curbs
E. Section 0601 Drainage Conveyance System
F. Section 0602 Furnish and Install Sanitary Sewers
G. Section 0901 Synthetic Turf Preparation
H. Section 0906 Site Restoration

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

B. Federal Specifications (FS)

C. American Association of State Highway and Transportation Officials (AASHTO)

D. Standard drainage specifications of the Town of Yorktown

E. New York State Department of Transportation Standard Specifications

F. International Concrete Repair Institute (ICRI)

1.04 DEFINITIONS

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1.05 DESIGN REQUIREMENTS

A. Precast units, frames and grates shall meet specifications provided and be capable of withstanding an AASHTO HS20 loading.

B. Precast units shall be manufactured using normal weight concrete with a minimum compressive strength of 4000 psi, air-entrained, and a maximum water to cement ratio of 0.42.

1.06 MANUFACTURER

A. All manufacturers of materials shall be as approved by The Town of Yorktown or as specified by the plans. The Contractor may offer substitutions for approval.

B. Frames & Castings – Expanded Supply Products Inc. 3330 Route 9, Cold Spring, New York, 10518, (845) 265-3772

C. Precast Structures – Expanded Supply Products Inc. 3330 Route 9, Cold Spring, New York, 10518, (845) 265-3772

1.07 SUBMITTALS

A. Product Data

Submit manufacturer's product data on each of the following:

1. Each type of cast iron cover and frame
2. Each type of step/rung
3. Trap
4. Butyl Gasket

B. Shop Drawings

Before casting units, submit shop drawings of each item to be cast, showing details of all pipe entries, finish grades and other pertinent information. Ensure the orientation of the catch basin properly accounts for the required grating slot direction.

C. Quality Control Submittals

1. Design Data: Submit design mixes for concrete, including list of admixtures to be used, and preliminary trial mix test results.
2. Test Reports: Daily testing logs.
3. Certification: From testing laboratory that construction of the precast units is in compliance with the requirements of the Town of Yorktown and this specification.
4. Contractor Qualifications: Provide proof of Manufacturer and Concrete Laboratory qualifications specified under "Quality Assurance".

1.08 QUALITY ASSURANCE

A. Qualifications
1. Precast Unit Manufacturer: Company specializing in the production of precast concrete site structures shall have a minimum of five years' experience.

2. Concrete Laboratory: Concrete laboratory providing design mixes and quality control inspection shall be approved by the Town of Yorktown and shall meet the requirements of ASTM E329.

1.09 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle precast units in such manner so as not to damage the units.

PART 2: PRODUCTS AND MATERIALS

2.01 MANUFACTURERS

A. All manufacturers of materials shall be as approved by the Town of Yorktown or as specified by the plans. The Contractor may offer substitutions for approval.

2.02 BACKFILL MATERIAL

A. Excavated Material: Excavated material shall be used as backfill under this item unless the Engineer deems the material to be unsuitable. Excavated material used as backfill and grading, shall meet the gradation requirements for Granular Fill. No additional payment will be made for this work but the cost thereof shall be deemed included in the price for the item for which work is being performed.

B. Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials and shall have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

1. If the Engineer deems the excavated material to be unacceptable, Granular Fill shall be to backfill the forcemain. Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

C. Crushed Stone: Shall conform to NYSDOT Item 703-0201 have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
½ inch	45 to 85
¼ inch	30 to 65
No.10	15 to 45
No.200	0 to 5

1. If the Engineer deems the excavated material to be unacceptable, Granular Fill shall be to backfill the precast catch basins. Crushed stone, if ordered by the Engineer, shall be paid under Item 0204. No payment will be made without the prior approval of the Engineer or Town.

2.03 MATERIALS

A. Cement

Shall conform to ASTM C150, Type II, and shall be of the non air-entrained types:

B. Admixtures

1. The use of admixtures shall comply with the requirements of Section 500 and all related sections of the NYS DOT Standard Specifications. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed .05 at 28 days.

2. Air-entraining admixtures shall conform to ASTM C260.

3. Chemical admixtures shall conform to ASTM C494.

C. Water

Shall be clean potable water free of injurious foreign matter conforming to the requirements for water specified in ASTM C94.

D. Aggregates

Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications. Maximum size of coarse aggregate shall conform to paragraph 3.3.3 of ACI 318. Aggregates shall conform to ASTM C33 and be of Size No.67 or No.8.

E. Concrete Reinforcement

1. Reinforcing Bars: All reinforcing bars shall be of deformed type of new billet steel conforming to current requirements of ASTM A615, grade 60. No rail or re-rolled steel will be permitted.

2. Welded Steel Wire Fabric: Wire Fabric shall conform to the requirements of ASTM A185.

F. Manhole Frame and Cover:

Cast iron frame and cover with type as specified on the plans or equal product approved by the Village's Representative.

G. Catch Basin Frame and Cover

Cast iron frame and cover with type as specified on the plans or equal product approved by the Village's Representative.

H. Precast Unit Steps/rungs:

Cast iron, diamond non-skid design or equal product approved by the Village's Representative.

I. Self-sealing Butyl Gasket

7/8" x 7/8" or 1" diameter conforming to Fed. Spec. SS-S-00210.

J. Expansion Screw Anchors with malleable lead shields in accordance with Federal Specifications FF-S-325C, Group 1, Type 1, Class 1.

2.03 MIXES

A. General

Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

Strength requirements given in Part 1 of this Specification are based on 28-day compressive strength.

C. Provide the following air content for the grading size of coarse aggregate as follows:

1. No.8.....$7^1/_2$%

2. No. 57 or 67.....6%

Tolerance on air content as delivered shall be +1.5%.

2.04 FABRICATION

A. Fabricate the precast units to the sizes and shapes shown on the Drawings, with pipe openings, precast collars, rungs/steps, lift inserts and other items as indicated.

B. Cast units in tight, well-built forms; vibrate concrete to ensure smooth, laitance-free surfaces.

C. Finished units shall be warp-free, of uniform thicknesses with shapes, sizes, pipe openings, inserts and all other details as shown on the Drawings and as specified herein.

D. Provide 5/8" threaded dowels at pipe opening locations to provide attachment for piping.

E. Provide scoring for bond on bottom slab of the precast units as detailed on the Drawings. Provide keys at all joints.

2.05 PROTECTIVE COATINGS

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PART 3: METHOD

3.01 INSTALLATION

A. Install precast units at locations shown on the Drawings; place level and plumb, and to proper depths. Catch basins are to be placed to ensure that the long direction of the slot of the grating will be perpendicular to the flow of pedestrian traffic. Coordinate with pipe connection locations. Install butyl gaskets at joints on both horizontal surfaces of keyed joint, in such manner to seal each joint completely, providing adequate lap. One 9" or less diameter opening per unit is permitted to be core drilled in the field due to fabrication errors. Any other unit requiring greater diameter or greater opening shall be rejected.

B. Install precast collars and manhole brick set in Type M mortar to allow for placement of the covers at the correct rim invert elevation.

C. Install cast iron frames and covers, and traps, as detailed on the Drawings and as recommended by the manufacturer. Grates are to be placed with the long direction of the slot perpendicular to the flow of pedestrian traffic when placed in walkways.

D. Units with large spalls (greater than 2" in depth and 2 SF in area) and openings greater than 9" in diameter placed in the wrong location are rejected and shall be replaced. Minor spalls and openings 9" or less placed in the wrong location are to be patched as follows:

1. Roughen surface or perimeter of opening to a fractured aggregate surface.
2. In openings, drill and install a minimum of four 1/2" dia ss expansion anchors with 4" extension.
3. At openings, install butyl sealant around perimeter.
4. Install hydraulic repair mortar to match existing contours and thicknesses of members.
5. Make pipe-to-precast unit connections using non-shrink grout.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Precast Concrete Catch Basins will be measured on a per each basis.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid including all structures, frames and grates, installed in place as per the Contract Drawings and shall include the cost of furnishing all labor, materials and equipment including but not limited to excavation to complete the work. This work shall include all piping, fittings, precast structures, frames and grates, reinforcing, bolts, covers, traps, steps/rungs, existing drainage pipe connections, brick masonry, concrete block, concrete, or other connections and other miscellaneous items to be fabricated with or installed on the precast units. This work shall not be limited to excavation, saw cutting asphalt and concrete, trenching and sheeting, screening of excavated material as required, backfilling and compaction, connections, temporary pavement, pavement repair or patching, street closure permits, removal and disposal of surplus material, and any incidental work in accordance with the Contract Drawings and Specifications, to the satisfaction of the Engineer.

Note: Included in this work shall be the cost for cleaning all catch basins and manholes of silt and debris prior to final acceptance of the project by the Town.

END OF SECTION

SECTION 0702

PRECAST CONCRETE MANHOLES

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish and install precast concrete manholes as indicated on the Drawings and as specified herein. Subsequently, in this Section, these items will be referred to as "precast unit". This shall also include the cost of all labor, materials and equipment necessary to complete the work including all piping, fittings, all frames, covers, traps, steps/rungs, and other miscellaneous items to be fabricated with or installed on the precast units.
This work shall not be limited to excavation, saw cutting asphalt and concrete, trenching and sheeting, screening of excavated material as required, backfilling and compaction, connections, temporary pavement, pavement repair or patching, street closure permits, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

The cost for cleaning all manholes of silt and debris prior to final acceptance of the project by the Town shall be included in this work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0301 Asphalt Pavement
D. Section 0402 Cast-In Place Concrete Curbs
E. Section 0601 Drainage Conveyance System
F. Section 0602 Furnish and Install Sanitary Sewers
G. Section 0701 Precast Concrete Catch Basins
H. Section 0901 Synthetic Turf Preparation
I. Section 0906 Site Restoration

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

B. Federal Specifications (FS)

C. American Association of State Highway and Transportation Officials (AASHTO)

D. Standard drainage specifications of the Town.

E. International Concrete Repair Institute (ICRI)

1.04 DEFINITIONS

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1.05 DESIGN REQUIREMENTS

A. Precast concrete manholes shall meet The Town of Yorktown requirements and be capable of withstanding an AASHTO HS20 loading.

B. Precast concrete manholes shall be manufactured using normal weight concrete with a minimum compressive strength of 4000 psi, air-entrained, and a maximum water to cement ratio of 0.42.

1.06 MANUFACTURER

A. All manufacturers of materials shall be as approved by The Town of Yorktown or as specified by the plans. The Contractor may offer substitutions for approval.

B. Frames & Castings – Expanded Supply Products Inc. 3330 Route 9, Cold Spring, New York, 10518, (845) 265-3772

C. Precast Structures – Expanded Supply Products Inc. 3330 Route 9, Cold Spring, New York, 10518, (845) 265-3772

1.07 SUBMITTALS

A. Product Data

Submit manufacturer's product data on each of the following:

1. Each type of cast iron cover and frame
2. Each type of step/rung
3. Trap
4. Butyl Gasket
5. Coating

B. Shop Drawings

Before casting units, submit shop drawings of each item to be cast, showing details of all pipe entries, finish grades and other pertinent information. Ensure the orientation of the catch basin properly accounts for the required grating slot direction.

C. Quality Control Submittals

1. Design Data: Submit design mixes for concrete, including list of admixtures to be used, and preliminary trial mix test results.
2. Test Reports: Daily testing logs.
3. Certification: From testing laboratory that construction of the precast units is in compliance with the requirements of the Town and this specification.
4. Contractor Qualifications: Provide proof of Manufacturer and Concrete Laboratory qualifications specified under "Quality Assurance".

1.08 QUALITY ASSURANCE

A. Qualifications

1. Precast Unit Manufacturer: Company specializing in the production of precast concrete site structures shall have a minimum of five years' experience.

2. Concrete Laboratory: Concrete laboratory providing design mixes and quality control inspection shall be approved by the Town of Croton-On-Hudson and shall meet the requirements of ASTM E329.

1.09 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle precast units in such manner so as not to damage the units.

PART 2: PRODUCTS AND MATERIALS

2.01 MANUFACTURERS

A. All manufacturers of materials shall be as approved by The Town or as specified by the plans. The Contractor may offer substitutions for approval.

2.02 BACKFILL MATERIAL

A. Excavated Material: Excavated material shall be used as backfill under this item unless the Engineer deems the material to be unsuitable. Excavated material used as backfill and grading, shall meet the gradation requirements for Granular Fill. No additional payment will be made for this work but the cost thereof shall be deemed included in the price for the item for which work is being performed.

B. Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials and shall have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

1. If the Engineer deems the excavated material to be unacceptable, Granular Fill shall be to backfill the concrete manholes. Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

C. Crushed Stone: Shall conform to NYSDOT Item 703-0201 have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
½ inch	45 to 85
¼ inch	30 to 65
No.10	15 to 45
No.200	0 to 5

1. If the Engineer deems the excavated material to be unacceptable, Granular Fill shall be to backfill the precast concrete manholes. Crushed stone, if ordered by the Engineer, shall be paid under Item 0204. No payment will be made without the prior approval of the Engineer or Town.

2.03 MATERIALS

A. Cement

Shall conform to ASTM C150, Type II, and shall be of the non air-entrained types:

B. Admixtures

1. The use of admixtures shall comply with the requirements of Section 500 and all related sections of the NYS DOT Standard Specifications. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed .05 at 28 days.

2. Air-entraining admixtures shall conform to ASTM C260.

3. Chemical admixtures shall conform to ASTM C494.

C. Water

Shall be clean potable water free of injurious foreign matter conforming to the requirements for water specified in ASTM C94.

D. Aggregates

Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications. Maximum size of coarse aggregate shall conform to paragraph 3.3.3 of ACI 318. Aggregates shall conform to ASTM C33 and be of Size No.67 or No.8.

E. Concrete Reinforcement

1. Reinforcing Bars: All reinforcing bars shall be of deformed type of new billet steel conforming to current requirements of ASTM A615, grade 60. No rail or re-rolled steel will be permitted.

2. Welded Steel Wire Fabric: Wire Fabric shall conform to the requirements of ASTM A185.

F. Manhole Frame and Cover

1. Cast iron frame and cover with type as specified on the plans or equal product approved by the Town's Representative.

G. Catch Basin Frame and Cover

Cast iron frame and cover with type as specified on the plans or equal product approved by the Town's Representative.

H. Precast Concrete Manholes /rungs:

Type as specified on the plans or equal product approved by the Town's Representative.

I. Self-sealing Butyl Gasket

7/8" x 7/8" or 1" diameter conforming to Fed. Spec. SS-S-00210.

J. Expansion Screw Anchors with malleable lead shields in accordance with Federal Specifications FF-S-325C,Group 1, Type 1, Class 1.

2.04 MIXES

A. General

Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

Strength requirements given in Part 1 of this Specification are based on 28-day compressive strength.

C. Provide the following air content for the grading size of coarse aggregate as follows:

1. No.8.....7$^1/_2$%

2. No. **57 or** 67.....6%

Tolerance on air content as delivered shall be +1.5%.

2.05 FABRICATION

A. Fabricate the precast concrete manholes to the sizes and shapes shown on the Drawings, with pipe openings, precast collars, rungs/steps, lift inserts and other items as indicated.

B. Cast units in tight, well-built forms; vibrate concrete to ensure smooth, laitance-free surfaces.

C. Finished units shall be warp-free, of uniform thicknesses with shapes, sizes, pipe openings, inserts and all other details as shown on the Drawings and as specified herein.

D. Provide 5/8" threaded dowels at pipe opening locations to provide attachment for piping.

D. Provide scoring for bond on bottom slab of the precast units as detailed on the Drawings. Provide keys at all joints.

PART 3: METHOD

3.01 INSTALLATION

A. Install precast concrete manholes at locations shown on the Drawings; place level and plumb, and to proper depths. Catch basins are to be placed to ensure that the long direction of the slot of the grating will be perpendicular to the flow of pedestrian traffic. Coordinate with pipe connection locations. Install butyl gaskets at joints on both horizontal surfaces of keyed joint, in such manner to seal each joint completely, providing adequate lap. One 9" or less diameter opening per unit is permitted to be core drilled in the field due to fabrication errors. Any other unit requiring greater diameter or greater opening shall be rejected.

B. Install precast collars and manhole brick set in Type M mortar to allow for placement of the covers at the correct rim invert elevation.

C. Install cast iron frames and covers, and traps, as detailed on the Drawings and as recommended by the manufacturer. Grates are to be placed with the long direction of the slot perpendicular to the flow of pedestrian traffic when placed in walkways.

D. Units with large spalls (greater than 2" in depth and 2 SF in area) and openings greater than 9" in diameter placed in the wrong location are rejected and shall be replaced. Minor spalls and openings 9" or less placed in the wrong location are to be patched as follows:

1. Roughen surface or perimeter of opening to a fractured aggregate surface.
2. In openings, drill and install a minimum of four 1/2" dia ss expansion anchors with 4" extension.
3. At openings, install butyl sealant around perimeter.
4. Apply slurry coat of hydraulic repair mortar of type approved by the A/E of Record to all surfaces to receive repair mortar.
5. Install hydraulic repair mortar to match existing contours and thicknesses of members.

E. Make pipe-to-precast concrete manholes connections using non-shrink grout.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Precast Concrete Manholes will be measured on per each basis.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid including frames and grates, installed in place as shown on the Contract Drawings and shall include the cost of furnishing all labor, materials and equipment including but not limited to excavation, select backfilling and compaction, removal and disposal of surplus material, proposed and existing drainage pipe connections, brick masonry, concrete block, concrete, precast structures, frames and grates, reinforcing, bolts or other connections, asphalt saw cutting, temporary pavement, pavement repair or patching, and any incidental work required to complete the work in accordance with the Contract Drawings and Specifications, to the satisfaction of the Engineer.

Note: Included in this work shall be the cost for precast concrete manholes of silt and debris prior to final acceptance of the project by the Town.

END OF SECTION

SECTION 0703

SEWAGE PUMPING STATION

PART 1 GENERAL

1.01 DESCRIPTION

Under this item the Contractor Shall Furnish and Install a completely operational sewage pumping station including pumps, flow metering equipment, motor controllers, emergency generator, odor control equipment, piping, plastic and metal fabrications, valves, painting, etc. for the collection and transfer of raw domestic sanitary wastewater.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0203 Select Fill Material
G. Section 0204 Crushed Stone Fill
H. Section 0301 Asphalt Pavement
I. Section 0401 Cast-In-Place Concrete
J. Section 0502 Force Main
K. Section 0802 Building Services – General Plumbing & Electrical Work
L. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. Materials for waste water systems shall meet the appropriate American Standard Testing Materials (ASTM) Standard.

B. NEMA Standards

C. 10 State Standards – Recommended Standards for Wastewater Facilities

D. Rules and Regulations of the Westchester County Department of Health

1.04 SUBMITTALS

A. Product Data: Catalog sheets, specifications.

1. Sewage Pumps, Sump Pumps:
   a. Dimensions.
   b. Illustration/description of construction.
   c. Hydraulic performance curve.
   d. Pump performance as a function of rotor speed. (Metering Pumps).

2. Pump controls.

3. Flow Metering Equipment:
   a. Dimensions for all items.
   b. Electrical wiring diagram for interconnection of flow metering equipment.

4. Valves (all types).

5. Pressure gages.

6. PVC Piping.

7. Flange adapters.

8. Paints and Coatings:

   a. Furnish the manufacturer's recommended directions for application of the paints and coatings.

B. Shop Drawings:

1. Motor Controller Electric Schematic Wiring Diagrams:

   a. Furnish schematic control wiring diagrams for the motor controllers for the 2 grinder pumps, mixer, and metering pumps

   b. Show control of equipment action, its sequence of operation, and its relationship with the action other interrelated equipment as described in Paragraph 3.01 D. and Paragraph 3.01 E.

   c. The control wiring diagrams shall be specifically prepared for this contract and reprinted copies of catalog wiring diagrams, modified for this contract, or wiring diagrams previously prepared for other customers, will be rejected and returned as not approved.

C. Quality Control Submittals:

1. Company Field Advisor Data:

   a. Name, business address and telephone number of Company Field Advisor secured for the required services.

   b. Certified statement from the Company listing the qualifications of the Company Field Advisor.

c. Services and each product for which authorization is given by the Company, listed specifically for this project.

2. Test Reports, Pump Test Curves:

a. In addition to the catalog curves, furnish pump curves, for tests conducted in compliance with the standards of the Hydraulic Institute and performed at the pump manufacturer's plant.

b. Furnish tests for the 2 grinder pumps.

c. Furnish curves for tests performed on the actual assembled pumps to be furnished. Curves derived from tests made on models, at reduced speeds, or equal pumps fabricated for others at a previous date will be rejected and returned as not approved.

d. Submit tabulated test data results together with the graphic performance curves for each pump. Present curves, in English Units, for total dynamic head, efficiency, and horsepower as functions of discharge rate. Include all specific points listed in Paragraph 2.02 A. on the curve plots.

e. Furnish curves from tests that are witnessed, dated, and certified correct by the Company Field Advisor.

1.05 QUALITY ASSURANCE

A. Company Field Advisor: Secure the services of a Company Field Advisor for the flow metering equipment for a minimum of 8 working hours. Delays that are due to faulty installation and wiring that unreasonably extends that service visit shall not be included as part of the 8 working hours.

1. The Field Advisor shall check the flow meter equipment for installation, wiring, and operation. Include in the review of equipment operation an evaluation of the accuracy of the flow recorder for simulated signals that represent the full zero gpm to 250 gpm range of the recorder. Recalibrate the instrument as may be required.

1.06 MAINTENANCE

A. Manuals: Provide maintenance manuals bound within soft covers for each item of equipment furnished for the pumping station. Identify the equipment on the front covers and present in triplicate to the Engineer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. FLYGT, Xylem, Inc., 14125 South Brudge Circle, Charlotte, N.C. 28273, Tel:704-205-9080

B. Piping:

1. Ductile Cast Iron:
   a. Clow Corporation.
   b. United States Piping and Foundry Co.
   c. Atlantic States Cast Iron Pipe Co.

2. Plastic: Plastic Piping Systems, 255 Old New Brunswick Road, Piscataway, NJ 08854.

3. Flange Adapters: EBAA Iron Sales, P.O. Box 857, Eastland, TX 76448.

2.02 PUMP STATION

A. Pump Station - 2 required

1. Pumps shall be a COMPIT 2000 DUPLEX GRINDER PUMP STATION as manufactured by FLYGT or approved equal.

A. Cavity Grinder Pump - 2 required.

1. Pump motor shall be Progressing Cavity Grinder Pump manufactured by FLYGT, Model M3068.175 PC or approved equal.

2.03 PUMP CONTROLS

A. General – 2 Required

1. Contractor shall furnish all labor, materials, equipment, and incidentals required to provide a custom duplex pump control panel to operate (2) 5 HP submersible explosion proof pumps and (1) 2 HP submersible explosion proof mixer as specified herein.

2. The pump control panel shall be assembled and tested by a shop meeting UL standard 698A for industrial intrinsically safe controls. Each control panel shall receive a factory test to ensure proper operation prior to shipment.

B. Construction

1. For each pump, a run light and a hand-off-auto switch shall be provided. The run lights and hand-off-auto switches shall be properly labeled as to function. The run lights shall match the hand-off-auto switches in appearance. Run lights shall be green.

2. A pump controller shall be provided for control logic. It shall be a dedicated, solid-state controller, which is easily replaceable with un-pluggable terminal blocks on all wiring inputs and outputs. Controller shall be surface mounted on the back panel, shall be UL listed, and shall operate on 120VAC ±10%, 50–70 Hz, with an operating temperature of –10°C to 60°C. A HMI shall be included that will allow adjustment of pump on/off levels and alarm levels. The wet well level shall be displayed on screen.

PART 3 EXECUTION

3.01 INSTALLATION

A. Pump Station and Controls

1. Shall be installed in accordance with the Manufactures installation specifications.

2. Fix the centerline elevation of the top pipe bends for cutter pump discharge piping based on the approved dimensional catalog drawings to be submitted for the metering pumps. Install all other piping at the elevations noted or indicated by the drawings.

3.02 FIELD QUALITY CONTROL

A. Test Preparation:

1. Notify the Engineer at least 3 working days prior to testing so arrangements can be made to witness the test. All tests shall be witnessed by the Engineer.

2. Obtain the services of the Company Field Advisor for the flow metering equipment prior to or during the testing of the sewage pumps.

3. Test pumps only after the sewage force main connecting the Facility with the Town's sewage system has been completed.

4. Clean construction debris from pumping station wet well before adding water for testing. Obtain verification from the Engineer that the wet well is clean.

3.04 CLEANING

A. Clean all room areas of construction debris, papers, dirt, etc. Leave the spaces broom clean. In addition, hose down with water the floor areas of both the Bar Screen Room and the Pump Room.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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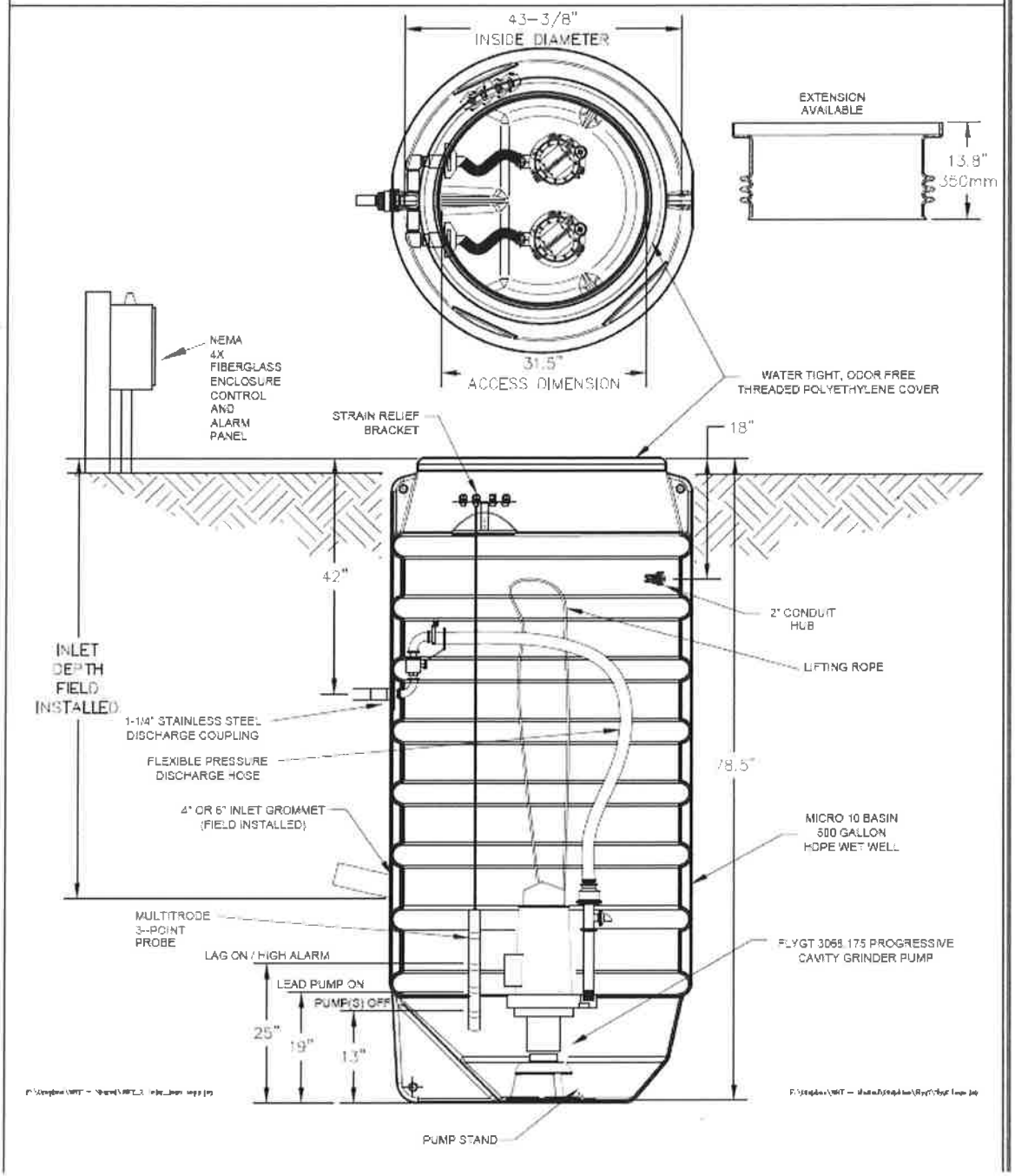
4.02 BASIS OF PAYMENT

Payment for this Work shall be at the **Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary to complete the work as shown on the Contract Drawings. All labor, materials and equipment including but not limited to excavation, trenching and sheeting, select backfilling and compaction, removal and disposal of surplus material. The work shall include all work, assembly and connections to complete and supply a fully operational pump station including; proposed pump station, control panels, electrical connections, enclosures, force main pipe connections, valves, fittings, couplings, restraints, connection to other pipe; all inspections, testing and certifications, and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

COMPIT 2000 DUPLEX
GRINDER PUMP STATION



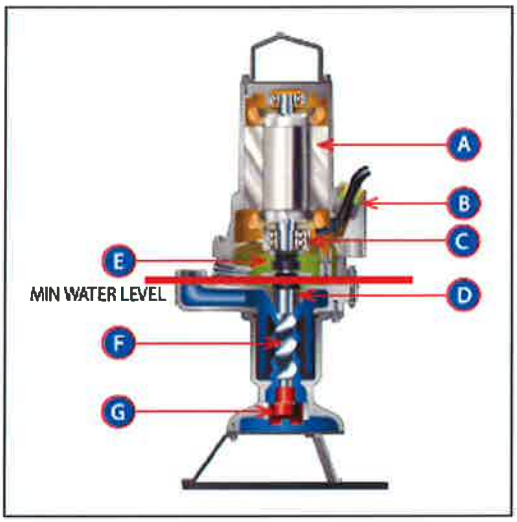
FLYGT
a xylem brand

M-3068.175 PC

Submersible Pump

Progressing Cavity Grinder Pump

Capacity up to 15.5 GPM, heads up to 240 ft



Specifications:

A **Motor:** The municipal grade squirrel cage induction motor NEMA type B, Class F (155°C) Designed and manufactured by Flygt to power this exact pump. The manufacturing process utilizes trickle impregnation method for insulating the windings. This method uses a capillary action to pull the resin into the windings producing over 90% fill rate

B **Cable Entry:** The Flygt 3068.175 PC Pump is designed to withstand over 60 ft. of submersion. The sealing and separate strain relief reduce the risk of damage from improper handling.

C **Double row bearings:** Shaft stability is enhanced by two row angular contact ball bearing pre-packed with high temperature grease.

D **Wear Ring:** Provides extra shaft stability improving seal and mot life.

E **Shaft sealing:** The 3068.175 utilizes the same double mechanical seal arrangement used in the Flygt municipal grade pumps. Two independent mechanical seal assembled in tandem run in a food grade oil bath that ensure a clean environment with no foreign debris to damage the seal assemblies. Because the seals do not run in the pump media they are protected against damage from dry run or debris that may get through the grinding assembly.

F **Rotor/Stator:** Stainless steel rotor paired with Nitrile rubber abrasion resistant stator provide long life and efficient pumping

G **Grinding Assembly:** The grinding wheel is manufactured from Hard Iron TM that has been proven in the municipal market to last at least four times as long as hardened cast iron and twice as long as duplex stainless steel.

Applications:
The M-3068.175 PC is designed for residential and commercial pressure sewer systems.

Approval:
CSA approved to UL Standard #778.

NRTL/C

Controls:
Compatible controls include single phase capacitor type panels for the most economical up front cost. The VFD phase conversion panels add higher level of security and performance. Both options are available for use with float switches or 3 point probe.

Accessories:
Compit polyethylene basin assemblies are available in various sizes from 120 gallons of storage up to over 600 gallons. Fiberglass basins with guide rails or hose are available in many custom configurations.

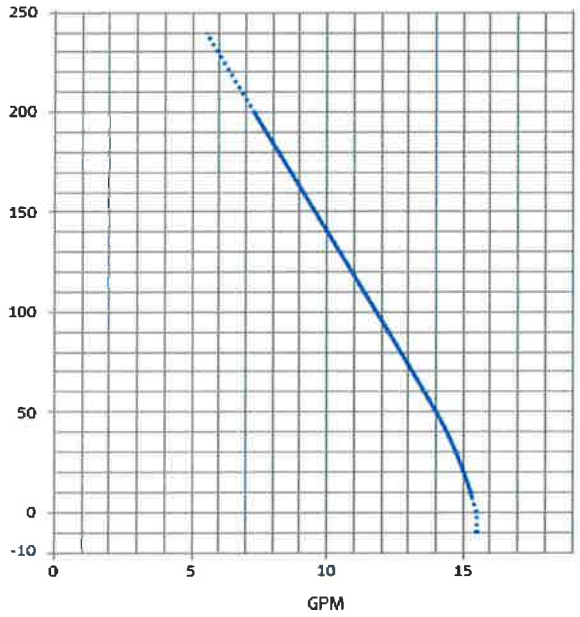
Flygt is a member of the following associations:

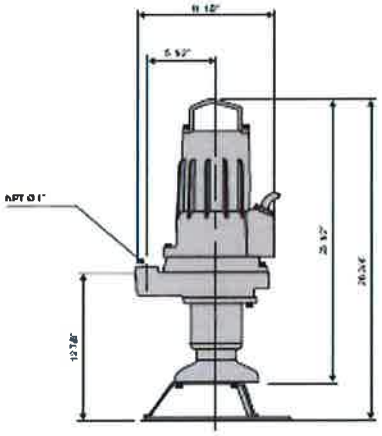
Submersible Wastewater Pump Association
SWPA

M-3068.175 PC
Performance Data

FLYGT	PERFORMANCE CURVE			PRODUCT MF3068.175	TYPE HT
HP	Phase	Volt	FLA	Comments	
1.7	1	115	16	Progressing cavity hydraulic end provides consistent performance over a wide range of system pressures. Class F motor with stator windings trickle impregnated with resin eliminating air pockets allowing the motor to run cooler.	
		230	8.1		
	3	200	8.2		
		208	9.1		
		230	6.7		
		480	3.4		
		575	2.8		

3068.175 PC Pump Curve





FLYGT
a xylem brand

Xylem, Inc. | 14125 South Bridge Circle | Charlotte, NC 28273 | Tel 704.409.9700 | Fax 704.295.9080 | 855-XYL-H2O1 (855-995-4261)

M-3068.175 PC

END OF SECTION

SECTION 0704

STORMWATER MANAGEMENT SYSTEM BASINS (POCKET WETLAND)

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish all labor, materials and equipment necessary to perform all excavation, grading, clay lining, installation of structures, installation of pipe, and planting as shown on the Contract Drawings to construct the Pocket Wetland Stormwater Basin (PWSB). Work shall include but not be limited to the following:

1. Excavation & Grading – Excavation and grading to establish the interior and exterior contouring of the PWSB.This will include the berm and tie in to adjoining or existing grades and micro-topography within the basins. all grassed and sourounding areas.
2. Screening of excavated material as required.
3. The Initial grading to use of the PWSB as a temporaray sediment basin during construction as per construction sequence.
4. Installation of outlet structures and pipes.
5. Installation of clay liner.
6. Placement of topsoil.
7. Planting of the required plants and shrubs as per the planting plans.

The Engineer at his discretion may require additional work under this section if he deems this work necessary to comply with the intent of this project. Any work not included under this specification but required for the successful completion of project work, as deemed by the Engineer, shall be performed by the Contractor as directed by the Engineer and paid for under Item 1002 Additional Miscellaneous Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0601 Drainage Conveyance System
F. Section 0906 Site Restoration

1.03 REFERENCES

A. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification using the abbreviation shown.

B. American Society for Testing and Materials (ASTM):

1. D 698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft)

2. D 1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
3. D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)(2,700 kN-m/m^3)
4. D 2167 Standard Test Method for Density and Unit Weight of Soil In Place by the Rubber Balloon Method
5. D 2216 Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
6. D 2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
7. D 2922 Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
8. D 2937 Standard Test Methods for Density of Soil in Place by the Drive-Cylinder Method
9. D 3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
10. D 4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
11. ASTM F2306 Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications
12. ASTM F2736 Joints for Sewer Pipe Standard Specification for 6 to 30 in. (152 To 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe And Double Wall Pipe
13. ASTM F2487 Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High Density Polyethylene and Polypropylene Pipelines
14. ASTM D3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
15. ASTM F 1668 Construction Procedures for Buried Plastic Pipe

C. American Association of State and Highway Transportation Officials

1. AASHTO M 294 Standard Specification for Corrugated Polyethylene Pipe
2. AASHTO Method T-99 (Standard Proctor)

D. New York State Department of Environmental Conservation – 6NYCRR PART 375

1.04 DEFINITIONS

Pocket Wetland Stormwater Basin (PWSB) will also be synonymous with the term "Basin".

1.05 DESIGN REQUIREMENTS

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1.06 SUBMITTALS

A. Product Data: Manufacturer's specifications (including dimensions, allowable height of cover information, and installation instructions).

B. Product tags for all seed mix material.

C. Manifests or delivery tickets for all plant material delivered to site.

B. New York State Department of Environmental Conservation – 6NYCRR PART 375

1. Laboratory test results.

1.07 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown, Department of Parks and Recreation regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown, Department of Parks and Recreation regulations are given in this Section, the requirements of this Section shall govern.

2. New York State Department of Environmental Conservation

1.08 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Owner and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner not less than three days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Owner's written permission.

3. Contact utility-locator service for area where Project is located before the start of work.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Protect material from the elements and from other damage on the site before, during, and after installation.

B. The Contractor shall replace and pay for any material and work damaged to the satisfaction of the Town and Engineer.

PART 2: MATERIALS

2.01 DESCRIPTION General: All materials utilized under this pay item shall be on-site material.

A. All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stockpiled convenient to areas for later re-use or placed within the limits of the Contract or where directed by the Town. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this work, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

B. Fill materials shall be free Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, construction debris, stones or boulders over 6 inches in greatest dimension, frozen material, and material which, in the opinion of the Engineer is unsuitable shall be immediately removed from the site.

C. Fill materials in the uppermost 2 feet shall not have any rocks larger than 3 inches in diameter.

D. Excavated Material: Excavated material shall be used as backfill under this item unless the Engineer deems the material to be unsuitable. Excavated material used as backfill and grading, shall meet the following gradation requirements as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size	% Passing by Weight
6 inch	100
4 inch	90
No. 40	70
No.200	15

E. Clay Liner Material: Material for construction of the clay liner where called on the Contract Drawings shall be approved by the Engineer or as specified herein. Clay liner material shall be a fine grained material and classified as CL soil according to ASTM D 2487and ASTM D 4318. The clay liner material shall be capable of providing a liner with a maximum hydraulic conductivity (permeability) of 1 x 10 -7 centimeters per second.

F. Site Stripped Topsoil may be used as fill in landscape areas only.

G. Plastic Pipe - The following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" through 10" pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" pipe shall meet the requirements of AASHTO M294 Type S.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding -The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to Structure Backfill requirements.

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

PART 3: METHOD

3.01 DESCRIPTION

The Contractor shall perform the required work under this section in accordance with the conditions and requirements as specified. The Contractor shall perform and execute all necessary excavation required to finish the work needed to complete all items or as directed by the Engineer. The Contractor shall supply all labor and equipment to complete the work. It is the Contractors obligation to make certain that grades stakes, bench marks, and offset staking are in place and accurately reflect elevations as per the construction drawings. The contractor is responsible to make sure all erosion and sediment control devices are in place. The Contractor will read and familiarize himself with the construction sequence posted in the Stormwater Pollution Prevention Plan (SWPPP) and as provided in the plan set. There are two stages for the construction of the PWSBs. The sequence of construction is important in order to comply with regulatory permits. Once final grading has been established all surfaces receive topsoil or clay liner and will be planted as specified with seed, plants, and shrubs as per the Contract Drawings.

Excavation shall generally be taken to mean the removal of soil and other material of any nature whatsoever that may be encountered.

A. Areas designated for the PWSBs shall be grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Banks and sharp breaks shall be sloped to no steeper than 3:1. All trees shall be cleared and grubbed within 10 feet of the toe of the embankment. All cleared and grubbed material shall be disposed of as specified in Section 0101Site Prep and Removals. Topsoil will be stockpiled in a suitable location for use at the time of the completion of the PWSB and other designated areas.

B. Survey and stakeout. The contractor shall have each PWSB staked out as per plan in two stages. The initial stage will be to establish the overall size, height of berm, limits of cut/fill, and general depth of bottom. During construction this will serve as a temporary sediment basin. After completion of all site work the sediment basins will be converted to the permanent state of a pocket wetland. This will require re-staking of the micro-topography within the interior of the basin.

C. Conservation of Topsoil: Topsoil shall be removed as required without contamination with subsoil and stockpiled convenient to areas for later application or at locations specified. Any surplus of topsoil from excavations and grading shall be stockpiled in location approved by the Town. A silt fence shall be installed on the downslope side and the stockpiles seeded.

   The Contractor shall carefully protect all trees and shrubs and other landscape vegetation to remain shall be protected as per specification "Site Restoration." The Town shall have the final authority on the removal of all trees and existing features to remain. The Contractor at his expense in accordance with the Specification "Site Restoration" and the General Conditions shall replace any trees removed contrary to the orders of the Town.

The Contractor shall be responsible for any and all damages to property caused by the removals operations. All damaged trees and plants or improvements shall be replaced or restored to their original condition to the satisfaction of the Town. Further any new or existing improvements to remain shall also be protected throughout the construction of the project. The Contractor will be responsible at his expense to replace any improvements damaged by his company workers and those of any subcontractors under the Contractor.

D. Conservation of On-Site Material: Material removed during excavation and grading operations shall be stockpiled convenient to areas for later reuse or at locations required. A silt fence shall be installed on the downslope side and the stockpiles seeded.

   The Contractor shall carefully protect all trees and shrubs and other landscape vegetation to remain shall be protected as per specification "Site Restoration." The Town shall have the final authority on the removal of all trees and existing features to remain. The Contractor at his expense in accordance with the Specification "Site Restoration" and the General Conditions shall replace any trees removed contrary to the orders of the Town.

E. Initially, the extent of excavation and grading will be to establish the overall size, height of berm, limits of cut/fill, and general depth of bottom. During construction PWSB will serve as a temporary sediment basin. The pipe outlet will be installed in its final location. Since the berm and external tie-in grades will be permanent, thearea outside the basin will be permanently seeded as per plan.

F. After completion of all site work, and with the Engineers approval the sediment basins will be converted to the permanent state of a pocket wetland. This will require establishment of the micro-topography within the interior of the basin. The forebays and micropools will be lined with clay if required by the Engineer. Final outlet structures will be installed. All other areas will receive a minimum of 3" of topsoil, and seed and plantings will be established. All work will be as per the Contract Drawings, Technical Specifications, and SWPPP.

3.02 PERFORMANCE AND LIMITS

Prior to start of work the limits shall be staked by the surveyor and all erosion controls established. All areas subject to earthwork shall be brought to the required elevations and grades by excavating, filling, and grading. Excavated materials found suitable by the Engineer, shall be used in making embankments. Embankments shall be constructed so as soil shall be placed in successive horizontal layers not over six (6") inches in depth, extending across the entire fill. It shall be spread and shall then be thoroughly compacted suitable hand operated equipment to the satisfaction of the Engineer. Any hollows and/or depressions which may result from compacting shall be filled with like or acceptable material, and shall again be compacted. This shall be repeated until all depressions are eliminated. Where clay or plastic soils are encountered compaction shall be done in such a manor as to avoid a plastic condition. In all cases these type soils should not be rolled when wet.

The Contractor shall make sure to cut or fill accurately to the limits and levels shown on the plans and shall make a smooth transition to existing grade, or as directed by the Engineer. Where the excavation limit has been exceeded by error on the part of the Contractor, the over excavated zone will be filled to the correct grade. The Contractor will not receive any additional payment for these corrective measures.

The Contractor shall maintain the banks of excavation in a safe and stable condition. The Contractor shall furnish and install temporary sheet piling or planks, braces and shores of good sound timber of adequate strength, and shall remove such piling or shoring as the work progresses.

When the excavation(s) have been completed to the required depth as shown on the drawings, the Contractor shall not proceed with the work until the subgrade has been inspected and approved by the Engineer. The Engineer may order further excavation as the conditions indicate. No additional work shall be done until the excavation has been approved by the Engineer.

3.03 PREPARATION

A. Areas designated for the PWSBs shall be grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Banks and sharp breaks shall be sloped to no steeper than 3:1. All trees shall be cleared and grubbed within 10 feet of the toe of the embankment. All cleared and grubbed material shall be disposed of as specified in Section 0101Site Prep and Removals. Topsoil will be stockpiled in a suitable location for use at the time of the completion of the PWSB and other designated areas.

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

A. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust.

B. The Contractor shall establish control stakes which will be used to determine the amount of excavation and fill.

3.04 DEWATERING

A. If required, dewatering shall be done following the details provided in the Contract Drawings. Discharge shall be to a location designated by the Engineer.

3.05 EXCAVATION, GENERAL

A. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory on site soil materials.

1. Excavation includes excavating obstructions visible on surface; underground structures, other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.

   a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

2. Rock excavation includes removal and disposal of rock.
   a. Do not excavate rock until it has been classified and cross-sectioned by the Contractor's surveyor.

3.06 APPROVAL OF COMPLETED WORK

A. Notify Engineer when the following stages have been reached.
   1. Stage one grading which includes construction of the berm, side slope grading tie-in to existing grade, grading within berm to approximate bottom, installation of outlet pipe and filtered outlet, and stabilization.
   2. After full site stabilization and approval by the Engineer, the interior PWSB shall be graded to its final state. After the grading and installation of structures the Engineer shall inspect prior to planting.

   3. After all planting is in place the Engineer shall inspect and sign off for final approval.

3.07 STORAGE OF SOIL MATERIALS

A. Stockpile satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Stockpiles shall be placed in designated areas.

B. No direct payment shall be made for re-handling of excavated materials for backfilling structures, nor for any other purposes necessary to complete the work as shown on the Contract Drawings, but the compensation will be considered as having been included in the individual pay items for this project. Re-handling of excavated materials shall be incidental to and shall be included in any additional work which resulted as an outcome of a change made to the Contract Drawings, and is ordered in writing by the Engineer.

3.08 ON-SITE MATERIAL

A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing on site fill materials.

B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

C. Place and compact fill material in layers to required elevations.

D. No stones larger than six (6) inches in any dimension shall be placed within the soil berm.

3.09 MOISTURE CONTROL

The Contractor shall furnish all materials, equipment and labor required to keep the site of the work free from water, ice and snow during construction. Shall provide ample means and equipment with which to promptly remove and dispose of all water and drainage during excavation, and keep all excavations dry until the structures to be constructed are completed.
Under no circumstances will completed portions of the work be used as a means of dewatering, unless specifically provided for under a Specification Item, no direct payment will be made for dewatering, including the use of deep wells, but compensation therefore will be considered as being included in the unit prices bid for the various items of the Contract.

3.10 COMPACTION OF BACKFILLS AND FILLS

A. The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller in a static mode. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out. When required by the Engineer the minimum required density shall not be less than 90% of maximum dry density with a moisture content within 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

B. Place fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

3.11 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Final grading of the interior of the basin shall be uniform and smooth to the micro-topography elevations shown on the Contract Drawings. The tolerance shall be plus or minus 1/2 inch (13 mm).

3.12 FIELD QUALITY CONTROL

A. Allow Engineer to inspect and test stages of completion as outline in this specification. Proceed with subsequent earthwork only after approval is provided for previously completed work.

C. Testing agency will test compaction of soils in place according to AASHTO T-99, as applicable. Tests will be performed as directed by the Engineer:

D. When subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

E. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

1. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

3.13 USE OR DISPOSAL OF EXCAVATED MATERIAL

A. All undesirable material such as excavated boulders larger than 2 cubic feet, concrete, wood, metals, debris or any other deleterious material shall be removed from the site under this item. Stones under 6" may be placed back into the excavation but shall be placed at least two (2') feet from the surface. Clean select fill approved by the Engineer shall be used for backfill to replace the removed debris and shall be provided and placed under this item.

B. All excavated materials which in the opinion of the Engineer are suitable for backfilling shall be stored or placed within the limits of the Contract, where directed by the Town. All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the price for the item for which work is being performed.

C. Where settling occurs before project acceptance, the Contractor shall remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing. The Contractor shall restore the appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.14 SAFETY COMPLIANCE

All shoring work shall meet or exceed the requirements of the New York State Department of Labor Industrial Code Rule 23 and Title 29 Code of Federal Regulations Part 1926, Safety and Health Regulations for Construction.

The Contractor's obligation to protect utilities is not relieved by calling the One Call Center. The Contractor shall understand that not all utilities may be located and he is responsible to locate other utilities, to the best of his ability, using electronic probes, or other methods, prior to the start of excavation. The Contractor shall then proceed cautiously and perform hand excavation, as necessary, to protect the utility as directed by the Engineer and the operator of the utility, at no extra cost. If a utility is inadvertently damaged, it is the Contractors responsibility to restore that utility to operating condition, equal to that existing prior to damage. The Contractor shall remain at the site with the damaged utility until it has been restored and there is no danger to the public (i.e., exposed live electrical wires, etc.).

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be the **Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary to construct and complete the Pocket Wetland Stormwater Basin as specified and required by the work within the limits shown on the Contract Drawings and as directed by the Engineer or Town.

The Work shall include but not be limited to clearing surface material such as removing shrubbery, trees, roots, stumps, stones, vines, topsoil, organic matter, masonry, large boulders; all excavation and grading to achieve final elevations, installation of pipe and outlet structures such as HDPE pipe, riser pipe, anti-seep collars, trash racks, rip-rap, end sections, clay liner, filter fabric, plantings such as trees, shrubs, plants, and seeding as per the Contract Drawings or as determined and directed by the Engineer or Town.

END OF SECTION

SECTION 0801

SITE LIGHTING

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish and install all materials necessary including all LED lighting fixtures, poles, concrete foundations, bulbs, photocontrol receptacle, timers, underground conduit and fittings, wire, pull boxes etc., to form a Site Lighting System which shall be installed in accordance with the Contract Drawings and Specifications. The lighting system shall be completely operational, tested, and free from fault. The Contractor shall coordinate his work and shall allow ample time and facility for the work of other Sections to be installed.

Special Note: The approved lighting product(s) shall be manufactured Acuity Brands including all components. The approved suppler for this project:

Holophane
Northeast Sales Support team
Phone: 1-855-231-9466
Email: NortheastSalesSupport@Holophane.com

A. The Site Lighting will include the installation of site lighting at following areas of the project:

   1. Path Lighting
   2. Access Road

Included in this item shall be the cost to furnish and install all lighting as shown on the Drawings and as listed herein.

1.02 RELATED SECTIONS

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0206 Gravel Parking Area
G. Section 0401 Cast-In-Place Concrete
H. Section 0901 Synthetic Turf Preparation
I. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American National Standards Institute (ANSI)

B. American Society for Testing and Materials International (ASTM)

C. Illuminating Engineering Society of North America (IESNA)

D. International Electrotechnical Commission (IEC)

E. National Electrical Manufacturers Association (NEMA)

E. National Fire Protection Association (NFPA) - NFPA 70

F. National Electrical Code (NEC)

G. Underwriters Laboratory (UL):
1. U.L. 1598 Luminaires
2. UL 8750 Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products

1.04 SUPPLEMENTAL SUBMITTALS

A. Warranty

B. Spare parts

C. Underwriters Certificate of the completed works Certified by a Qualified Electrical Underwriter with credentials accepted by the Town of Yorktown.

1.05 QUALITY ASSURANCE

A. Company Field Advisor

1. The Contractor shall contact a manufacturer's representative when installing the lights to meet at the site and review the installation requirements.

1.06 SPARE PARTS

A. Screwdrivers

Provide one (1) screwdriver suitable for each type of vandal resistant screw installed on fixtures.

B. Spare parts lenses, vandal shields, ballasts, lamps and photocontrols

1. The Contractor shall provide extra parts as follows:

For All Fixtures:
LED Lamps: The contractor shall provide at (1) one LED lamp for each 10 fixtures (same type and wattage) with a minimum of (1) one LED lamp for each type and wattage.

Electrical Module: The contractor shall provide at (1) one electrical module for each 10 fixtures (same type and wattage) with a minimum of (1) one electrical module for each type and wattage.

Electrical Driver: The contractor shall provide at (1) one electrical driver for each 10 fixtures (same type and wattage) with a minimum of (1) one driver for each type and wattage.

Photocell: The contractor shall provide at (1) one photocell for each 10 fixtures (same type and wattage) with a minimum of (1) one photocell for each type and wattage.

2. The spare parts shall be delivered to the Engineer with an itemized list and a receipt taken, certifying that these spare parts have been delivered securely packed and received in acceptable condition. The receipt shall be given to the Town.

1.06 WARRANTY

Manufacturer's standard form in which manufacturer agrees to repair or replace luminaires or components of luminaires and lamps that fail in materials or workmanship; corrode; or fade, stain, or chalk due to effects of weather or solar radiation within one year of Substantial completion.

PART 2: MATERIALS

2.01 SITE LIGHTING

The site lighting shall be Manufactured by HOLOPHANE, Acuity Brands Lighting, Inc., 3825 Columbus Rd. S.W., Granville, Ohio 43023, Phone 800-754-0463, catalog number AUCL2 053HO 3K AS BK L3 S P7 PCLL Series, 053O LED Package, Finish Black.

The pole shaft shall be Charleston Aluminum Pole, CHA 14 F5J 12 P07 A and shall have an outside diameter of 5" Fluted, 0.25 wall. The pole finish shall meet the lamp fixture color. The height from the ground surface to the top of the light fixture shall be 14 feet.

A. Miscellaneous Requirements

1. UL listing and label for wet locations.
2. Stainless steel hardware.
3. Heat and aging-resistant gaskets to seal and cushion lenses and refractors in fixture doors.
4. Fixture Identification: A 2" high weather-resistant, reflective number label shall be affixed to each luminaire denoting the wattage and lamp type. Only the first two numbers for a specific wattage are used. (Example: "25" for 250 watt HPS). For those lamps who's wattage is below 100 watts then two numbers starting with "0" will denote the wattage (example: 70 watt HPS would be "07").

2.02 CONDUIT

A. PVC Conduit shall be Prime Conduit Schedule 40, CSA and UL listed, rated for use with 90° C conductors, ETL Listed to UL 651 or approved equal.

B. Material shall comply to NEMA Specification TC-2 (Conduit), TC- 3 (Fittings) and UL 51 (Conduit) and 514b (Fittings).

C. Conduit and fittings shall carry a ETL label or printline (Conduit - on each 10 foot length; Fittings – stamped or molded on each fitting).

D. Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. The markings shall be legible and permanent.

E. Conduit shall be made from polyvinyl chloride compound (recognized by ETL) which includes inert modifiers to improve weatherability and heat distortion. Clean rework material, generated by the manufacturer's own conduit production, may be used by the same manufacturer, provided the end products meet the requirements of this specification.

F. Fittings - The conduit and fittings shall be homogeneous plastic material free from visible cracks, holes or foreign inclusions. The conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables.

G. All conduit and fittings shall be solvent cemented in applications in accordance with instructions from the Manufacturer.

2.03 ELECTRICAL WIRE

A. The wire shall be sized in accordance with National Electrical Code, but shall be a minimum of No. 8 American Wire Gauge, unless otherwise specified by a utility company providing power supply.

B. Conductors: Copper, insulated with Type FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, XHHW-2 insulation rated 600 volts and shall UL listed. Electrician shall properly size wire for application.

PART 3: METHOD

3.01 GENERAL

A. The Contractor shall follow all applicable electrical codes, and shall follow the manufacturer's installation instructions.

B. The Contractor shall be responsible for the safe and proper support of each lighting fixture. The Contractor shall provide all items of equipment (hangers, rods, inserts, boxes, brackets, yokes, channels, frames, etc.) required to adequately and safely support each lighting fixture in a manner acceptable to the Engineer.

C. The Contractor shall examine the Drawings and familiarize himself with location and conditions under which each type of lighting fixture is to be installed, so that details of construction will best suit mounting conditions and/or obstructions at the job.

D. The Contractor shall follow all applicable electrical codes, and shall follow the manufacturer's installation instructions.

E. Install the Work in accordance with the requirements of NFPA 70 - National Electrical Code and the NYS Electrical Code and all references contained within, and the standard electrical practices.

F. The Contractor is required to protect fixtures from damage during installation of same and up to time of acceptance by the Authority and any broken fixtures, glassware, plastics, lamps, etc., shall be replaced by the Contractor.

3.02 FIXTURE INSTALLATION

A. The Contractor shall be responsible for the proper mounting and support of all lighting fixtures.

B. A suitable cast metal roughing box shall be provided by the Contractor for each lighting fixture provided. The box shall receive all branch circuit conduit and wiring. Each fixture shall connect to the roughing box in an approved manner using sealtile conduit, maximum length 12".

3.03 MOUNTING HEIGHT OF FIXTURES

A. Fixtures shall be in accordance with the mounting heights indicated on Drawings and meeting the State Electrical Code Requirements. Mounting heights (distance above finished floor) are detailed on the Drawings.

3.04 CONDUIT

A. General - The diameter of the conduit pipe shall be determined by the size and amount of wires installed as per the National Electric Code. The wire shall be sized in accordance with National Electrical Code, but shall be a minimum of No. 8 American Wire Gauge, unless otherwise specified by a utility company providing power supply.

3.05 WIRING AND CONNECTIONS

A. Each fixture shall be completely wired in an approved manner in accordance with requirements of the Electrical Code of the State of New York.

B. Install branch circuit grounding conductor from the grounding terminal bar in the panel board to each exterior lighting fixture.

C. Each light fixture assembly shall be wired to the main panel. The wiring shall be pulled through the conduit to be installed as a separate item in this contract. All wiring shall be in accordance with State and Local Electrical codes.

3.06 CLEANING

A. All fixtures shall be cleaned prior to final acceptance to remove construction dirt, dust, finger prints, etc. inside and out.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for this Work shall be at the **Lump Sum** bid and shall include the cost of all permits, inspections, testing, labor, materials and equipment necessary to complete the work as shown on the Contract Drawings. All labor, materials and equipment including but not limited to the proposed supply and installation of the lamp assembly including bulbs, pole, reinforced concrete base, excavation and backfill, underground conduit , conduit, wiring from main panel to each light assembly, spare parts, excavation, trenching, disposal of surplus materials, pull boxes or other connections and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

END OF SECTION

SECTION 0802

BUILDING SERVICES – GENERAL PLUMBING & ELECTRICAL WORK

PART 1: WORK

1.01 DESCRIPTION

The Contractor shall be responsible for the installation of all service connections for the premanufactured buildings and general building services for the site. This shall include the copper water service connections to all locations shown, interior tie in of water service to building plumbing, sanitary connections, install back flow preventers, outside spigots, electrical wiring, connections, underground service, conduit and the installation of electrical fixtures.

A. Building Services as required will be provided at the following locations of the project:

1. Concession Building
2. Outdoor Pavilion
3. Pavilion Rest Rooms
4. Maintenance Building
5. Public Announcement System (3 Fields)
6. Dugouts
7. Score Boards (3)

B. The Contractor will be responsible to include the furnishing and installation of all piping, valves, backflow/double check assembly, lighting fixtures, switches, outlets, GFCI outlets indoor and outdoor, bulbs, wire, conduit, underground conduit, pull boxes, electrical breaker panels etc. where required and not furnished by the premanufactured building Manufacturer.

C. The Contractor will arrange for power to be brought to a transformer pad near the Concession Building. The main power panel will be located in the utility room of the concession building for the site, including the field lighting. The contractor will be required to bring the underground service to a sub-panel in the maintenance shed. This location will house the controls for the site lighting. The Contractor will determine the power requirements and sizing of all wiring and plumbing pipe to meet the site requirements and all applicable codes. The Contractor shall coordinate his work and shall allow ample time and facility for the work of other Sections to be installed.

D. The Contractor will be required to bring underground communication lines to the concession building. The Contractor will determine the requirements and sizing of all wiring required for telephone and Internet hubs. The Contractor shall coordinate his work and shall allow ample time and facility for the work of other Sections to be installed.

E. The Contractor shall furnish and install leaders and gutters for the Concession Building including all materials and tie-ins to the underground drainage system.

1.02 RELATED SECTIONS

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0401 Cast-In-Place Concrete
G. Section 0501 Water Main
H. Section 0502 Force Main
I. Section 0503 Copper Water Service
J. Section 0801 Site Lighting
K. Section 0803 Athletic Field Lighting
L. Section 0901 Synthetic Turf Preparation
M. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American National Standards Institute (ANSI)

B. American Society for Testing and Materials International (ASTM)

C. Illuminating Engineering Society of North America (IESNA)

D. International Electrotechnical Commission (IEC)

E. National Electrical Manufacturers Association (NEMA)

E. National Fire Protection Association (NFPA) - NFPA 70

F. National Electrical Code (NEC)

G. New York State Electrical Code (Latest Version)

H. New York State Plumbing Code

I. Comply with the State Department of Health Sanitary Code for Cross Connection Control, and the other standards listed in Part 2 of this section.

J. Where conflicts occur between the referenced standards, the most stringent requirements shall apply.

K. Comply with applicable requirements of FS WW-P-541, and the following standards:
   a. ANSI/ASME A112.6.1M - Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use.
   b. ANSI/ASME A112.18.1M - Plumbing Fixture Fittings.
   c. ANSI/ASME A112.19.1M - Enameled Cast Iron Plumbing Fixtures.
   d. ANSI/ASME A112.19.2M - Vitreous China Plumbing Fixtures.
   e. ANSI/ASME A112.19.6 - Hydraulic Requirements for Water Closets and Urinals.

L. ASTM B 88: Copper Tube, Types K, L, and M.

M. ASME B16.22: Wrot Copper Tube Fittings, Solder Joint.

N. ASME B16.18: Cast Copper Alloy Tube Fittings, Solder Joint.

O. ASTM B 306: Drainage Tube, Type DWV.

P. ASME B16.29: Wrot Copper Drainage Tube Fittings, Solder Joint.

Q. Materials and installations designated as handicapped accessible shall conform to the following:
   a. ANSI A117.1 - Buildings and Facilities - Providing Accessibility and Usability for Physically Handicapped People.
   b. The Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG), (Appendix A to 28 CFR Part 36).
   c. The Uniform Federal Accessibility Standards (UFAS), (Appendix A to 41 CFR Part 101-19.6).

R. ASTM F876: Standard Specification for Crosslinked Polyethylene (PEX) Tubing.

S. ASTM F877: Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold- Water Distribution Systems.

T. ASTM F2023: Oxidative resistance of PEX to Hot Chlorinated Water per NSF protocol P171 (Non-Barrier PEX Tubing).

U. CSA B137.5: Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications.

V. NSF/ANSI 61-G, NSF/ANSI 372, nsf-pw-g: Complies with NSF/ANSI standard 61-G for Lead-Free Drinking Water System Components (Non-Barrier PEX Tubing). UPC listed by IAPMO (International Association of Plumbing and Mechanical Officials).

W. Each fixture carrier support shall be listed by model number in the fixture support manufacturer's Fixture Support Selection Guide as being recommended for support of the appropriate fixture.

1.04 SUBMITTALS

A. Underwriters Certificate of the completed works Certified by a Qualified Electrical Underwriter with credentials accepted by the Town of Yorktown.

B. Product Data:

   1. Catalog sheets and specifications indicating manufacturer name, type, applicable reference standard, schedule, or class for specified pipe and fittings.

   2. Material Schedule: Itemize pipe and fitting materials for each specified application in Pipe and Fittings Schedule in Part 3 of this Section. Where optional materials are specified indicate option selected.

C. Product Data: Manufacturer's catalog sheets, specifications, and installation instructions for each type backflow preventer and test kit.

D. UL Listing: Equipment and materials for which Underwriters' Laboratories, Inc. (UL) provides product listing service shall be listed and bear the listing mark.

E. Underwriter's Certificate: A New York Board of Fire Underwriters inspection or certificate is not required.

1.05 QUALITY ASSURANCE

A. Company Field Advisor:
The Contractor shall contact a manufacturer's representative when installing the lights to meet at the site and review the installation requirements.

B. All Electrical and Plumbing work shall be performed under the direction supervision of licensed contractors meeting the requirements of the Town of Yorktown Building Department.

C. Quality Control Submittals: Copy of hydraulic press fitting manufacturer's printed field inspection procedures for hydraulic press joints in copper tubing.

D. Qualifications: The persons performing the Work of this Section and their supervisor shall be personally experienced in plumbing and electrical work and shall have been regularly performing such work for a minimum of 3 years.

1.06 PERMITS, TESTING, AND INSPECTIONS

A. The Contractors shall be responsible for obtaining all permits necessary to complete work. This will include all preparation of plans, permit applications, provision of insurance requirements, and fees. The Town will directly reimburse the contractor for any filing fees.

B. The Contractor is responsible to coordinate with the Town Departments and the Westchester County Department of Health for all testing of plumbing and electrical work.

C. The Contractor is responsible to have the Backflow Assemblies tested by a New York State Certified Tester.

D. The Contractor is responsible to coordinate with the Town Departments and the Westchester County Department of Health for all inspections of plumbing and electrical work.

E. The Contractor is responsible to provide all certificates of final approval from the appropriate agency and where necessary provide asbuilt certification documents.

1.06 WARRANTY

The contractor shall provide a warranty that all work has been completed in conformance with the Contract Documents and with all applicable codes. The Contractor shall warranty all work for five (5) years.

PART 2: MATERIALS

2.01 PLUMBING

A. Copper:

1. Tube, Types K, L, and M.
2. Wrot Copper Tube Fittings, Solder Joint.
3. Cast Copper Alloy Tube Fittings, Solder Joint.
4. Drainage Tube, Type DWV.
5. Wrot Copper Drainage Tube Fittings, Solder Joint.

B. Cross-Linked Polyethylene (PEX)

1. High-density polyethylene
2. All types (A, B, C) of PEX compatible Crimp, Clamp or Push-to-connect type connection systems:
3. Crimp system: Crimp Tool + Copper Crimp + Crimp style PEX Fittings (brass – per F877/F1807 or poly – per F877/F2159 standards).
4. Clamp (Cinch) system: Clamp Tool + Stainless Steel Clamps (per ASTM F2098) + Crimp style PEX Fittings (same as above).
5. Push system: Push-Fit or Push-to-Connect style fittings

C. Type A: Reduced Pressure Zone Principle device, with atmospheric vent, conforming to ASSE Standard 1013, AWWA C-511, USC specifications manual for Cross Connection Control, and listed as acceptable in the State Department of Health, Environmental Health Manual.

1. Performance: 150 psig, and 130 degrees F maximum working conditions.

2. Assembly: Strainer and gate valve on inlet side, gate valve on outlet side, and four test cocks, all as furnished or recommended by the backflow preventer manufacturer.

D. Type B: Double Check Valve device, conforming to ASSE Standard 1015, AWWA C-510, USC specifications manual for Cross Connection control, and listed as acceptable in the New York State Department of Health, Environmental Health manual.

1. Performance: 150 psig, and 130 degrees F, maximum working conditions.

2. Assembly: Strainer and gate valve on inlet side, gate valve on outlet side, and four test cocks, all as furnished or recommended by the backflow preventer manufacturer.

E. Type C: Double check valve with intermediate atmospheric vent, conforming to ASSE 1012.

1. Performance: 175 psig and 210 degrees F maximum working conditions.

2. Assembly: Internal strainer, and union connections.

2.02 ELECTRICAL - GENERAL

A. Raceways For Concealed Work: Rigid ferrous metal conduit, intermediate ferrous metal conduit, or electrical metallic tubing.

B. Raceways For Exposed Work: Mono-System Inc.'s, Wiremold Co.'s, or Thomas & Betts Corp.'s surface metal raceway systems.

C. Conductors: Copper, insulated with Type FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, XHHW-2 insulation rated 600 volts and shall UL listed. Electrician shall properly size wire for application.

D. Galvanized Steel Outlet Boxes: Standard galvanized steel boxes and device covers by Appleton Electric Co., Beck Mfg./Picoma Industries, Cooper/Crouse-Hinds, Raco/Div. of Hubbell , or Steel City/T & B Corp.

E. Galvanized Steel Junction and Pull Boxes: Code gage, galvanized steel screw cover boxes by Delta Metal Products Inc., Hoffman Enclosures Inc., Hubbell Wiegmann, Lee Products Co., or Rittal/Electromate.

F. Specific Purpose Outlet Boxes: As fabricated by equipment manufacturers for mounting their equipment thereon.

G. Outlet Boxes and Related Products for Fire Rated Construction:

1. Parameters For Use of Listed Metallic Outlet or Switch Boxes: UL Electrical Construction Equipment Directory - Metallic Outlet Boxes (QCIT).
2. Wall Opening Protective Materials: As listed in UL Fire Resistance Directory - Wall Opening Protective Materials (CLIV), or UL Electrical Construction Equipment Directory - Wall Opening Protective Materials (QCSN).

H. Local Switches:

1. Single Pole, 15A, 120/277 V ac: Bryant's 4801, Crouse-Hinds/AH's 1891, General Electric's GE5931-1G, Hubbell's 1201, Leviton's 1201, Pass & Seymour's 15AC1, or Slater's 710-BR.

2. Double Pole, 15A, 120/277 V ac: Bryant's 4802, Crouse-Hinds/AH's 1892, General Electric's GE5932-1G, Hubbell's 1202, Leviton's 1202, Pass & Seymour's 15AC2, or Slater's 712-BR.

3. Three-Way, 15A, 120/277 V ac: Bryant's 4803, Crouse-Hinds/AH's 1893, General Electric's GE5933-1, Hubbell's 1203, Leviton's 1203, Pass & Seymour's 15AC3, or Slater's 713-BR.

4. Four-Way, 15A, 120/277 V ac: Bryant's 4804, Crouse-Hinds/AH's 1894, General Electric's GE5934-1G, Hubbell's 1204, Leviton's 1204, Pass & Seymour's 15AC4, or Slater's 714-BR.

I. Receptacles:

1. Single Receptacle, NEMA 5-15R (15A, 125 V, 2P, 3W): Bryant's 5251, Crouse-Hinds/AH's 5251, General Electric's 5251-1, Hubbell's 5251, Leviton's 5251, Pass & Seymour's 5251, or Slater's 5361-AG-BR.

2. Duplex Receptacle, NEMA 5-15R (15A, 125 V, 2P, 3W): Bryant's 5262, Crouse-Hinds/AH's 5252-S, General Electric's GEN5252-1, Hubbell's 5252, Leviton's 5252, Pass & Seymour's 5252 or Slater's 5252-AG-BR.

3. Ground Fault Interrupter Receptacle Rated 15A (NEMA 5-15R), Circuit-Ampacity 20A: Bryant's GFR52FT, Crouse-Hinds/AH's 1591-F, General Electric's TGTR15B, Leviton's 6194, Pass & Seymour's 1591-F, or Slater's SIR-15-F-BR.

2.03 CONDUIT

A. PVC Conduit shall be Prime Conduit Schedule 40, CSA and UL listed, rated for use with 90° C conductors, ETL Listed to UL 651 or approved equal.

B. Material shall comply with NEMA Specification TC-2 (Conduit), TC- 3 (Fittings) and UL 51 (Conduit) and 514b (Fittings).

C. Conduit and fittings shall carry an ETL label or printline (Conduit - on each 10 foot length; Fittings – stamped or molded on each fitting).

D. Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. The markings shall be legible and permanent.

E. Conduit shall be made from polyvinyl chloride compound (recognized by ETL) which includes inert modifiers to improve weatherability and heat distortion. Clean rework material, generated by the manufacturer's own conduit production, may be used by the same manufacturer, provided the end products meet the requirements of this specification.

F. Fittings - The conduit and fittings shall be homogeneous plastic material free from visible cracks, holes or foreign inclusions. The conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables.

G. All conduit and fittings shall be solvent cemented in applications in accordance with instructions from the Manufacturer.

2.04 ELECTRICAL WIRE

A. The wire shall be sized in accordance with National Electrical Code, but shall be a minimum of No. 8 American Wire Gauge, unless otherwise specified by a utility company providing power supply.

B. Conductors: Copper, insulated with Type FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, XHHW-2 insulation rated 600 volts and shall UL listed. Electrician shall properly size wire for application.

PART 3: METHOD

3.01 GENERAL

A. The Contractor shall follow all applicable state and local plumbing codes, and shall follow the manufacturer's installation instruction.

B. The Contractor shall follow all applicable electrical codes, and shall follow the manufacturer's installation instructions.

C. Install the Work in accordance with the requirements of NFPA 70 - National Electrical Code.

D. The Contractor shall examine the Drawings and familiarize himself with location and conditions under which each type of lighting fixture is to be installed, so that details of construction will best suit mounting conditions and/or obstructions at the job.

E. Install the Work in accordance with the requirements of NFPA 70 - National Electrical Code and the NYS Electrical Code and all references contained within, and the standard electrical practices.

F. Install the Work in accordance with the requirements of the NYS Plumbing Code and all references contained within, and shall follow all standard plumbing practices.

3.02 PREMANUFACTURED CONCESSION AND RESTROOM BUILDING

A. The premanufactured buildings will be delivered and assembled by the manufacturer. Prior to the pouring of the building slabs the Contractor shall extend the water, sewer, and electric service to the predetermined locations. Once in place the slab can be poured. After assembly of the building, all plumbing and electric connections can be made. The building will have all fixtures, plumbing, and wiring in place and terminated at the mechanical room. The Contractor shall install backflow assembly and make service connections to plumbing main lines. The contractor shall make all waste line connections. The Contractor shall install the required electrical sub-panel and tie in the main electrical lines. All services shall be tested as required.

3.03 PREMANUFACTURED MAINTENANCE BUILDING

A. The premanufactured buildings will be delivered and assembled by the manufacturer. Prior to the pouring of the building slabs the Contractor shall extend the water, sewer, and electric service to the predetermined locations. Similarly the utilities shall be extended prior to pouring of the slab. The maintenance building shall have an electrical panel and shall be the control for all of the site lighting other than the field lights. The interior wiring shall be tied to the panel. An exterior freeze proof spigot shall be installed at a determined location. Leaders and gutters shall be installed as required.

3.04 PAVILION

A. The pavilion will be delivered and assembled by the manufacturer. After the installation of the Pavilion, the Contractor shall extend power to the building from the maintenance building. A power supply conduit shall be extended underground to the pavilion. A timer control shall be installed inside of the maintenance building. A conduit shall be run up along one of the pavilion columns for lighting and GFCI outlets. The contractor shall install 12 lights and 6 GFCI protected outlets.

3.05 DUGOUTS

A. Underground power shall be extended to the dugouts and maintenance building. The power shall be extended underground from the concession building. Similarly the utilities shall be extended prior to pouring of the slab. The dugouts shall be fitted with two lights and two GFCI outlets. The controls for the dugouts shall be inside the mechanical room of the concession building. The shed shall be fitted with one light and light switch, and one GFCI outlet.

3.06 PUBLIC ANNOUNCEMENT SYSTEMS

A. Underground power shall be extended to three determined locations near the field for the connection of portable public announcement systems. These will be located centrally in the vicinity of the concession building.

3.07 SCORE BOARDS

A. Underground power shall be extended to the three score boards at the locations show on the Drawings.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** bid and shall include the cost of all plans, permits, inspections, testing, labor, materials and equipment necessary to complete the work as shown on the Contract Drawings. All labor, materials and equipment including but not limited to the proposed supply and installation of all underground piping, fittings, valves, taps, spigots, backflow assemblies, underground conduit, service, communication wiring, conduit, wiring, switches, outlets, pull boxes, electrical panels, leaders, gutters or other connections and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer. Included in this work shall be all underground service for power to be brought to a transformer pad near the Concession Building as well as the underground service to a sub-panel in the maintenance building. No additional payment will be made for this work.

The Work under this item shall include building services for the following locations:

1. Concession Building
2. Outdoor Pavilion
3. Pavilion Rest Rooms
4. Maintenance Building
5. Public Announcement System (3 Fields)
6. Dugouts
7. Score Boards (3)

END OF SECTION

SECTION 0803

ATHLETIC FIELD LIGHTING

PART 1 – WORK

1.01 DESCRIPTION

A. Under this work, the Contractor shall install a lighting system furnished by the Town. The Contractor shall include the cost of concrete backfill for the precast concrete bases, underground service, conduit, wire, pull boxes, electrical connections to lighting components, etc. to form an operable athletic field lighting at the locations shown on the Contract Drawings and as specified below:

1. The Athletic Fields Lighting will include the following areas of the project:

   a. Baseball Field
   b. Multi-purpose Field 1
   c. Multi-purpose Field 2
   d. Walkways Lighting as shown. Additional site lighting will be paid under Item 0801 Site Lighting.

B. The lighting system shall be completely operational, tested, and free from fault.

C. The Town will purchase all of the components required for the Athletic Fields Lighting as shown on the drawings. All lighting components and equipment will be turned over to the Contractor for installation.

D. The Contractor shall coordinate his work and shall allow ample time and facility for the work of other Sections to be installed.

E. **Special Note**: The approved product for this project is Musco's Light-Structure System™ with TLC for LED™. It is the intent of this project to install Musco's Light-Structure System™ with TLC for LED™ including all components as manufactured and supplied by:

Musco Sports Lighting, LLC
2107 Stewart Road
PO Box 260
Muscatine, Iowa 52761
Local Phone: 563/263-2281
Toll Free: 800/756-1205
Fax: 800/374-6402

1.02 RELATED SECTIONS

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0103 Erosion and Sediment Control
D. Section 0201 Earthwork
E. Section 0202 Unclassified Excavation
F. Section 0401 Cast-In-Place Concrete
G. Section 0801 Site Lighting
H. Section 0802 Building Services – General Plumbing & Electrical Work
I. Section 0901 Synthetic Turf Preparation
J. Section 0906 Site Restoration

Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American National Standards Institute (ANSI)

B. American Society for Testing and Materials International (ASTM)

C. Illuminating Engineering Society of North America (IESNA)

D. International Electrotechnical Commission (IEC)

E. National Electrical Manufacturers Association (NEMA)

F. National Fire Protection Association (NFPA) - NFPA 70

G. National Electrical Code (NEC)

H. American Concrete Institute

1.04 DEFINITIONS

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1.05 DESIGN REQUIREMENTS

The purpose of these specifications is to define the lighting system and requirements for Granite Knolls Sports and Recreation Complex using an LED Lighting source. The Town will furnish a complete lighting system.

1.06 SUBMITTALS

A. Product Data - Manufacturer's installation instructions for materials supplied for this project.

B. Underwriters Certificate of the completed works Certified by a Qualified Electrical Underwriter with credentials accepted by the Town of Yorktown.

1.07 QUALITY ASSURANCE

A. Company Field Advisor - The Contractor shall contact the Manufacturer and shall have a representative present on site when installing the lights and controls to insure proper installation.

B. All connections shall be made by an Electrical Contractor licensed in Westchester County.

PART 2 – MATERIALS

2.01 SPORTS LIGHTING SYSTEM CONSTRUCTION

A. Manufacturing Requirements: All components shall be designed and manufactured as a system.
System Description: Lighting system shall consist of the following and shall be furnished by **Musco Sports Lighting, LLC**

1. Galvanized steel poles and cross-arm assembly
2. Lighting systems
3. Drivers and supporting electrical equipment
4. Surge protection
5. Control cabinets
6. Lightning grounding as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A. Integrated grounding via concrete encased electrode grounding system.
7. Precast concrete base

2.02 ELECTRICAL - GENERAL

A. Electric Power Requirements for the Sports Lighting Equipment:

1. Electric power: 480 Volt, 3 Phase – Supply power to each pole
2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.

2.03 CONDUIT

A. PVC Conduit shall be Prime Conduit Schedule 40, CSA and UL listed, rated for use with 90° C conductors, ETL Listed to UL 651 or approved equal.

B. Material shall comply to NEMA Specification TC-2 (Conduit), TC- 3 (Fittings) and UL 51 (Conduit) and 514b (Fittings).

C. Conduit and fittings shall carry a ETL label or printline (Conduit - on each 10 foot length; Fittings – stamped or molded on each fitting).

D. Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. The markings shall be legible and permanent.

E. Conduit shall be made from polyvinyl chloride compound (recognized by ETL) which includes inert modifiers to improve weatherability and heat distortion. Clean rework material, generated by the manufacturer's own conduit production, may be used by the same manufacturer, provided the end products meet the requirements of this specification.

F. Fittings - The conduit and fittings shall be homogeneous plastic material free from visible cracks, holes or foreign inclusions. The conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables.

G. All conduit and fittings shall be solvent cemented in applications in accordance with instructions from the Manufacturer.

2.04 ELECTRICAL WIRE

A. The wire shall be sized in accordance with National Electrical Code, but shall be a minimum of No. 8 American Wire Gauge, unless otherwise specified by a utility company providing power supply.

B. Conductors: Copper, insulated with Type FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, XHHW-2 insulation rated 600 volts and shall UL listed. Electrician shall properly size wire for application.

2.05 CONTROLS

A. Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.

B. Lighting contact cabinet(s) constructed of NEMA Type 4 aluminum (by Musco).

C. Remote Lighting Control System - Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling.

PART 3 – METHOD

3.01 SOIL QUALITY CONTROL

It shall be the Contractor's responsibility to notify the Engineer and Town if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated.

3.02 FOUNDATIONS

A. Excavation – The Contractor shall perform the required excavation in accordance with the conditions and requirements as specified. The Contractor shall perform and execute all necessary excavation required to install the lighting and complete all items or as directed by the Engineer or Town. The Contractor shall supply all labor and equipment to complete the work and will make provisions for sheeting, bracing or trench boxes for deep trench excavations. It is the Contractors obligation to make certain that grades stakes, bench marks, and offset staking are in place and accurately reflect elevations as per the construction drawings.

B. The foundation shall a pre-stressed concrete base (by manufacturer) embedded in concrete backfill. All concrete shall be air-entrained and have a minimum compressive design strength at 28 days of 3,000 PSI.

C. Concrete backfill must bear on and against firm undisturbed soil.

D. Pole erection may not occur until a minimum of 7 days or the concrete having reached a minimum compressive strength of 2000 PSI.

3.03 ELECTRICAL

A. The Contractor shall follow all applicable electrical codes, and shall follow the manufacturer's installation instructions.

B. The Contractor shall examine the Drawings and familiarize himself with location and conditions under which each type of lighting fixture is to be installed, so that details of construction will best suit mounting conditions and/or obstructions at the job.

C. Install the Work in accordance with the requirements of NFPA 70 - National Electrical Code and the NYS Electrical Code and all references contained within, and the standard electrical practices.

3.03 MOUNTING HEIGHT OF FIXTURES

A. Fixtures shall be in accordance with the mounting heights indicated on Drawings and meeting the State Electrical Code Requirements. Mounting heights (distance above finished floor) are detailed on the Drawings.

3.04 CONDUIT

A. General - The diameter of the conduit pipe shall be determined by the size and amount of wires installed as per the National Electric Code. The wire shall be sized in accordance with National Electrical Code, but shall be a minimum of No. 8 American Wire Gauge, unless otherwise specified by a utility company providing power supply.

3.05 WIRING AND CONNECTIONS

A. Each fixture shall be completely wired in an approved manner in accordance with requirements of the Electrical Code of the State of New York.

B. Install branch circuit grounding conductor from the grounding terminal bar in the panel board to each exterior lighting fixture.

C. Each light fixture assembly shall be wired to the main panel. The wiring shall be pulled through the conduit to be installed as a separate item in this contract. All wiring shall be in accordance with State and Local Electrical codes.

3.06 CLEANING

A. All fixtures shall be cleaned prior to final acceptance to remove construction dirt, dust, finger prints, etc. inside and out.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for this Work shall be at the **Lump Sum** bid and shall include the cost of all permits, inspections, testing, labor, materials and equipment necessary to complete the work as shown on the Contract Drawings. All labor, materials and equipment including but not limited to the proposed supply and installation of the lamp assembly including bulbs, pole, reinforced concrete base, excavation and backfill, underground conduit , conduit, wiring from main panel to each light assembly, spare parts, excavation, trenching, disposal of surplus materials, pull boxes or other connections and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

Control System Summary

Project Specific Notes:

Project Information

Project #:	183572
Project Name:	Granite Knolls Park Ballfields
Date:	03/31/17
Project Engineer:	Logan Conrad
Sales Representative:	David Kulis JR
Control System Type:	Control and Monitoring
Communication Type:	Digital Cellular
Scan:	183572A
Document ID:	183572P1V2-0331224117
Distribution Panel Location or ID:	Panel
Total # of Distribution Panel Locations for Project:	1
Design Voltage/Hertz/Phase:	480/60/3
Control Voltage:	120

Equipment Listing

DESCRIPTION	APPROXIMATE SIZE
1.Control and Monitoring Cabinet	24 X 72
2.Control and Monitoring Cabinet	24 X 48

	QTY	SIZE
Total Contactors	17	30 AMP
Total Off/On/Auto Switches:	4	

Materials Checklist

Contractor/Customer Supplied:

- ❑ A single control circuit must be supplied per distribution panel location.
  - — If the control voltage is NOT available, a control transformer is required.
- ❑ Electrical distribution panel to provide overcurrent protection for circuits
  - — Thermal/Magnetic circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- ❑ Wiring:
  - — Dedicated control power circuit
  - — Power circuit to and from lighting contactors
  - — Harnesses for cabinets at remote locations
  - — Means of grounding, including lightning ground protection
- ❑ Electrical conduit wireway system
  - — Entrance hubs rated NEMA 4: must be die-cast zinc, PVC, or copper-free die-cast aluminum
- ❑ Mounting hardware for cabinets
- ❑ Control circuit lock-on device to prevent unauthorized power interruption to control power
- ❑ Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central ™ operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation. Note: Activation may take up to 1 1/2 hours

IMPORTANT NOTES

1. Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's ballast enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are UL 100% rated for the published continuous load. All contactors are 3 pole.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. A single control circuit must be supplied per control system.
6. Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart- Minimum power factor is 0.9.

NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements

Granite Knolls Park Ballfields

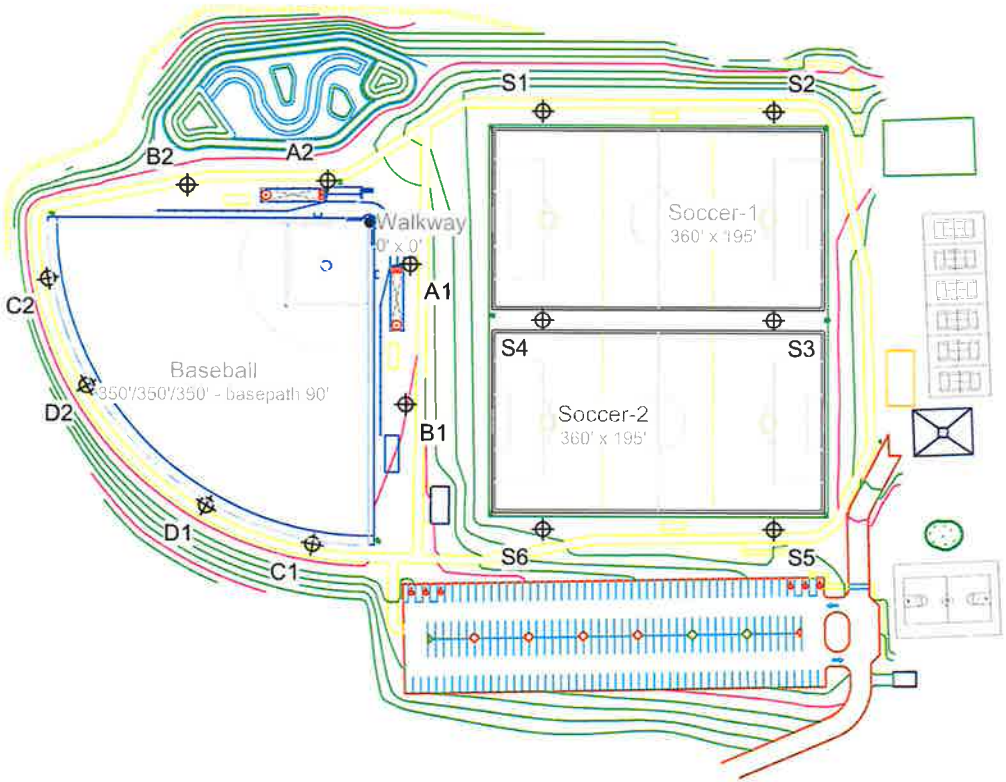
Yorktown Heights,NY

EQUIPMENT LAYOUT

INCLUDES:
- Baseball
- Soccer-1
- Soccer-2
- Walkway

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
2	A1-A2	70'	-	25'	TLC-LED-1150	1
				30'	Cree OSQ	1
				70'	TLC-LED-1150	5
2	B1-B2	80'	-	25'	TLC-LED-1150	1
				30'	Cree OSQ	1
				80'	TLC-LED-1150	7
2	C1-C2	70'	-	30'	Cree OSQ	1
				70'	TLC-LED-1150	3
2	D1-D2	70'	-	25'	TLC-LED-1150	1
				30'	Cree OSQ	1
				70'	TLC-LED-1150	4
2	S1, S5	70'	-	60'	TLC-LED-400	2
				25'	TLC-LED-1150	1
				70'	TLC-LED-1150	9
2	S2, S6	70'	-	60'	TLC-LED-400	1
				25'	TLC-LED-1150	1
				70'	TLC-LED-1150	9
1	S3	70'	-	25'	TLC-LED-1150	1/1*
				60'	TLC-LED-400	1
				70'	TLC-LED-1150	9/9*
1	S4	70'	-	25'	TLC-LED-1150	1/1*
				70'	TLC-LED-1150	9/9*
14	TOTALS					139

* This structure utilizes a back-to-back mounting configuration

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1150	7.0	6.6	6.1	5.2	4.2	3.8	3.0
Cree OSQ	-	-	-	-	-	-	-
TLC-LED-400	2.5	2.3	2.1	1.9	1.5	1.4	1.1

SCALE IN FEET 1 : 200

0' 200' 400'

Pole location(s) ✛ dimensions are relative to 0,0 reference point(s) ◌

ENGINEERED DESIGN By: Logan Conrad • File #183572A • 31-Mar-17

We Make It Happen.

Granite Knolls Park Ballfields

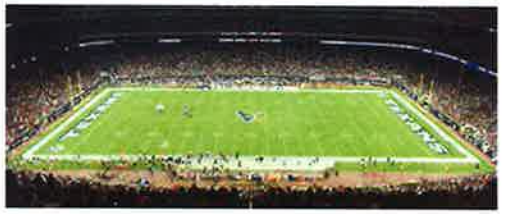
Yorktown Heights,NY

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Group
A1-A2	70'	30'	1	Cree OSQ	0.13 kW	D
		70'	5	TLC-LED-1150	5.75 kW	A
		25'	1	TLC-LED-1150	1.15 kW	A
B1-B2	80'	30'	1	Cree OSQ	0.13 kW	D
		80'	7	TLC-LED-1150	8.05 kW	A
		25'	1	TLC-LED-1150	1.15 kW	A
C1-C2	70'	30'	1	Cree OSQ	0.13 kW	D
		70'	3	TLC-LED-1150	3.45 kW	A
D1-D2	70'	30'	1	Cree OSQ	0.13 kW	D
		70'	4	TLC-LED-1150	4.60 kW	A
		25'	1	TLC-LED-1150	1.15 kW	A
S1	70'	70'	9	TLC-LED-1150	10.35 kW	B
		25'	1	TLC-LED-1150	1.15 kW	B
		60'	2	TLC-LED-400	0.80 kW	D
S2	70'	70'	9	TLC-LED-1150	10.35 kW	B
		25'	1	TLC-LED-1150	1.15 kW	B
		60'	1	TLC-LED-400	0.40 kW	D
S3	70'	70'	9	TLC-LED-1150	10.35 kW	B
		70'	9	TLC-LED-1150	10.35 kW	C
		25'	1	TLC-LED-1150	1.15 kW	B
		25'	1	TLC-LED-1150	1.15 kW	C
		60'	1	TLC-LED-400	0.40 kW	D
S4	70'	70'	9	TLC-LED-1150	10.35 kW	B
		70'	9	TLC-LED-1150	10.35 kW	C
		25'	1	TLC-LED-1150	1.15 kW	B
		25'	1	TLC-LED-1150	1.15 kW	C
S5	70'	70'	9	TLC-LED-1150	10.35 kW	C
		25'	1	TLC-LED-1150	1.15 kW	C
		60'	2	TLC-LED-400	0.80 kW	D
S6	70'	70'	9	TLC-LED-1150	10.35 kW	C
		25'	1	TLC-LED-1150	1.15 kW	C
		60'	1	TLC-LED-400	0.40 kW	D
14			***139***		***146.44 kW***	

From Hometown to Professional



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Granite Knolls Park Ballfields

Yorktown Heights,NY

Group Summary

Group	Description	Avg Load	Max Load	Fixture Qty
A	Baseball	50.6 kW	50.6 kW	44
B	Soccer-1	46.0 kW	46.0 kW	40
C	Soccer-2	46.0 kW	46.0 kW	40
D	Walkway	3.84 kW	3.84 kW	15

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1150	LED 5700K - 75 CRI	1150W	121,000	>51,000	>51,000	>51,000	124
Cree OSQ	LED 5700K - 70 CRI	130W	16,261	--	--	--	8
TLC-LED-400	LED 5700K - 75 CRI	400W	38,600	61,000	>72,000	>72,000	7

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination				Groups	Fixture Qty
		Ave	Min	Max	Max/Min		
Baseball (Infield)	Horizontal Illuminance	51.6	36	60	1.69	A	44
Baseball (Outfield)	Horizontal Illuminance	30.5	20	45	2.30	A	44
Soccer-1	Horizontal Illuminance	50.3	37	59	1.58	B	40
Soccer-2	Horizontal Illuminance	50.3	37	59	1.58	C	40

From Hometown to Professional

We Make It Happen.

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Control System Summary

SWITCHING SCHEDULE

Field/Zone Description	Zones
Baseball	1
Soccer-1	2
Soccer-2	3
Walkway	4

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 4768.0
	SEALED: 547.8

CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	*FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
A1	Baseball	6	6	**10.5**	30	C1	1
A2	Baseball	6	6	**10.5**	30	C2	1
B1	Baseball	8	8	**15.7**	30	C3	1
B2	Baseball	8	8	**15.7**	30	C4	1
C1	Baseball	3	3	**5.3**	30	C5	1
C2	Baseball	3	3	**5.3**	30	C6	1
D1	Baseball	5	5	**10.5**	30	C7	1
D2	Baseball	5	5	**10.5**	30	C8	1
S1	Soccer-1	10	10	**18.4**	30	C9	2
S2	Soccer-1	10	10	**18.4**	30	C10	2
S3	Soccer-1	10	10	**18.4**	30	C11	2
S4	Soccer-1	10	10	**18.4**	30	C12	2
S3	Soccer-2	10	10	**18.4**	30	C13	3
S4	Soccer-2	10	10	**18.4**	30	C14	3
S5	Soccer-2	10	10	**18.4**	30	C15	3
S6	Soccer-2	10	10	**18.4**	30	C16	3
A1,A2,B1,B2,C1	Walkway	15	0	**7.0**	30	C17	4
C2,D1,D2,S1,S2							
S3,S5,S6							

*Full Load Amps based on amps per driver.

Control System Summary

PANEL SUMMARY

CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole A1	10.50		
1	1	C2	Pole A2	10.50		
1	1	C3	Pole B1	15.74		
1	1	C4	Pole B2	15.74		
1	1	C5	Pole C1	5.25		
1	1	C6	Pole C2	5.25		
1	1	C7	Pole D1	10.50		
1	1	C8	Pole D2	10.50		
1	1	C9	Pole S1	18.37		
1	1	C10	Pole S2	18.37		
1	1	C11	Pole S3	18.37		
1	1	C12	Pole S4	18.37		
2	1	C13	Pole S3	18.37		
2	1	C14	Pole S4	18.37		
2	1	C15	Pole S5	18.37		
2	1	C16	Pole S6	18.37		
2	1	C17	Pole A1,A2,B1,B2,C1,C2,D1,D2,S1,...	7.00		

ZONE SCHEDULE

ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	CIRCUIT DESCRIPTION	
			POLE ID	CONTACTOR ID
Zone 1	1	Baseball	A1	C1
			A2	C2
			B1	C3
			B2	C4
			C1	C5
			C2	C6
			D1	C7
			D2	C8
Zone 2	2	Soccer-1	S1	C9
			S2	C10
			S3	C11
			S4	C12
Zone 3	3	Soccer-2	S3	C13
			S4	C14
			S5	C15
			S6	C16
Zone 4	4	Walkway	A1	C17
			A2	C17
			B1	C17
			B2	C17
			C1	C17
			C2	C17
			D1	C17
			D2	C17

CONTINUED ON NEXT PAGE

Control System Summary

ZONE SCHEDULE				
			CIRCUIT DESCRIPTION	
ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	POLE ID	CONTACTOR ID
Zone 4	4	Walkway	S1	C17
			S2	C17
			S3	C17
			S5	C17
			S6	C17

PRELIMINARY FOUNDATION AND POLE ASSEMBLY DRAWING

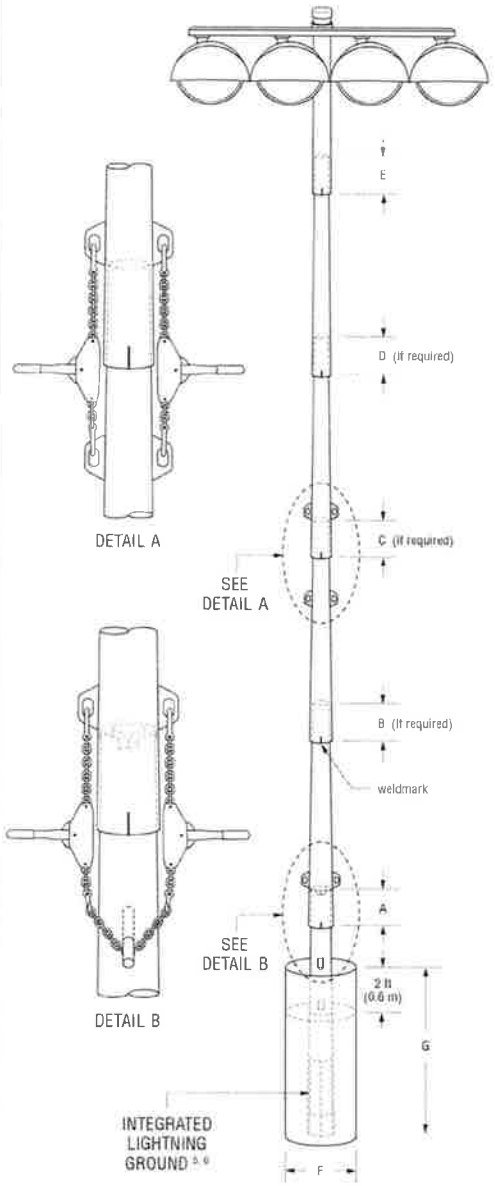


TABLE 1: POLE ASSEMBLY

POLE ID	MOUNTING HEIGHT ft (m)	# OF LUMINAIRES	ASSEMBLED POLE WEIGHT [3] lb (kg)
A1	70 (21.3)	6	2163 (981)
A2	70 (21.3)	6	2163 (981)
B1	80 (24.4)	8	3293 (1494)
B2	80 (24.4)	8	3293 (1494)
C1	70 (21.3)	3	1386 (629)
C2	70 (21.3)	3	1386 (629)
D1	70 (21.3)	5	2073 (940)
D2	70 (21.3)	5	2073 (940)
S1	70 (21.3)	10	3296 (1495)
S2	70 (21.3)	10	3296 (1495)
S3	70 (21.3)	20	4623 (2097)
S4	70 (21.3)	20	4623 (2097)
S5	70 (21.3)	10	3296 (1495)
S6	70 (21.3)	10	3296 (1495)

Pole Assembly Notes:

1. Steel pole should overlap concrete base and be seated tight with 1 1/2 ton come-alongs (contractor provided).
2. Align weldmarks on steel sections before assembling.
3. Assembled pole weight includes steel sections, crossarms, luminaires, and electrical components enclosures.
4. This document is not intended for use as an assembly instruction. See *Installation Instructions: Light-Structure Green Lighting System™* for complete assembly procedure.

TABLE 2: FOUNDATION DETAILS

POLE ID	CONCRETE BASE WEIGHT lb(kg)	BURIAL INFORMATION [3,4] F in (mm)	G ft (m)	CONCRETE BACKFILL [1,2] yd³ (m³)	CUT BASE	LIGHTNING GROUND [5] TYPE	SUPPLEMENTAL INSTRUCTION
A1	3780 (1715)	30 (762)	14 (4.3)	1.6 (1.2)	NO	INTEGRATED [6]	
A2	3780 (1715)	30 (762)	14 (4.3)	1.6 (1.2)	NO	INTEGRATED [6]	
B1	5300 (2404)	30 (762)	16 (4.9)	1.6 (1.2)	NO	INTEGRATED [6]	
B2	5300 (2404)	30 (762)	16 (4.9)	1.6 (1.2)	NO	INTEGRATED [6]	
C1	2720 (1234)	30 (762)	12 (3.7)	1.5 (1.1)	NO	INTEGRATED [6]	
C2	2720 (1234)	30 (762)	12 (3.7)	1.5 (1.1)	NO	INTEGRATED [6]	
D1	3780 (1715)	30 (762)	14 (4.3)	1.6 (1.2)	NO	INTEGRATED [6]	
D2	3780 (1715)	30 (762)	14 (4.3)	1.6 (1.2)	NO	INTEGRATED [6]	
S1	5250 (2381)	30 (762)	16 (4.9)	1.6 (1.2)	NO	INTEGRATED [6]	
S2	5250 (2381)	30 (762)	16 (4.9)	1.6 (1.2)	NO	INTEGRATED [6]	
S3	7630 (3461)	36 (914)	18 (5.5)	2.8 (2.2)	NO	INTEGRATED [6]	
S4	7630 (3461)	36 (914)	18 (5.5)	2.8 (2.2)	NO	INTEGRATED [6]	
S5	5250 (2381)	30 (762)	16 (4.9)	1.6 (1.2)	NO	INTEGRATED [6]	
S6	5250 (2381)	30 (762)	16 (4.9)	1.6 (1.2)	NO	INTEGRATED [6]	

Foundation Notes:

1. Concrete backfill is calculated to 2 ft (0.6m) below grade (no overage included). Top 2 ft (0.6m) to be class 5 soil compacted to 95% density of surrounding undisturbed soil unless otherwise specified in stamped structural design.
2. Concrete backfill required 3000 lb/in² (20 MPa) minimum unless otherwise specified in stamped structural design.
3. Foundation design per 2015 IBC ,115 mph ,exposure category C ,variation STD (Risk Category II).
4. Assumes IBC class 5 soils.
5. Standard bases include integrated lightning protection. If bases are cut, supplemental lightning protection is required. Contact Musco for materials and instruction.
6. Lightning protection is a manufacturer installed concrete encased electrode and connector. Ground connection is made when concrete base is installed and footing is poured. No additional steps required.

Granite Knolls Park Ballfields - Yorktown Heights, NY, USA

Date: 04/04/2017 Scale: N/A

Rep: David Kulis JR Page: 1 of 1

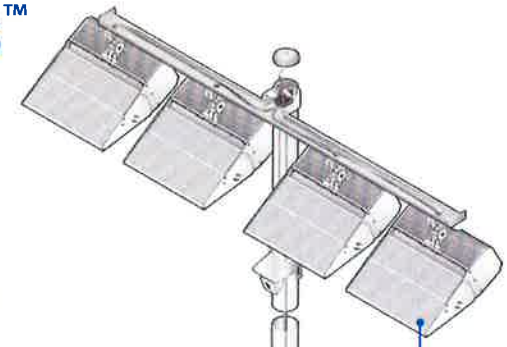
Project: 183572 Preliminary

musco Lighting

Light·Structure System™

5 Easy Pieces™

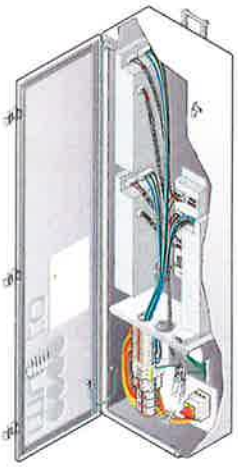
Complete System from Foundation to Poletop

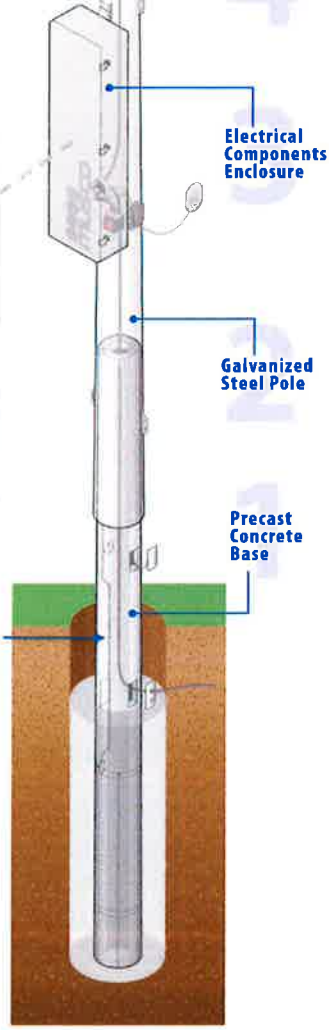


Two light source options

TLC for LED
Total Light Control™

Green Generation Lighting™
Metal Halide Light Source



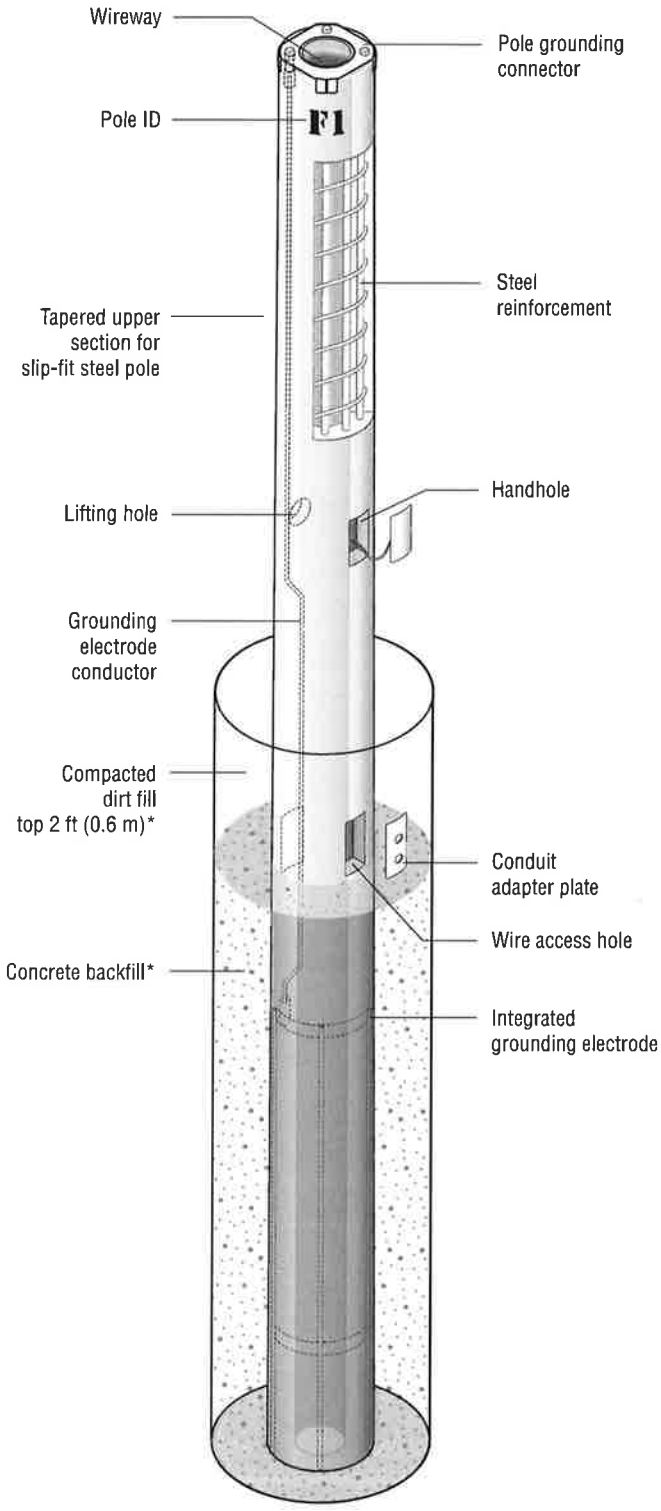


All components designed to work together ... factory built, wired, aimed, and tested to assure reliable, trouble-free operation

Covered by a 25-year product assurance and warranty program with guaranteed light levels, parts and labor for maintenance, system monitoring, and 24/7 support from Control-Link Central™

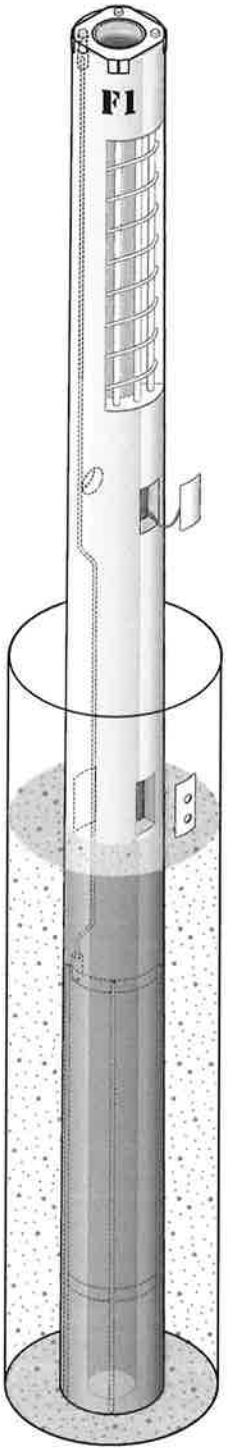
For your
BUDGET,
for the
ENVIRONMENT.

Precast Concrete Base – HID and LED



*Standard pier foundation shown. Foundation and/or backfill may vary per alternate foundation design.

Precast Concrete Base – HID and LED



Overview

The precast concrete base is set directly into the ground and backfilled with concrete. The base includes an integrated lightning ground system.

Features

Base

- Set pole on base in 24 hours
- Tapered upper section for slip-fit steel pole
- Access holes for wire entry
- Epoxy coated ends prevent water intrusion
- Lifting hole accepts load-rated steel rod provided by Musco

Integrated Lightning Ground System

- Complies with NFPA 780, UL 96A, and EN 62305 standards when installed per Musco installation instructions
- UL Listed, Class II Lightning Protection, file number E337467
- Tested up to 100 kA by independent laboratory
- Steel pole interfaces with integrated grounding system by means of the pole grounding connector
- 2/0 AWG (crossectional area of 67.4 mm^2) grounding electrode conductor
- Concrete-encased grounding electrode, 20 feet (6.1 m) total length, ½ inch (12.7 mm) diameter

Technical Specifications

Base dimensions vary. For measurements refer to project specific *Foundation and Pole Assembly* drawing.

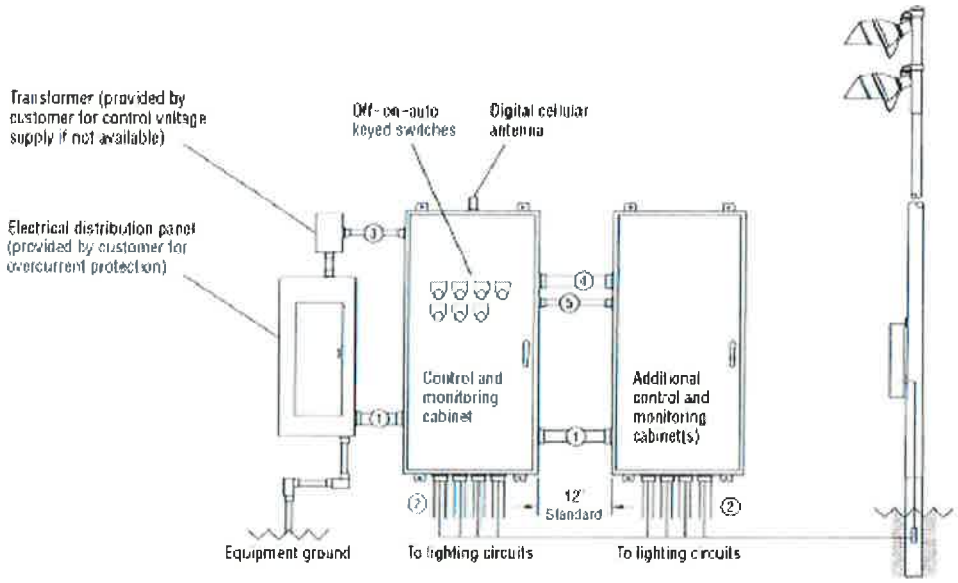
Construction

- Spun concrete construction
- Prestressed vertical strands and steel coil spiral for radial reinforcement throughout base
- Minimum design strength is 9500 lb/in^2 (65.5 MPa) at 28 days
- Meets ASTM C1804 design requirements

Quality Assurance Tests

- 28-day compressive strength
- Bending moment capacity
- Grounding system continuity

Control•Link. Control and Monitoring System



Wire	Description	# of Wires	Typ. Wire Size (AWG)	Max. Wire Length (FT)	Wire from Musco	Notes
1	Line power to contactors, and equipment grounding conductor	Note A	Note B	27	No	A – E
2	Load power to lighting circuits	Note A	Note B	N/A	No	A - D
3	Control power (dedicated, 20A)	3	12	N/A	No	C, D
4	Control harnesses	Note F	--	8'	Yes*	C, D, F
5	Communication cable (RS – 485)	1	--	8'	Yes*	C, D

R00-03-00 C

Notes
A. Voltage and phasing per the notes on cover page
B. Calculate per load and voltage drop
C. Minimum conduit diameter.
   a. Wire 4 requires 2" (for connector ends to pass through)
   b. Wire 5 requires 1" (for connector ends to pass through)
   c. All other conduit diameters should be per code.
D. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.
E. Contact Musco if maximum wire length from circuit breaker to contactor exceeds value in chart.
F. Number of wires = 6 power wires + 2 wires per zone (see circuit summary by zone chart for the number of zones)

IMPORTANT: Communication wire (5) must be in separate conduit from any AC power wiring (1, 2, 3, 4). Control (3, 4) wires must be in separate conduit from line and load power wiring (1, 2).

*Musco supplied wire harnesses are provided in standard 8 foot lengths.

END OF SECTION

SECTION 0901

SYNTHETIC TURF PREPARATION

PART 1: WORK

1.01 DESCRIPTION

Under this Work the Contractor shall prepare the site for the installation of the Synthetic Turf Fields. This work will include a complete Underground Field Drainage System (UFDS) including all related products specified on the Contract Drawings including storage media, geotextile fabric, inlet and outlet pipe with connections, cleanouts and curtain drains, concrete curb and final grading. The Underground Field Drainage System shall be installed at the locations and grades shown on the drawings.

Special Note: The actual Synthetic Turf material will be purchased and installed by the Town. No payment will be made for this work.

Included in this item shall be the cost to prepare the site for the installation of the synthetic turf fields. This work shall be limited to:

1. Preparation of the Soccer Fields

2. Preparation of the Baseball Field

3. Preparation of the Putting Green

This work shall not be limited to excavation and grading, compaction, testing, installation of geotextile fabric, subgrade reinforcement and construction of the permeable aggregate base layer, concrete perimeter curbing, piping and any incidental work required to complete the work in accordance with the Plans and Specifications, to the satisfaction of the Engineer or Town.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0201 Earthwork
B. Section 0202 Unclassified Excavation
C. Section 0203 Select Fill Material
D. Section 0204 Crushed Stone Fill
E. Section 0402 Cast-In-Place Concrete Curbs
F. Section 0601 Drainage Conveyance System
G. Section 0701 Precast Concrete Catch Basins
H. Section 0702 Precast Concrete Manholes
I. Section 0902 Outdoor Equipment
J. Section 0903 Dugouts
K. Section 0904 Metal Fence & Gates
L. Section 0906 Site Restoration

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society of Testing and Materials

1. D 698 Test Method for Laboratory Compaction
2. D 1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
3. D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
4. D 2167 Standard Test Method for Density and Unit Weight of Soil In Place by the Rubber Balloon Method
5. D 2216 Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
6. D 2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
7. D 2922 Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
8. D 2937 Standard Test Methods for Density of Soil in Place by the Drive-Cylinder Method
9. D 3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
10. D 4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
11. D7001Standard Specification for Geocomposites
12. D6088 Standard Practice for Installation of Geocomposite
13. F2306 Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications
14. D2321 Underground Installation of Thermoplastic Pipe (non-pressure applications)
15. F1668 Construction Procedures for Buried Plastic Pipe

B. American Association of State and Highway Transportation Officials

1. AASHTO M 294 Standard Specification for Corrugated Polyethylene Pipe

D. New York State Department of Environmental Protection

1.04 DEFINITIONS

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1.05 DESIGN REQUIREMENTS

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1.06 SUBMITTALS

A. Product Data: Manufacturer's specifications including dimensions, allowable height of cover information, and installation instructions.

B. Samples: For the following:

C. 1. 10-lb (4.5-kg) samples, sealed in airtight containers, of each proposed soil material from source.

D. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each on-site soil material proposed for fill and backfill.
2. Laboratory compaction curve according to ASTM D 1557 for each on-site soil material proposed for fill and backfill.

1.07 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Regulatory Requirements

1. Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown, Department of Parks and Recreation regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown, Department of Parks and Recreation regulations are given in this Section, the requirements of this Section shall govern.
2. New York State Department of Environmental Conservation
3. New York State Department of Transportation

C. Testing of Completed Permeable Aggregate Layer:

1. The surface of the processed stone course shall be well drained at all times. No standing water shall be permitted at any time. The permeability of the aggregate shall be field checked. Test samples shall be taken (at a minimum of) one sample per every 10,000 square feet or as otherwise directed by the Owner's Representative. Final in-place aggregate shall have a percolation rate of not less than 20" per hour. Surface elevations and planarity shall be verified by means of an independent survey utilizing a maximum grid size spacing of 25' x 25'. (Grid size may be reduced to 20' x 20' or even 10' x 10' depending on individual field dimensions and configuration.)

2. All test results will be logged and documented by the Owner's Representative or Project Engineer. If at any time the processed stone base does not meet specifications, it shall be the Contractor's responsibility to restore, at his expense, the processed stone base to the required grade, cross-section, and density.

3. When the Contractor has independently confirmed that he is in compliance with all the above listed requirements (planarity and elevation verified by a licensed Surveyor and compaction, gradation, and permeability verified by the specified tests), he shall notify the Owner's Representative to schedule a final inspection by the Synthetic Turf System Installer. During this final inspection, the Contractor shall make available an orbital laser system for checking grades. Any deficiencies uncovered during this inspection must be remedied to the satisfaction of the Synthetic Turf System Installer before the base system will be considered acceptable.

1.08 PROJECT CONDITIONS

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1.09 DELIVERY, STORAGE, AND HANDLING

Permeable Aggregate Base Layer: Processed stone must contain 90% to 110% of the optimum moisture content to ensure that fines do not migrate in transit or during placement and to facilitate proper compaction. It is critical that the installation contractor ensure that aggregate leaving the source plant meet this requirement. The Contractor shall apply water to the processed stone on site to attain and maintain this minimum moisture content.

PART 2: PRODUCTS AND MATERIALS

2.01 MANUFACTURERS

A. Storm Tech, A Division of ADS, Inc, 70 Inwood Road, Suite 3, Rocky Hill, Connecticut, 06067, http://www.stormtech.com

B. In-Line Plastics, LC or approved equal.

C. Advanced Drainage Systems, Inc., Columbus, Ohio, or approved equal.

D. Tensar Corporation, 2500 Northwinds Parkway, Suite 500, Alpharetta, Georgia 30009 or approved equal.

E. TenCate Geosynthetics Americas Corporate Headquarters, 365 South Holland Drive, Pendergrass, Georgia 30567, Tel: 706-693-2226, Fax: 706-693-4400, Email: spec@tencate.com

2.02 MATERIALS

A. Underground field drainage system shall consist of AdvanEDGE panel shape Pipe and fittings.

B. Permeable Aggregate Base Layer shall conform to the following gradation:

Sieve Size	Sieve Metric (mm)	Percent Passing by Weight
1.5"	38.1	100
1"	25.4	95 - 100
0.75"	19.0	80 - 100
0.50 "	12.7	60 - 80
0.375"	9.52	30 - 50
No. 4	4.75	20 - 40
No. 8	2.38	10 - 30
No. 40	0.42	5 - 17
No. 200	0.074	1 - 4
Note: If local resources cannot provide a single blended mix approximating the above listed gradation breakdown, it will be acceptable to install a 2-layer base system consisting of 4" of open-graded bottom layer (+/- .75" clean stone), topped by a 2" layer of finishing stone and or screenings. Completed 2-layer system must meet same compaction and percolation specifications.		

1. Aggregate shall be durable and not exceed 12% loss of materials as determined by a sulfate soundness test (ASTM C88).

2.03 BACKFILL MATERIAL

A. All fill materials shall be free Materials containing excessive amounts of water, plastic clay, vegetation, organic matter, debris, pavement, construction debris, stones or boulders over 6 inches in greatest dimension, frozen material, and material which, in the opinion of the Engineer is unsuitable shall be immediately removed from the site. Materials from other sources may be used upon approval by the Geotechnical Engineer. Fill materials in the uppermost 2 feet shall not have any rocks larger than 3 inches in diameter.

1. Imported soil or fill materials to the site shall be analyzed for the following chemical parameters using EPA methods. Volatiles, Semi-Volatiles, TAL Metals, Pesticides/Herbicides, PCB's. Concentrations shall be compared to the NYSDEC Technical Assistance Guidance Memorandum (TAGM) and approved by the ENGINEER. Samples shall be taken at a frequency of 1 per 5,000 cubic yards if originating from a natural borrow source and 1 per 1,000 cubic yards if manufactured or recycled.

2. Unsatisfactory soil materials are defined as those complying with ASTM 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT; Shale shall not be considered suitable for fill unless specifically approved by the Engineer.

B. Borrow Material: Where undercutting or construction of embankments are required and the Engineer deems that onsite material is unsuitable, he may require that the Contractor import suitable fill material. Suitable soil materials are defined as those complying with ASTM D2487 soil classification groups SM, SW, and SP or NYSDOT Item 733-09 Select Borrow or as directed by the Engineer. The source shall approved by the Engineer. Borrow Material if ordered by the Engineer will be paid under Item 0203.1. No payment will be made without the prior approval of the Engineer or Town.

C. Select Granular Fill: Material for use in replacing undercut areas or in construction of embankments or where called for shall be approved by the Engineer and obtained from approved sources. Suitable soil materials shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials conforming to NYSDOT Item 733-1101 and have the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
4 inch	100
No. 40	5 – 70
No.200	0 -15

Select Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.2. No payment will be made without the prior approval of the Engineer or Town.

D. Granular Fill: Material for use as backfill or for use in replacing undercut areas where called for by the Engineer shall be approved by the Engineer and obtained from approved sources. Native material may be used as backfill provided it meets the gradation specified below. Granular fill shall consist of suitable soil materials and shall be sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials having the following gradation as determined by ASTM Designation D-422, Particle Size Analysis of Soils:

Sieve Size Max	% Passing by Weight
1 inch	100
No. 40	5 – 70
No.200	0 -15

Granular Fill, if ordered by the Engineer, shall be paid under Item 0203.3. No payment will be made without the prior approval of the Engineer or Town.

E. Site Stripped Topsoil may be used as fill in landscape areas only.

F. Permeable Geotextile Fabric Liner Material: Mirafi 140NC or a non-woven fabric weighing at least 4 oz./SY meeting the following average values:

Property	Test Method	Min. Avg Roll Values US Units/Metric Units
Mechanical		
Tensile Strength	ASTM D 4632	112 lbs 510 N
Elongation At Break	ASTM D 4632	50% 50%
Trapezoidal Tear	ASTM D 4533	49 lbs 210 N
Mullen Burst	ASTM D 3786	210 psi 1551 Kpa
Puncture Strength	ASTM D 4833	65 lbs 289 N
Hydraulic		
EOS (AOS)	ASTM D 4751	70 US Sieve 212 mm
Water Permittivity	ASTM D 4491	2.0 sec-1 2.0 sec-1
Water Permeability	ASTM D 4491	0.22 cm / sec 0.22 cm / sec
Flow Rate	ASTM D 4491	140 gpm/ ft2 5698 lpm/m2
Endurance		
UV Resistance	ASTM D 4355	70% 70%

G. Subgrade Reinforcement – The sub-base reinforcement shall be Tensar TX5.

PART 3: METHOD

3.01 DESCRIPTION

The Contractor shall perform the required work under this section in accordance with the conditions and requirements as specified. The Contractor shall perform and execute all necessary excavation required to finish the work needed to complete all items or as directed by the Engineer. The Contractor shall supply all labor and equipment to complete the work and will make provisions for sheeting or bracing. It is the Contractors obligation to make certain that grades stakes, bench marks, and offset staking are in place and accurately reflect elevations as per the construction drawings.

Excavation shall generally be taken to mean the removal of soil and other material of any nature whatsoever that may be encountered.

3.01 PERFORMANCE AND LIMITS

A. General

All areas subject to earthwork shall be brought to the required elevations and grades by excavating, filling, and grading. Excavated materials found suitable by the Engineer, shall be used in making embankments and filling the low areas of the work, and at such places as the Engineer may direct. Where required embankments shall be constructed as directed by the Engineer. The soil shall be placed in successive horizontal layers not over six (6") inches in depth, extending across the entire fill. It shall be spread and shall then be thoroughly compacted by rolling with a self-propelling roller weighing not less than ten (10) tons to the satisfaction of the Engineer. In places where the use of this roller is impracticable or where subsurface or surface structures may be damaged a lighter weight one may be substituted or the area shall be compacted by mechanical tamping, all with the approval, and to the satisfaction of the Engineer. Any hollows and/or depressions which may result from rolling and compacting shall be filled with like

or acceptable material, and the sub-grade shall again be compacted. This shall be repeated until all depressions are eliminated. Where clay or plastic soils are encountered rolling shall be done in such a manner as to avoid a plastic condition. In all cases these type soils should not be rolled when wet.

The Contractor shall make sure to level the bottoms of all excavations accurately to the limits and levels shown on the plans or as directed by the Engineer to receive the bottom of structures or other work supported on soil. Where the excavation limit has been exceeded by error on the part of the Contractor, the over excavated zone will be filled to the correct grade. At the discretion of the Engineer this zone will be filled with compacted crushed stone. The Contractor will not receive any additional payment for these corrective measures.

All soft, wet, clay or other objectionable material below the proposed sub-grade shall be removed to the satisfaction of the Engineer. The excavated zone shall be brought up to sub-grade level with material acceptable to the engineer. Under foundations and structures, 3000 psi concrete will be used. Otherwise Crushed Stone will be used, placed in 6" lifts and fully compacted to the satisfaction of the Engineer. Payment will be made under the Item 0203, 0204 or 0401 as determined by the Engineer or Town.

The Contractor shall maintain the banks of excavation in a safe and stable condition. The Contractor shall furnish and install temporary sheet piling or planks, braces and shores of good sound timber of adequate strength, and shall remove such piling or shoring as the work progresses.

When the excavation(s) have been completed to the required depth as shown on the drawings, the Contractor shall not proceed with the work until the subgrade has been inspected and approved by the Engineer. The Engineer may order further excavation as the conditions indicate. No additional work shall be done until the excavation has been approved by the Engineer.

3.03 PREPARATION

A. Compaction of the Subgrade - All subgrade materials shall be compacted prior to placement of fill or permeable aggregate base material as follows:

   1. Use a minimum of eight passes with a steel wheel roller having a minimum weight or centrifugal force of 10 tons.

   2. Compact the subgrade a minimum depth of 16 inches below the subgrade surface under all locations where synthetic turf will be installed

   3. Any soft or yielding areas shall be re-compacted or removed and replaced with suitable material to meet required compaction requirements.

B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

D. The Contractor shall establish control stakes which will be used to determine the amount of excavation and fill.

3.04 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.05 APPROVAL OF SUBGRADE

A. Notify Engineer when excavations have reached required subgrade.

B. If required by the Engineer, the subgrade shall be proof rolled using a 2O ton vibratory roller making a minimum of 3 passes. Soft spots and any unsuitable material shall be removed and replaced with compacted with the material specified in NYSDOT Standard Specifications Section 733-1302 Select Granular Subgrade (Typical). If the Engineer determines that additional removal is required, continue excavation and replace with compacted backfill or fill material as directed.

1. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed by the Engineer. The Contractor shall conduct his operations to allow the Engineer to measure the cross-sections before placing the backfill.

2. Additional excavation and replacement material as ordered by the Engineer will be paid for under the corresponding pay item according to Contract provisions.

3. If unsatisfactory subgrade results from inadequate surface drainage or lack of maintenance, the Contractor shall excavate and replace the unsatisfactory material at his own cost. No additional payment will be made.

C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.

3.06 PERMEABLE AGGREGATE BASE LAYER

A. The stone layer shall be compacted to a minimum of 95% of maximum density as determined by ASTM D698. The Contractor shall apply water to the processed stone on site to attain and maintain the minimum moisture content specified.

B. Prior to the placement of the stone aggregate, remove any excess or contaminated backfill from the drainage trenches. Should any separation of the materials occur, during any stage of the spreading or stockpiling, the Contractor must immediately remove and dispose of segregated material and correct or change handling procedures to prevent any further separation. Double handling of materials should be avoided.

C. The Contractor shall utilize laser-controlled equipment for the grading of the processed stone to ensure accuracy in grading tolerances.

D. Install stone base, whenever possible, from sideline toward centerline, parallel to the composite drain network, to the lines and grades shown on the drawings. Distance material is pushed from point of discharge should be limited to that where segregation of materials does not occur.

E. Each layer must be spread uniformly with equipment that will not cause perceptible separation in gradation (segregation of the aggregates), preferably a self-propelled paving machine, or a small grader or low ground pressure (LPG) dozer.

F. The Contractor shall grade the surface of the processed stone acceptable to receive the final synthetic turf surface system. Care shall be taken to maintain the grade designed for the base.

G. Planarity

The finished aggregate surface shall not deviate (tolerance-to-grade) by more than plus or minus .25" (.02') from designated compacted grade elevations when checked by 25' grid survey. Surface shall also not indicate any deviation more than .25" (.02') in 10' (any direction) when placed under a 10' straight edge. This tolerance is required over the entire field. Areas that deviate should be marked with spray paint and corrected by re-grading or filling low areas with crushed stone, granite chips or screenings, and rolling tight to achieve proper density.

3.07 GRADING

A. Backfilling of the underground field drainage system shall be in accordance with the Manufacturers Specifications and Installation instructions.

B. Subgrade and base shall be uniformly compacted to a minimum of 95% of maximum dry density. Care must be exercised to minimize segregation. The Engineer and Contractor shall make written records available to Synthetic Turf Contractor's inspector for both drainage/permeability and compaction/planarity as obtained from a minimum 10' x 10' grid.

C. The completed base and adjacent curbs/perimeter nailer shall be inspected by the Engineer by means of a laser and plotted on a 10-foot grid. Based upon the Engineers inspection of the topographical survey, the Contractor shall fine grade the base suitably, including properly rolling and compacting the base to achieve a surface planarity within ¼" in 10-feet (+0, -1/4"). The Engineer, Town will not approve the bas for tolerance to grade without a Topographical Survey. Work may not proceed with approval of the Engineer or Town.

3.08 SUBBASE REINFORCEMENT

A. Prepare the subgrade by compacting and grading the existing subgrade to the required elevation. Install Tensar TX 130S geogrid over the prepared subgrade. Place and compact aggregate base as specified in Section 3.06. The geogrid installation shall be in compliance with Tensar published

installation guidelines. A Tensar authorized representative shall inspect the geogrid installation prior to placement of the aggregate base course.

3.09 CONCRETE PERIMETER CURB

A. Install concrete curb at the perimeter of the synthetic turf area as per the manufacturer's specifications. Reference Item 0402 Cast in Place Concrete Curbs for means and methods. No additional payment will be made for this work.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: The Contractor shall hire a qualified independent geotechnical/environmental engineering testing agency to perform laboratory and field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

E. Control Survey - Prior to commencement of this work, the Contractor shall check the existing bench marks and reference points located on or out of the site as indicated. The Contractor shall establish newly standard bench marks and control stakes for the work within the site as approved by the Engineer. A single benchmark must be established prior to any work and maintained by a licensed Surveyor of record during the entire construction process.

1. Principal points – Principle points shall be established taking advantage of the existing reference points. Individual principal point posts shall be of wood, 4" x 4" size, with an indicating nail on the top, the surface of the post above the ground shall be painted white.

2. Bench marks - When establishing bench marks within the site, a minimum of one (1) back and forth leveling operation shall be carried out. Establishment of temporary bench marks and stakes shall be determined and performed by the Contractor. Temporary bench mark posts shall be of wood, 2" x 2" in size, with an indicating nail on the top, the surface of the post above ground shall be painted.

F. Finished Grading: The finished surface of the subgrade shall have a finished grade in accordance with the Plans and Specifications. Final subgrade shall be established to within a tolerance of +/ -.5" (.04') of the designed subgrade elevation.

G. Grade Verification: A certified survey shall be performed on a 25-foot grid to verify grade and elevation of the subgrade.

3.11 UNDERGROUND FIELD DRAINAGE

The installation of the underground field drainage system shall be in accordance with the Manufacturers Specifications and Installation instructions and the Contract Drawings.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall include the cost of furnishing all labor, materials and equipment for the installation of a complete Underground Field Drainage System and all incidental work as shown on the Contract Drawings. This work shall include all related products specified on the Contract Drawings or Specifications including storage media, geotextiles, inlet and outlet pipe with connections, cleanouts, curtain drains and concrete perimeter curbing. The Underground Field Drainage System shall be installed at the locations and grades shown on the drawings. This work shall not be limited to excavation and grading, compaction, testing, installation of geotextile fabric, subgrade reinforcement and construction of the permeable aggregate base layer and any incidental work required to complete the work in accordance with the Plans and Specifications, to the satisfaction of the Engineer or Town. Incidental work shall include trenching and sheeting if required, select backfilling and compaction, washed gravel or stone, removal and disposal of surplus material, installation of pipe, connections to any structures, fittings and connections required to install a complete Underground Field Drainage System in accordance with the plans and specifications to the satisfaction of the Engineer or Town.

The cost for this work under item shall be **Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary to install the following work items:

1. Preparation of the Soccer Fields

2. Preparation of the Baseball Field

3. Preparation of the Putting Green

END OF SECTION

SECTION 0902

OUTDOOR EQUIPMENT

PART 1: WORK

1.01 DESCRIPTION

Under this Work, the Contractor shall furnish and install all outdoor equipment as complete with accessories, as indicated as shown on the on the Contract Drawings and specified herein. This item includes all incidental work required to install the outdoor equipment. No additional payment will be made for work deemed necessary for completion of this work. The Contractor shall coordinate his work and shall allow ample time and facility for the work of other Sections to be installed.

Included in this item shall be the cost to furnish and install all outdoor equipment and other miscellaneous items as shown on the Drawings and as listed herein:

1. Basketball Court Equipment - Outdoor Glass Backboard System.
2. Pickleball Courts - Net Posts, Nets, Portable Players Benches.
3. Multipurpose Field Equipment - Soccer and Football Field Goal Combination System, Heavy Duty Lacrosse Goals, Portable Player Benches.
4. Baseball Field Equipment – Bases, Portable Mound, L Screen, Outfield Fence Protection Cap.
5. Picnic Tables – Rectangular & Round (Heavy Duty and ADA)
6. Bike Racks
7. Bleachers
8. Park Benches
9. Flag Pole
10. Score Boards

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0102 Survey and Stakeout
B. Section 0301 Asphalt Pavement
C. Section 0401 Cast-In-Place Concrete
D. Section 0906 Site Restoration

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American Society for Testing and Materials (ASTM)

2. National Federation of State High School Association (NFSHSA).

3. The Americans with Disabilities Act (ADA)

1.04 DEFINITIONS

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1.05 DESIGN REQUIREMENTS

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1.06 SUBMITTALS

A. Product Data

For each type of product indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation methods

B. Shop Drawings

Indicate locations; pertinent details at minimum of 3/4" scale. For Each Equipment Item

C. Samples

Submit upon request by the Town.

D. Submit Warranties.

1.07 QUALITY ASSURANCE

A. Manufacturer/Fabricator - Minimum of 3 years successful experience in the manufacture/fabrication of the type of equipment specified.

B. Installer - Minimum of 3 years successful experience in installation of the type of equipment specified.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle all game equipment as recommended by the respective product manufacturer or fabricator, to protect from damage.

1.09 MANUFACTURER'S WARRANTY

A. Provide one year warranty against defects in materials and workmanship for each item. Extended Warranties shall be in force on each item as listed in product specifications.

PART 2: MATERIALS

2.01 MANUFACTURERS

A. The outdoor athletic equipment, in order to establish a basis of design, performance and quality, is based on products manufactured by:

1. Bison Inc. Sports Equipment Manufacturer,603 L Street Lincoln, NE 68508 Tel: 800-247-7668, Fax: 800-638-0698, www.bisoninc.com
2. Wilson Sporting Goods, 8750 W. Bryn Mawr Avenue, Chicago, IL 60631, Tel: 800-874-5930, www.wilson.com
3. NRS National Recreation Systems,1300-D Airport North Office Park, Fort Wayne, IN 46825, Tel: 888-568-9064, http://www.bleachers.net
4. Sportsfield Specialties, Inc, 41155 State Highway 10, PO Box 231, Delhi, NY 13753, Tel: 888-975-3343, http://www.sportsfieldspecialties.com
5. Brine Corp, 32125 Hollingsworth Avenue, Warren, MI 48092, Tel: 800-968-7845 Fax: 586-446-1162, www.brine.com
6. Soft Touch Bases, Phone: 866-544-2077, Fax: 262-544-2080, info@softtouchbases.com
7. American Flagpole, 26252 Hillman Highway,Abingdon, VA 24210, Tel: 276-525-4078, Fax: 276-676-3090, http://www.americanflagpole.com
8. Nevco, 301 East Harris Avenue, Greenville, IL 62246, 1-800-851-4040
9. Approved Equal

B. Approved Suppliers

1. BSN SPORTS, PO Box 7726, Dallas TX 75209, Tel: 1-800-856-3488 Fax: 800-899-0149, www.bsnsports.com
2. Japro Sports LLC, 976 Hartford Turnpike, Waterford, CT 06385, Tel: 800-243-0533, Fax: 800-988-3363, www.jayprosports.com
3. Anthem Sports 2 Extrusion Drive, Pawcatuck, CT 06379, Phone: (800) 688-6709,Fax: (860) 599-8448, www.anthem-sports.com
4. PickleballCentral.com, 6918 South 220th Street, Kent, Washington, 98032, Tel: (888) 854-0163, Fax: (253) 590-2814, Pickleballcentral.com
5. Sportshop.com, 86 Route 13, Brookline, NH 03033, Tel: 800-335-4670, www.sportstop.com
6. Marker's Inc., 33490 Pin Oak Parkway Avon Lake, Ohio 44012, Tel: 866-617-6275, Fax: 440- 933-7839, www.markersinc.com
7. Highland Products Group, 3350 NW Boca Raton Blvd., Suite B2, Boca Raton, FL 33431, Tel: 877-961-6411 x4, Fax: 561-620-8668 fax, www.theparkcatalog.com

8. Belson Outdoors, LLC, 111 North River Road, North Aurora, IL 60542, Tel: 630-897-8489, Fax:630-897-0573, sales@belson.com

2.02 BASKETBALL COURT EQUIPMENT

A. Bison Ultimate Outdoor Glass System- Item# 987344XX
- Size: 42" x 72" Competition Glass Backboard
- 5' setback
- 6" x 6" square powder coated, heavy-gauge steel post
- Quantity: 2

B. Bison Duraskin Backboard Safety Padding - Item # 5054XXX
- No glue, pre drilled
- Color: Yellow
- Length:72 inches)
- Quantity: 2

C. Portable Players Benches – National Recreation Systems Inc.- Model BE-DA15
- Length: 15'
- Material: Aluminum
- Rubber Foot Pads
- Quantity: 6

2.03 PICKLEBALL COURT EQUIPMENT

A. Posts - Wilson Heavy Duty Pickleball Posts - Model 3441W
- Size: 2-7/8" outside diameter
- Length: 54" overall length
- Color: Green or Black Removable Handle and ratchet
- Aluminum Steel - Wall thickness 1/4" 69 lbs
- Quantity: 12

B. Nets – Wilson Model 3578W
- Size: 22' L x 3' H (Official Size)
- Material: 3 mm braided polyethylene
- Top Ridge: 23 oz white vinyl headband
- Length: 27' long
- 1/2" fiberglass dowels
- Quantity: 6

C. Portable Players Benches – National Recreation Systems Inc.- Model BE-DA15
- Length: 15'
- Material: Aluminum
- Rubber Foot Pads
- Quantity: 2

2.04 MULTIPURPOSE FIELD EQUIPMENT

A. Soccer and Football Goals: Goal Pak Soccer and Football Field Goal Combination System
- Model GPKS20HSPL (SG4980HSPL)
- Mounting Plates: BaseL HS Base Plate Mounted Combination Football Soccer Goal
- Quantity: 4

B. Lacrosse Goals- Brine Collegiate Lacrosse Goal Style #026585063308
- Frame: Heavy Duty 2" dia. steel frame with 3" width flat base bar
- Quantity: 4

C. Portable Player Benches: National Recreation Systems Inc. Model BE-DA21
- Length: 21'
- Material: Aluminum
- Rubber Foot Pads
- Quantity: 8

D. Bleachers: National Recreation Systems Inc. Model NB-0524APRF
- Length: 24'
- Material: Aluminum Angle Frame
- Guardrail w/ chain link fence
- Quantity: 4

E. Scoreboard: Nevco Model 3600
- Length: 18'
- Quantity: 2

2.05 BASEBALL FIELD EQUIPMENT

A. Home Plate - Soft Touch for Turf Home Plate Model THP
- Material: Durable cut resistant polyurethane
- Product dimensions: 18-5/8 x 8-3/4 x 5/8 (Barbs: 15/16")
- Quantity: 2

B. Pitching Rubber- Soft Touch for Turf Pitching Rubber Model TPR
- Material: Durable cut resistant polyurethane
- Product Dimensions: 24-1/4 x 6-1/8 x ¾ (Barbs: 15/16")
- Quantity: 2

C. Bases - Soft Touch for Turf Bases Model T15
- Material: Durable cut resistant polyurethane
- Base dimensions: 15" x 15" x 2 ½"
- Quantity: 2 Sets of 3

D. Portable Mound: Sportsfield Specialties #LGPRTPTCH-GR-SYN 18'
- Size: 18'-0" Diameter
- Color: Green
- Quantity: 1

E. L Screen: Pitchers Protector- BSN Sports Supply SKU # BS47743
- Frame Design: L-shaped
- Material: 1.5 in. square, 17-gauge galvanized steel

- Netting: Heavy-duty polyethylene netting
- Product Height: 7 ft.
- Quantity: 2

F. Foul Poles: Sportsfield Specialties Model FPW420 (LGFPW420)
- Height: 20'-0"
- Material: 4" O.D. x 1/8" (0.125") Thick Wall 6061 Aluminum Tube, 3.5" Schedule 40 Aluminum Pipe (4" O.D.)
- Powder Coated
- Ground Sleeve Mount
- Mesh Wing - Stamped 1/8" (0.125") Thick Aluminum Panel
- Mesh: 1.5" Square Open Mesh Size
- Color: Yellow
- Quantity: 2

G. Outfield Fence Protection Cap - Poly-Cap Fence Guard Markers Inc. SKU: 01160 or 01162
- Size: 4-1/2" in diameter
- Color: Yellow Color
- Quantity: TBD by length of outfield fence

H. Bleachers: National Recreation Systems Inc. Model NB-0524APRF
- Length: 24'
- Material: Aluminum Angle Frame
- Guardrail w/ chain link fence
- Quantity: 3

I. Scoreboard: Nevco Model 1608
- Length: 18'
- Quantity: 1

2.06 OUTDOOR EQUIPMENT

A. Picnic Table – Everest 8 ft. Heavy Duty - The Park Catalog Item #: 398-6006
- Material: Steel
- Pattern Type: Perforated Metal
- Coating: Thermoplastic
- Product dimensions: 96"L x 66 7/16"W x 30 5/16"H
- Color: TBD
- Quantity: 48

B. Picnic Table – 8 ft. Heavy Duty Rectangular ADA Picnic Table - The Park Catalog Item #: 398-6006
- Material: Steel
- Pattern Type: Perforated Metal
- Coating: Thermoplastic
- Product dimensions: 96"L x 60"W x 30"H
- Color: TBD
- Quantity: 6

C. Picnic Table – Everest 46-in Round - The Park Catalog Item #: 398-6010
- Material: Steel
- Pattern Type: Perforated Metal

- Coating: Thermoplastic
- Product dimensions: 78" x 30"
- Color: TBD
- Quantity: 8

D. Picnic Table – 46-in Round ADA Picnic Table - The Park Catalog Item #: 543-6011
   - Material: Steel
   - Pattern Type: Perforated Metal
   - Coating: Thermoplastic
   - Product dimensions: 69.5" x 76" x 30"
   - Quantity: 4

E. Bike Rack - 9 Bike Wave – 2-3/8 in Heavy Duty - The Park Catalog Item #: 543-1004
   - Material: Galvanized Steel
   - Product dimensions: 39"W x 36"H
   - In Ground Mount
   - Quantity: 1

F. Bike Rack - 11 Bike Wave – 2-3/8 in Heavy Duty - The Park Catalog Item #: 543-1005
   - Material: Galvanized Steel
   - Product dimensions: 39"W x 36"H
   - In Ground Mount
   - Quantity: 1

G. Park Bench - 6-ft Recycled Plastic Malibu Bench - The Park Catalog Item #: 1333-1003
   - Material: Galvanized Steel
   - Dimensions: 72"L x 26½"W x 33¼"H
   - Frame Color: Black
   - Bench Slat Color: Cedar
   - In Ground Mount
   - Quantity: 17

H. Flag Pole – American Flagpole Model ESR30D6M - 02
   - Material: Stainless Steel
   - Height: 30'
   - In Ground Mount
   - Quantity: 1

PART 3: METHOD

3.01 DESCRIPTION

A. The work to be performed under this specification includes all labor, equipment, materials and supplies necessary for the installation of the outdoor equipment specified on the Contract Drawings and these specifications.

B. The Contractor shall take special note of the bleacher anchors that are required for securing the bleachers. No additional payment will be made for installation of the anchors.

C. Gravel pads below the bleachers are considered incidental to the work. No additional

payment will be made for this work.

3.02 INSTALLATION

A. Check equipment for alignment and hold in position during placement and finishing operations.

B. Erect equipment plumb, level and true.

C. All equipment shall be installed in the locations as shown on the Contract Drawings and shall meet the standard method of installation of the manufacturer and all applicable codes. This work shall include and not be limited to fittings, concrete foundations, surplus material, backfill and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

3.03 CLEANING AND TOUCH-UP

A. After erection and installation are complete, touch-up portions damaged during transportation and erection using same finish to match appearance.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

SECTION 0902

OUTDOOR EQUIPMENT

PART 1: WORK

1.01 DESCRIPTION

Under this Work, the Contractor shall furnish and install all outdoor equipment as complete with accessories, as indicated as shown on the on the Contract Drawings and specified herein. This item includes all incidental work required to install the outdoor equipment. No additional payment will be made for work deemed necessary for completion of this work. The Contractor shall coordinate his work and shall allow ample time and facility for the work of other Sections to be installed.

Included in this item shall be the cost to furnish and install all outdoor equipment and other miscellaneous items as shown on the Drawings and as listed herein:

1. Basketball Court Equipment - Outdoor Glass Backboard System.
2. Pickleball Courts - Net Posts, Nets, Portable Players Benches.
3. Multipurpose Field Equipment - Soccer and Football Field Goal Combination System, Heavy Duty Lacrosse Goals, Portable Player Benches.
4. Baseball Field Equipment – Bases, Portable Mound, L Screen, Outfield Fence Protection Cap.
5. Picnic Tables – Rectangular & Round (Heavy Duty and ADA)
6. Bike Racks
7. Bleachers
8. Park Benches
9. Flag Pole

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0102 Survey and Stakeout
B. Section 0301 Asphalt Pavement
C. Section 0401 Cast-In-Place Concrete
D. Section 0906 Site Restoration

1.03 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American Society for Testing and Materials (ASTM)

2. National Federation of State High School Association (NFSHSA).

3. The Americans with Disabilities Act (ADA)

1.04 DEFINITIONS

THIS SECTION LEFT BLANK

1.05 DESIGN REQUIREMENTS

THIS SECTION LEFT BLANK

1.06 SUBMITTALS

A. Product Data

For each type of product indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation methods

B. Shop Drawings

Indicate locations; pertinent details at minimum of 3/4" scale. For Each Equipment Item

C. Samples

Submit upon request by the Town.

D. Submit Warranties.

1.07 QUALITY ASSURANCE

A. Manufacturer/Fabricator - Minimum of 3 years successful experience in the manufacture/fabrication of the type of equipment specified.

B. Installer - Minimum of 3 years successful experience in installation of the type of equipment specified.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle all game equipment as recommended by the respective product manufacturer or fabricator, to protect from damage.

1.09 MANUFACTURER'S WARRANTY

A. Provide one year warranty against defects in materials and workmanship for each item. Extended Warranties shall be in force on each item as listed in product specifications.

PART 2: MATERIALS

2.01 MANUFACTURERS

A. The outdoor athletic equipment, in order to establish a basis of design, performance and quality, is based on products manufactured by:

1. Bison Inc. Sports Equipment Manufacturer,603 L Street Lincoln, NE 68508 Tel: 800-247-7668, Fax: 800-638-0698, www.bisoninc.com
2. Wilson Sporting Goods, 8750 W. Bryn Mawr Avenue, Chicago, IL 60631, Tel: 800-874-5930, www.wilson.com
3. NRS National Recreation Systems,1300-D Airport North Office Park, Fort Wayne, IN 46825, Tel: 888-568-9064, http://www.bleachers.net
4. Sportsfield Specialties, Inc, 41155 State Highway 10, PO Box 231, Delhi, NY 13753, Tel: 888-975-3343, http://www.sportsfieldspecialties.com
5. Brine Corp, 32125 Hollingsworth Avenue, Warren, MI 48092, Tel: 800-968-7845 Fax: 586-446-1162, www.brine.com
6. Soft Touch Bases, Phone: 866-544-2077, Fax: 262-544-2080, info@softtouchbases.com
7. American Flagpole, 26252 Hillman Highway,Abingdon, VA 24210, Tel: 276-525-4078, Fax: 276-676-3090, http://www.americanflagpole.com
8. Nevco, 301 East Harris Avenue, Greenville, IL 62246, 1-800-851-4040
9. Approved Equal

B. Approved Suppliers

1. BSN SPORTS, PO Box 7726, Dallas TX 75209, Tel: 1-800-856-3488 Fax: 800-899-0149, www.bsnsports.com
2. Japro Sports LLC, 976 Hartford Turnpike, Waterford, CT 06385, Tel: 800-243-0533, Fax: 800-988-3363, www.jayprosports.com
3. Anthem Sports 2 Extrusion Drive, Pawcatuck, CT 06379, Phone: (800) 688-6709,Fax: (860) 599-8448, www.anthem-sports.com
4. PickleballCentral.com, 6918 South 220th Street, Kent, Washington, 98032, Tel: (888) 854-0163, Fax: (253) 590-2814, Pickleballcentral.com
5. Sportshop.com, 86 Route 13, Brookline, NH 03033, Tel: 800-335-4670, www.sportstop.com
6. Marker's Inc., 33490 Pin Oak Parkway Avon Lake, Ohio 44012, Tel: 866-617-6275, Fax: 440- 933-7839, www.markersinc.com
7. Highland Products Group, 3350 NW Boca Raton Blvd., Suite B2, Boca Raton, FL 33431, Tel: 877-961-6411 x4, Fax: 561-620-8668 fax, www.theparkcatalog.com

8. Belson Outdoors, LLC, 111 North River Road, North Aurora, IL 60542, Tel: 630-897-8489, Fax:630-897-0573, sales@belson.com

2.02 BASKETBALL COURT EQUIPMENT

A. Bison Ultimate Outdoor Glass System- Item# 987344XX
- Size: 42" x 72" Competition Glass Backboard
- 5' setback
- 6" x 6" square powder coated, heavy-gauge steel post
- Quantity: 2

B. Bison Duraskin Backboard Safety Padding - Item # 5054XXX
- No glue, pre drilled
- Color: Yellow
- Length:72 inches)
- Quantity: 2

C. Portable Players Benches – National Recreation Systems Inc.- Model BE-DA15
- Length: 15'
- Material: Aluminum
- Rubber Foot Pads
- Quantity: 6

2.03 PICKLEBALL COURT EQUIPMENT

A. Posts - Wilson Heavy Duty Pickleball Posts - Model 3441W
- Size: 2-7/8" outside diameter
- Length: 54" overall length
- Color: Green or Black Removable Handle and ratchet
- Aluminum Steel - Wall thickness 1/4" 69 lbs
- Quantity: 12

B. Nets – Wilson Model 3578W
- Size: 22' L x 3' H (Official Size)
- Material: 3 mm braided polyethylene
- Top Ridge: 23 oz white vinyl headband
- Length: 27' long
- 1/2" fiberglass dowels
- Quantity: 6

C. Portable Players Benches – National Recreation Systems Inc.- Model BE-DA15
- Length: 15'
- Material: Aluminum
- Rubber Foot Pads
- Quantity: 2

2.04 MULTIPURPOSED FIELD EQUIPMENT

A. Soccer and Football Goals: Goal Pak Soccer and Football Field Goal Combination System
   - Model GPKS20HSPL (SG4980HSPL)
   - Mounting Plates: BaseL HS Base Plate Mounted Combination Football Soccer Goal
   - Quantity: 4

B. Lacrosse Goals- Brine Collegiate Lacrosse Goal Style #026585063308
   - Frame: Heavy Duty 2" dia. steel frame with 3" width flat base bar
   - Quantity: 4

C. Portable Player Benches: National Recreation Systems Inc. Model BE-DA21
   - Length: 21'
   - Material: Aluminum
   - Rubber Foot Pads
   - Quantity: 8

D. Bleachers: National Recreation Systems Inc. Model NB-0524APRF
   - Length: 24'
   - Material: Aluminum Angle Frame
   - Guardrail w/ chain link fence
   - Quantity: 4

2.05 BASEBALL FIELD EQUIPMENT

A. Home Plate - Soft Touch for Turf Home Plate Model THP
   - Material: Durable cut resistant polyurethane
   - Product dimensions: 18-5/8 x 8-3/4 x 5/8 (Barbs: 15/16")
   - Quantity: 2

B. Pitching Rubber- Soft Touch for Turf Pitching Rubber Model TPR
   - Material: Durable cut resistant polyurethane
   - Product Dimensions: 24-1/4 x 6-1/8 x ¾ (Barbs: 15/16")
   - Quantity: 2

C. Bases - Soft Touch for Turf Bases Model T15
   - Material: Durable cut resistant polyurethane
   - Base dimensions: 15" x 15" x 2 ½"
   - Quantity: 2 Sets of 3

D. Portable Mound: Sportsfield Specialties #LGPRTPTCH-GR-SYN 18'
   - Size: 18'-0" Diameter
   - Color: Green
   - Quantity: 1

E. L Screen: Pitchers Protector- BSN Sports Supply SKU # BS47743
   - Frame Design: L-shaped
   - Material: 1.5 in. square, 17-gauge galvanized steel
   - Netting: Heavy-duty polyethylene netting
   - Product Height: 7 ft.
   - Quantity: 2

F. Foul Poles: Sportsfield Specialties Model FPW420 (LGFPW420)
- Height: 20'-0"
- Material: 4" O.D. x 1/8" (0.125") Thick Wall 6061 Aluminum Tube, 3.5" Schedule 40 Aluminum Pipe (4" O.D.)
- Powder Coated
- Ground Sleeve Mount
- Mesh Wing - Stamped 1/8" (0.125") Thick Aluminum Panel
- Mesh: 1.5" Square Open Mesh Size
- Color: Yellow
- Quantity: 2

G. Outfield Fence Protection Cap - Poly-Cap Fence Guard Markers Inc. SKU: 01160 or 01162
- Size: 4-1/2" in diameter
- Color: Yellow Color
- Quantity: TBD by length of outfield fence

H. Bleachers: National Recreation Systems Inc. Model NB-0524APRF
- Length: 24'
- Material: Aluminum Angle Frame
- Guardrail w/ chain link fence
- Quantity: 3

2.06 OUTDOOR EQUIPMENT

A. Picnic Table – Everest 8 ft. Heavy Duty - The Park Catalog Item #: 398-6006
- Material: Steel
- Pattern Type: Perforated Metal
- Coating: Thermoplastic
- Product dimensions: 96"L x 66 7/16"W x 30 5/16"H
- Color: TBD
- Quantity: 48

B. Picnic Table – 8 ft. Heavy Duty Rectangular ADA Picnic Table - The Park Catalog Item #: 398-6006
- Material: Steel
- Pattern Type: Perforated Metal
- Coating: Thermoplastic
- Product dimensions: 96"L x 60"W x 30"H
- Color: TBD
- Quantity: 6

C. Picnic Table – Everest 46-in Round - The Park Catalog Item #: 398-6010
- Material: Steel
- Pattern Type: Perforated Metal
- Coating: Thermoplastic
- Product dimensions: 78" x 30"
- Color: TBD
- Quantity: 8

D. Picnic Table – 46-in Round ADA Picnic Table - The Park Catalog Item #: 543-6011
- Material: Steel

- Pattern Type: Perforated Metal
- Coating: Thermoplastic
- Product dimensions: 69.5" x 76" x 30"
- Quantity: 4

E. Bike Rack - 9 Bike Wave – 2-3/8 in Heavy Duty - The Park Catalog Item #: 543-1004
- Material: Galvanized Steel
- Product dimensions: 39"W x 36"H
- In Ground Mount
- Quantity: 1

F. Bike Rack - 11 Bike Wave – 2-3/8 in Heavy Duty - The Park Catalog Item #: 543-1005
- Material: Galvanized Steel
- Product dimensions: 39"W x 36"H
- In Ground Mount
- Quantity: 1

G. Park Bench - 6-ft Recycled Plastic Malibu Bench - The Park Catalog Item #: 1333-1003
- Material: Galvanized Steel
- Dimensions: 72"L x 26½"W x 33¼"H
- Frame Color: Black
- Bench Slat Color: Cedar
- In Ground Mount
- Quantity: 17

H. Flag Pole – American Flagpole Model ESR30D6M - 02
- Material: Stainless Steel
- Height: 30'
- In Ground Mount
- Quantity: 1

PART 3: METHOD

3.01 DESCRIPTION

A. The work to be performed under this specification includes all labor, equipment, materials and supplies necessary for the installation of the outdoor equipment specified on the Contract Drawings and these specifications.

B. The Contractor shall take special note of the bleacher anchors that are required for securing the bleachers. No additional payment will be made for installation of the anchors.

C. Gravel pads below the bleachers are considered incidental to the work. No additional payment will be made for this work.

3.02 INSTALLATION

A. Check equipment for alignment and hold in position during placement and finishing operations.

B. Erect equipment plumb, level and true.

C. All equipment shall be installed in the locations as shown on the Contract Drawings and shall meet the standard method of installation of the manufacturer and all applicable codes. This work shall include and not be limited to fittings, concrete foundations, surplus material, backfill and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

3.03 CLEANING AND TOUCH-UP

A. After erection and installation are complete, touch-up portions damaged during transportation and erection using same finish to match appearance.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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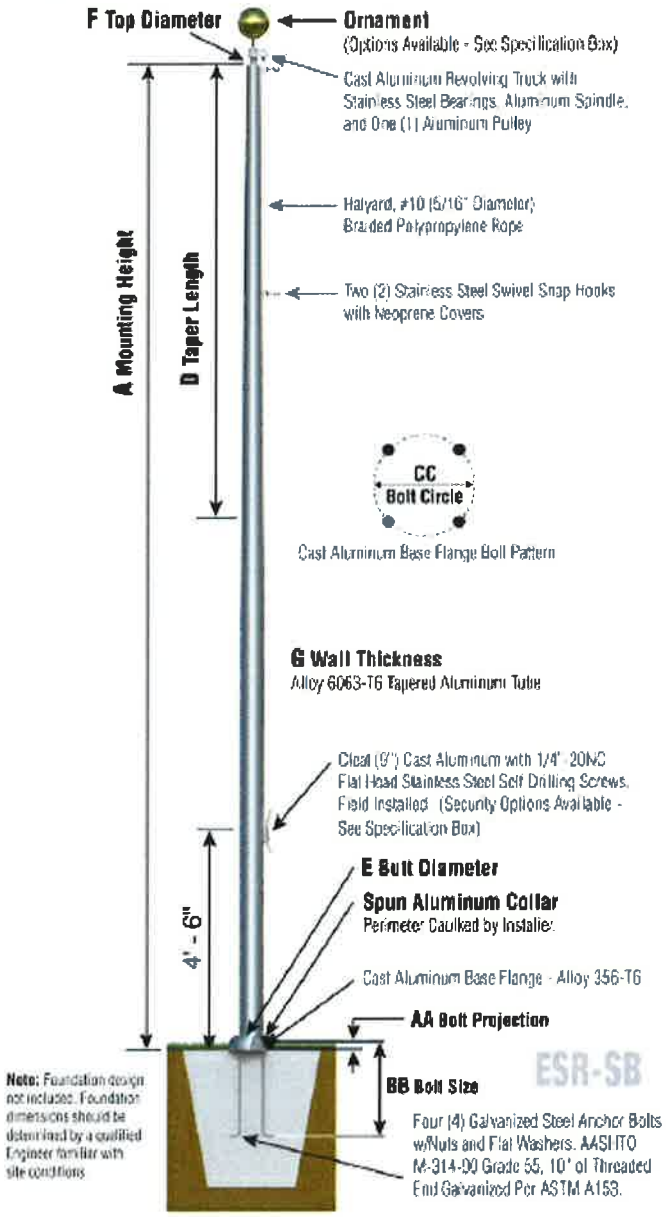
4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** bid and shall include the cost of all labor, materials and equipment necessary to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

Architectual Elite Series - ESR
External Single Revolving
Rope Halyard
Shoe Base Installation

ESR30D6M - 02




Clear Anodized


Satin Aluminum


Spun Collar


Cleat/Halyard Cov.

Accessory Specifications
Satin Aluminum (02), Clear Anodized Ball (90065-004), 6" Shoe Base Collar (87567), Cleat Cover - Padlock (Padlock not included) with 9" HD Alum. Cleat (96017) with Halyard Cover - 1-1/2" x 5 feet (96153)

Specifications
A. Mounting Height: 30'
C. Total Length: 30'-0"
D. Taper Length: 13'-9"
E. Butt Diameter: 6.000"
F. Top Diameter: 3.500"
G. Wall Thickness: 0.188"
AA. Bolt Projection: 2.75"
BB. Bolt Size: 1" x 36" x 4"
CC. Bolt Circle: 9'-10"
Flagpole Sections: 1
Flagpole Weight: 204 lbs.
Max Flag Size: 6' x 10'
Max Wind Speed w/ Flag: 105 mph
Max Wind Speed No Flag: 175 mph

Notes

Customer Name: Town of Yorktown	
Dealer: Tony Cioffi - Site Design Conultants	
Project: Granite Knolls Park	Location: Yorktown, New York

END OF SECTION

SECTION 0903

DUGOUTS

PART 1: WORK

1.01 DESCRIPTION

Under this item, the Contractor shall furnish and install all material and equipment necessary to construct the dugouts as shown on the Contract Drawings. This shall include all excavation, backfilling, framing, roofing, finishes, dugout equipment, disposal of surplus materials and any incidental work required to furnish and install two complete dugouts as specified in the Contract Documents and Specifications, to the satisfaction of the Engineer or Town.

Included in this item shall be the cost to furnish and install all dugout equipment and other miscellaneous items as shown on the Drawings and as listed herein:

1. Bat Racks
2. Cubby Shelves
3. Players Benches

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0201 Earthwork
D. Section 0204 Crushed Stone Fill
E. Section 0401 Cast-In-Place Concrete
F. Section 0801 Site Lighting
G. Section 0802 Building Services – General Plumbing & Electrical Work
H. Section 0906 Site Restoration

1.03 REFERENCES

A. American Concrete Institute (ACI)
   1. AC1 318- Building Code Requirements for Structural Concrete and Commentary
   2. ACI 530

B. American Society of Testing and Materials (ASTM)
   1. ASTM C91 - Standard Specification for Masonry Cement
   2. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar
   3. ASTM C150 - Standard Specification for Portland Cement
   4. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes
   5. ASTM C270 - Standard Specification for Mortar for Unit Masonry
   6. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Masonry
   7. ASTM C897 - Standard Specification for Aggregate for Job-Mixed Portland Cement Based Plasters
   8. ASTM C979 - Standard Specifications for Pigments for Integrally Colored Concrete.
   9. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength.

10. ASTM C1384 - Standard Specification for Admixtures for Masonry Mortars

C. American Society of Civil Engineers (ASCE)
   1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures

D. The Masonry Society (TMS) Masonry Joint Standards Committee:
   1. TMS 602 - Specification for Masonry Structures

E. National Concrete Masonry Association (NCMA)

F. The American Wood Council

   1. NDS for Wood Construction

G. National Federation of State High School Association (NFSHSA).

H. 2010 Residential Code of the State of New York

1.04 DEFINITIONS

THIS SECTION LEFT BLANK

1.05 SUBMITTALS

A. Product Data

   For each type of product indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation methods

B. Shop Drawings

   Indicate locations; pertinent details at minimum of 3/4" scale. For Each Equipment Item

C. Samples

   Submit upon request by the Town

1.06 DELIVERY, STORAGE, AND HANDLING

Deliver, store and handle all material and equipment as recommended by the respective product manufacturer or fabricator, to protect from damage.

1.07 QUALITY ASSURANCE

THIS SECTION LEFT BLANK

1.08 MANUFACTURER'S WARRANTY

Provide one year warranty against defects in materials and workmanship for each item. Extended Warranties shall be in force on each item as listed in product specifications.

PART 2 MATERIALS

2.01 MANUFACTURERS

A. Dugout Equipment - In order to establish a basis of design, performance and quality; the dugout equipment specified is based on products manufactured by Baseball Racks, 2908 West 99th Place, Evergreen Park, IL 60805, (708) 636-1047or approved equal.

B. No substitutions may be made without prior approval of the Town.

C. The approval of other manufacturer's names and product numbers does not relieve the Contractor from furnishing products which comply with the detailed requirements of these specifications.

2.02 DUGOUT

A. Foundation & Concrete Pad

1. Concrete for the dugout foundation and pad shall be in conformance with Item 0401 Cast-In-Place Concrete.

2. Concrete shall have a minimum compressive strength f'c = 4,000 psi @ 28 days.

3. Reinforcing shall be ASTM Grade 60.

B. Concrete Masonry Units: Concrete Masonry Units: ASTM C 90 and as follows:

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2500 psi

2. Weight Classification: Normal weight.

3. Provide Type I, moisture-controlled units.

4. Size (Width): Manufactured to the following dimensions:
   a. 4 inches nominal; 3-5/8 inches actual.
   b. 6 inches nominal; 5-5/8 inches actual.
   c. Provide 8" x 16" x width for all units exposed to view.

5. Masonry Reinforcement: ASTM A 951

C. Wood Framing – Shall conform to the Residential Code of New York State.

1. Provide dressed lumber, S4S.

2. Load-Bearing: No.1 grade

3. Wood Treatment
   a. Pressure-treat all lumber components in contact with concrete unless otherwise indicated, to meet the requirements of the American Wood-Preserver's Association Standards C2-lumber, and C9 plywood.

D. Roofing

1. Roof sheeting shall be ½" CDX plywood sheeting

2. Standing-Seam Metal Roof Panels

a. General: Provide factory-formed metal roof panels designed 10 be field assembled by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
   i. Aluminum Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1637.

b. Vertical-Rib, Snap-Joint. Standing-Seam Metal Roof Panels: Fanned with vertical ribs at panel edges and flat pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels, and snapping panels together.
   i. Basis-of-Design Product: Petersen Aluminum Corporation, SNAP-CLAD panels, factory formed and tension leveled with a factory applied sealant bead for improved weather resistance.
   ii. Panels 1¾" (44 mm) leg height and a continuous inter·lock for structural performance and wind resistance.
   iii. Material: .040" ga (0.1mm) alloy 3105-H14 aluminum panel.
   iv. Panel Dimension: 12" (305 mm), o.c.
   v. Eave Notching: Factory produced eave notching for trinuned eave panels.
   vi. Texturc: Smooth texture.
   vii. Rating: UL 9Q rating (wind uplift) panel assembly.
   viii. Flashing and Trim: Aluminum, .063"
   ix. Fasteners: SNAP-CLAD galvanized steel, non-penetrating high performance clips for roofing application and UL 90 rated (wind uplift) assemblies and standard clips for fascia applications.
   x. Sealant Bead: Factory applied sealant bead.
   xi. Exterior Finish: Fluoropolymer.
   xii. Color: As selected by Architect from manufacturer's full range.

3. Building Paper: ASTM D 226, Type I (No. 15 asphalt-saturated organic felt), unperforated.

E. Exterior Finish

1. Brick or textured CMU as shown – Color by Town

2.03 DUGOUT EQUIPMENT

A. Baseball Racks "Blackjack Bat Rack" SKU: BLKJK or approved equal. Two (2) required. Color shall be selected by the Town.

B. Baseball Racks "Players Rack" SKU: PLYR or approved equal. Four (4) required. Color shall be selected by the Town.

C. Baseball Racks "Valerio Bench" SKU BLKJK or approved equal. Four (4) required. Color shall be selected by the Town.

PART 3 METHOD

3.01 INSTALLATION

Installation shall conform to all applicable sections of this specification and as specified herein.

3.02 CONCRETE FOUNDATION

Cast-in-place concrete foundation(s) shall be constructed and shall meet the requirements specified in Section 0401 Cast-In-Place Concrete

3.03 LAYING MASONRY WALLS

A. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at comers, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch horizontal face dimensions at comers or jambs.

1. One-half running bond with vertical joint in each course centered on units in courses above and below.

2. Provide special courses as indicated on drawings.

C. Mortar Bedding and Jointing

1. Lay solid brick-size masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

2. Tool exposed joints to match existing when thumbprint hard.

D. Masonry Joint Reinforcement

1. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with II minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

a. Space reinforcement not more than 16 inches o.c.
b. Space reinforcement not more than 8 inches o.c. in parapet walls.

c. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
   i. Reinforcement above is in addition to continuous reinforcement.

d. Spread mortar prior to installing ties and reinforcement. Do not set ties dry.

2. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

3. Provide continuity at comers and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.04 DUGOUT EQUIPMENT INSTALLATION

A. Check dugout equipment for alignment and hold in position during placement and finishing operations.

B. Erect dugout equipment plumb, level and true.

C. Protect surfaces and finishes from abrasion and other damage during handling and installation.

D. Replace damaged equipment.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

THIS SECTION LEFT BLANK

4.02 BASIS OF PAYMENT

Payment for this work item shall be at the **Lump Sum** bid for the dugouts shown on the Contract Drawings. All labor, materials and equipment including but not limited to the excavation and backfill, concrete foundation, framing, roofing, finishes, dugout equipment, disposal of surplus materials and any incidental work required to furnish and install two complete dugouts as specified in the Contract Documents and Specifications, to the satisfaction of the Engineer or Town. The Cast-in-Place concrete foundation(s) and pads shall be paid under Item 0401 Cast-In-Place Concrete.

END OF SECTION

SECTION 0904

METAL FENCES AND GATES

PART 1: WORK

1.01 DESCRIPTION

Under this item, the Contractor shall furnish supply and install a complete metal fencing and metal fence gates as required by the plans and these specifications. The fencing shall be installed at the locations as shown on the plan and shall meet the standard method of installation of the manufacturer. This work shall include gates and the removal of surplus material and cleaning up at the locations shown on the Contract Documents and these specifications or as directed by the Engineer or Town.

Included in this item of work are the following Work Items:

0904.1	**Backstop Fence**
0904.2	**4' High Fence**
0904.3	**6' High Fence**

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparations and Removals
B. Section 0102 Survey and Stakeout
C. Section 0401 Cast-In-Place Concrete
D. Section 0402 Cast-In-Place Concrete Curbs
E. Section 0901 Synthetic Turf Preparation
F. Section 0902 Outdoor Equipment
G. Section 0903 Dugouts
H. Section 0906 Site Restoration

1.03 REFERENCES

A. American Society of Testing and Materials (ASTM) standards, latest editions.

1.04 DEFINITIONS

A. NYS DOT Standard Specifications- This shall refer to the New York State Department of Transportation Standard Specifications of September 4, 2014 or latest edition of addendums.

1.05 SUBMITTALS

A. Shop Drawings: manufacturer's product data and samples, plan layouts including spacing of components, accessories and post details. Machine duplicated copies of Contract Drawings will not be accepted.

B. Sample

1. Provide a 12-inch long sample of fence board.

2. Provide a 12-inch long sample of fence post.
3. Provide a sample of each type of fence hardware.
4. Provide a sample fence slat, color to be determined by Town.

C. Quality Control

1. Provide written certification of the titanium dioxide content of the vinyl used in the fencing system.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver fence and gate components fully wrapped in protective plastic. Stack components in accordance with manufacturer's printed recommendations.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: Not less than 10 years' experience in the actual production of metal fence systems.

PART 2: MATERIALS

2.01 FENCE SYSTEM

A. Components

1. Steel Framework

a. The steel material shall be zinc-coated steel strip, galvanized by the hot-dip process conforming to ASTM A653/A653M and the general requirements of ASTM A924/A924M.

b. The zinc used in the galvanizing process shall conform to ASTM B6. Weight of zinc shall be determined using the test method described in ASTM A90 and shall conform to the weight range allowance for ASTM A653, Designation G-90.

c. The framework shall be manufactured in accordance with commercial standards to meet the strength (50,000 psi minimum yield strength) and coating requirements of ASTM F1043, Group IC, Electrical Resistance Welded Round Steel Pipe, light industrial weight.

d. The exterior surface of the electrical resistance weld shall be recoated with the same type of material and thickness as the basic zinc coating.

e. The strength shall conform to the requirements of ASTM F1043; the minimum weight shall not be less than 90% of the nominal weight (see Table 1). The strength of line, end, corner and pull posts shall be

determined by the use of 4' or 6' cantilevered beam test. The top rail shall be determined by a 10' free-supported beam test (Table 1).

An alternative method of determining pipe strength is by the calculation of bending moment (Table1). Conformance with this specification can be demonstrated by measuring the yield strength of a randomly selected piece of pipe from each lot and calculating the section modulus. The yield strength shall be determined according to the methods described in ASTM E8. For materials under this specification, the 0.2 offset method shall be used in determining yield strength. Terminal posts, line posts and top/bottom rails shall be precut to specified lengths.

2. Fence Fabric

   a. The material for chain link fence fabric shall be manufactured from galvanized steel wire. The weight of zinc shall meet the requirements of ASTM F668, Table 4. Galvanized wire shall be PVC-coated to meet the requirements of ASTM F668.

   b. Selvage: Top edge and bottom edge shall be knuckled.

   c. Wire Size: 0.148" (9 gauge)

   d. Mesh Size: 2"

   e. Vinyl Coating - The class of the fence fabric shall be Class 2B - Fused and Bonded. Color by the Town.

   f. Privacy slats – Color by Town

   g. Height: The fabric height shall be as specified on the Contract Drawings.

3. Gate Frames

Swing gates shall be manufactured to meet the requirements of ASTM F900. Gates shall be constructed of tubular members welded at all corners or assembled with corner fittings. Where corner fittings are used gates shall have 3/8 inch nominal diameter truss rods to prevent sag or twist. Gate leaves shall have vertical intermediate bracing so that no vertical members are more than 8 feet apart. Gate leaves over 10 feet long shall have a horizontal brace or a 3/8 inch nominal diameter diagonal truss rod. Gate leaves over 16 feet shall have both a horizontal brace and a 3/8 inch nominal diameter truss rod.

4. Gate Hinges

   Hinges shall be weldable steel, cast steel or malleable iron 180° offset industrial type. 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. Hinges shall be galvanized in accordance with NYSDOT Standard Specifications §719 Type I.

5. Gate Latches

   Latches, stops and keepers shall be provided for all gates. Latches shall have a plungerbar arranged to engage the center stop, except that single left gate openings with an opening of less than ten (10) feet may use a forked latch. Latches shall be arranged for locking and the Contractor shall provide a lock with triplicate keys for each gate. Center stops shall consist of a device arranged to be set in concrete and to engage a plunger-bar of the latch of double leaf gates. No stop is required.

TABLE 1

Fence Industry	Decimal O.D. Equivalent		Pipe Wall Thickness		Weight		Section Modulus	x	Min. Yield Strength	=	Max. Bending Moment	Calculated Load (lbs.)		
												10' Free	Cantilever	
O.D.	Inches	(mm)	Inches	(mm)	lb./ft.	(kg/m)	Inches		psi		lb. in.	Supported	4'	6'
1-3/8"	1.315	33.40	.080	2.03	1.06	1.57	.0900	x	50,000	=	4,500	150	N/A	N/A
1-5/8"	1.660	42.16	.085	2.16	1.43	2.13	.1574	x	50,000	=	7,870	262	164	109
2"	1.900	48.26	.090	2.29	1.74	2.59	.2208	x	50,000	=	11,040	N/A	230	154
2-1/2"	2.375	60.33	.095	2.41	2.32	3.45	.3734	x	50,000	=	18,670	N/A	389	259
3"	2.875	73.03	.111	2.82	3.26	4.85	.6365	x	50,000	=	31,825	N/A	663	442

TABLE 2

Finished Gauge	Finished OD (NOM)	Core Diameter (NOM)	PVC Coating Thickness	Mesh Sizes Available	Fabric Extrusion Type	Minimum Breaking Strength
8	.162 (4.11 mm)	.120 (3.05 mm)	.015 - .025 (0.38 - 0.64 mm)	2 (50 mm); 1-3/4 (44 mm); 1 (25 mm)	CLASS 1, 2A	850#
9	.148 (3.76 mm)	.097 (2.46 mm)	.015 - .025 (0.38 - 0.64 mm)	2 (50 mm); 1-3/4 (44 mm); 1-1/4 (32 mm); 1 (25 mm)	CLASS 1, 2A	650#

PART 3: METHOD

3.01 INSTALLATION

A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions, and as shown on the structural design shop drawings and details shown on the Contract Drawing.

B. All posts shall be set vertically and to the required grade and alignment. Cutting of the tops of the posts will be allowed only with the approval of the Engineer and under the Engineer's specified conditions.

C. When the plans require that the posts, braces, or anchors be embedded in concrete, the Contractor shall install temporary guys or braces as may be required to hold the posts in proper position until such time as the concrete has set sufficiently to hold the posts. Unless otherwise permitted, no materials shall be installed on posts or strain placed on guys and bracing set in concrete until seven days have elapsed from the time of placing the concrete.

D. Line posts shall be spaced equidistant in the fence line at the spacing shown on the plans, standard sheets or as directed by the Engineer. End, corner, and intermediate posts shall be placed at the locations indicated on the plans, standard sheets or as directed by the Engineer, and shall be braced as shown on the plans or standard sheets.

E. All posts shall be set vertically and to the required grade and alignment. Cutting of the tops of the posts will be allowed only with the approval of the Engineer and under the Engineer's specified conditions.

F. Vinyl privacy slats shall be installed as per the manufacturer's specifications and where shown on the Contract Drawings.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Metal Fence and Gates will be measured per linear foot of exposed fence along the center of the fence including posts, connections, roll gates and privacy slats. The Engineer's estimate of quantity of fencing for comparing bids is approximate and is based on field measurements. The aforesaid quantity may be adjusted as required by the Work.

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Unit Price** bid and shall be installed at the locations shown on the Contract Drawings. This work shall include the cost of furnishing all labor, materials, (fence system – gates, posts, slats, caps, latches, hinges, bolts or other connections), and equipment including but not limited to excavation, select backfilling and compaction, concrete, removal and disposal of surplus material and any incidental work required to complete the work in accordance with the Contract Drawings and Specifications, to the satisfaction of the Engineer or Town.

Payment shall be made for the following work Items as listed on the Itemized Proposal & Project Bid Sheet:

0904.1	**Backstop Fence**
0904.2	**4' High Fence**
0904.3	**6' High Fence**

END OF SECTION

SECTION 0905

PAVEMENT MARKINGS

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish, supply, and install all pavement markings in accordance with the Contract Drawings and Manufacturers Specifications.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0206 Gravel Parking Area
B. Section 0301 Asphalt Pavement
C. Section 0402 Cast-In Place Concrete Curbs
D. Section 0904 Metal Fences and Gates
E. Section 0906 Site Restoration
F. Section 0907 Traffic Signs

1.03 REFERENCES

A. "National Manual of Uniform Traffic Control Devices," New York State Department of Transportation Supplement;" (MUTCD);

B. New York State Department of Transportation Internet Site "Work Zone Traffic Control Manual" (WZTCM);

1.04 DEFINITIONS

THIS SECTION LEFT BLANK

1.05 SUBMITTALS

A. Specifications

1. Paint: Supply specification from manufacturer for paint with produce analysis.

B. Quality Control Submittals:

1. Certificates: Affidavit required under Quality Assurance Article.

1.06 QUALITY ASSURANCE

A. Certification: Affidavit by the paint applicator, certifying that the materials comply with the current regulatory requirements in effect at the time products were delivered and applied.

1.07 PROJECT CONDITIONS

A. Perform the painting operations after working hours, on weekends or at such time so as not to interfere with the flow of traffic. Provide temporary barriers to prevent vehicles from driving over newly painted areas.

B. Apply paint on dry pavement surface, when the air temperature is above 40º F.

PART 2: MATERIALS

2.01 MATERIALS

A. Paint: DOT Section 640-2, yellow or white as indicated, or if not indicated as directed. Delete reference to Glass Beads.

B. Rapid Dry Paint:

1. Aexcel Corp., www.aexcelcorp.com, 72W-A042 White, 72Y-A082 Yellow, 72L-A002 Blue
2. Rust-Oleum Professional, www.homedepot.com, Model # 2526402, 2526 Handicap Blue.
3. Franklin Paint Company, Inc., www.franklinpaint.com, 2014 White, 2015 Yellow.

PART 3: METHOD

3.01 PREPARATION

A. Remove dust, dirt, and other foreign material detrimental to paint adhesion.

B. Mark layout of stripes and lines with chalk or paint.

3.02 APPLYING PAVEMENT MARKING

A. Apply paint in accordance with DOT Section 640-3.02, except as follows:

1. Delete references to Glass Beads.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

THIS SECTION LEFT BLANK

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** bid installed in place as per the plans and specifications and shall include the cost of furnishing all labor, materials and equipment including but not limited to striping, makings, symbols, text designations and any incidental work required to complete the work in accordance with the plans and specifications, to the satisfaction of the Engineer or Town.

END OF SECTION

SECTION 0906

SITE RESTORATION

PART 1: WORK

1.01 DESCRIPTION

Under this Work the Contractor shall furnish and supply all materials, labor and equipment necessary to restore the site as specified under this section and within the limits shown on the Contract Drawings and as directed by the Engineer or Town. The work shall include but not be limited to all removal and replacement of existing asphalt, removal and cleaning of spalled concrete, patching of cracks and spalls in concrete, overlay coatings on asphalt and concrete, lines and striping, rough and fine grading, topsoil, seeding and fertilizing, soil preparation, and tree planting to complete the project in accordance with the Contract Documents and to the satisfaction of the Town.

Included in this item of work are the following Work Items:

Item No.	
0906.1	**Reconstruction of the Basketball Courts**
0906.2	**Rehabilitation of the Handball Courts**
0906.3	**Topsoil & Seeding**
0906.4	**Landscape and Plantings**
0906.5	**Tree Planting**
0906.6	**Stone Retaining Wall**
0906.7	**Brick Pavers**
0906.8	**Grass Pavers**
0906.9	**Gravel Path**
0906.10	**Pickleball Courts – Playing Surface**

Item 0906.1 Reconstruction of the Basketball Courts: The following work is included in this work item:

a. Final Grading
b. Playing Surface - Acrylic Overlay (Color by the Town)
c. Lines

Under this work item, the Contractor shall reconstruct the basketball courts as shown on the Contract Drawings and these specifications. This work shall include items a, b, & c as specified above. The work shall not be limited to select fill, base material, acrylic paint, final grading, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town. The asphalt surface shall be paid under Item # 0301.4

Item 0906.2 Rehabilitation of the Handball Courts: The following work is included in this work item:

a. Patching & Cleaning
b. Vertical Concrete Overlay – Color by Town
c. Sealing
d. Playing Surface - Acrylic Overlay & Color Coat (Color by the Town)
e. Lines
f. Fencing – 3' High

Under this work item, the Contractor shall rehabilitate the existing handball courts as shown on the Contract Drawings and these specifications. This work shall include items a, b, c, d, e & f as listed above. The work shall not be limited to cleaning, patching, concrete overlay, base material, acrylic paint, final grading, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town. The asphalt surface shall be paid under Item # 0301.4

Item 0906.3 Topsoil & Seeding: Under this work item, the Contractor shall furnish and install grass seed and wildflower seed or hydroseed/hydromulch within the limits shown on the Contract Drawings and as specified in the specifications. This work shall include and not be limited to rough grading, fine grading, topsoil, mulch, grass seed, wildflower seed, hydroseed/hydrmulch, erosion blankets, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

Item 0906.4 Landscaping & Plantings: Under this work item, the Contractor shall furnish and install landscape areas and plantings to the limits shown on the Contract Drawings and as specified in the specifications. This work shall include and not be limited to plantings, topsoil, peat moss, mulch, decorative rock, seed, final grading, and removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

Item 0906.5 Tree Planting: Under this work item, the Contractor shall furnish and install all trees as shown on the Contract Drawings and as specified in the specifications. This work shall include and not be limited to topsoil and seed, peat moss, final grading, decorative rock, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

Item 0906.6 Stone Retaining Wall: Under this work item, the Contractor shall construct a stone retaining wall as shown on the Contract Drawings and as specified. This work shall include and not be limited to excavation, crushed stone, washed gravel, perforated pipe, mortar mix, backfill, fine grading, topsoil and seed, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

Item 0906.7 Brick Pavers: Under this work item, the Contractor shall furnish and install a brick pavers as shown on the Contract Drawings and as specified. This work shall include and not be limited to excavation, compaction, base material, brick pavers, backfill, fine grading, topsoil and seed, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

Item 0906.8 Grass Pavers: Under this work item, the Contractor shall furnish and install a grass pavers as shown on the Contract Drawings and as specified in the specifications. This work shall include and not be limited to excavation, compaction, base material, grass pavers, infill, backfill, fine grading, topsoil and seed, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

Item 0906.9 Gravel Path: Under this work item, the Contractor shall furnish and install a gravel path as shown on the Contract Drawings and as specified in the specifications. This work shall include and not be limited to excavation, compaction, base material, native gravel, backfill, fine grading, topsoil and seed, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town.

Item 0906.10 Pickleball Courts – Playing Surface: The following work is included in this work item:

a. Playing Surface - Acrylic Overlay and Color Coat (Color by the Town)
b. Lines

Under this work item, the Contractor shall construct the pickleball courts as shown on the Contract Drawings and these specifications. This work shall include items a & b as specified above. The work shall not be limited acrylic paint, final grading, removal of surplus material and cleaning up at the locations shown on the Contract Documents or as directed by the Engineer or Town. The asphalt surface shall be paid under Item # 0301.3

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0103 Erosion and Sediment Control
C. Section 0201 Earthwork
D. Section 0202 Unclassified Excavation
E. Section 0205 Nature Trail
F. Section 0206 Gravel Parking Area
G. Section 0301 Asphalt Pavement
H. Section 0401 Cast-In-Place Concrete
I. Section 0402 Cast-In-Place Concrete Curbs
J. Section 0501 Water Main
K. Section 0502 Force Main
L. Section 0503 Copper Water Service
M. Section 0601 Drainage Conveyance System
N. Section 0603 Furnish and Install Sanitary Sewers
O. Section 0701 Precast Concrete Catch Basins
P. Section 0702 Precast Concrete Manholes
Q. Section 0703 Sewage Pumping Station
R. Section 0704 Stormwater Management System Basins (Pocket Wetlands)
S. Section 0801 Site Lighting
T. Section 0802 Building Services – General Plumbing & Electrical Work
U. Section 0803 Athletic Field Lighting
V. Section 0901 Synthetic Turf Preparation
W. Section 0902 Outdoor Equipment
V. Section 0903 Dugouts
X. Section 0904 Metal Fence & Gates
Y. Section 0907 Traffic Signs
Z. Section 0908 Timber Guard Rail

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society of Testing and Materials (ASTM) standards, latest editions.

B. School Construction Authority Standard Specifications & Details

C. National Federation of State High School Association (NFSHSA).

D. New York State Department of Environmental Conservation – 6NYCRR PART 375

E. American Joint Committee on Horticultural Nomenclature Standard: Standardized Plant Names, Latest Edition.

F. American Association of Nurserymen., Inc. Standard: American Standard for Nursery Stock, ANSI Z60.1 Latest Edition.

1.04 SUBMITTALS

A. Shop Drawings: manufacturer's product data and samples for all materials supplied, layouts, and manufacturers installation instructions. Machine duplicated copies of Contract Drawings will not be accepted. Included under this specification are the following required submittals:

1. Vertical Concrete Overlay - Submit product data and manufacturer's installation instructions for the system.

2. Acrylic Overlay Paint - Submit product data and manufacturer's installation instructions for the system.
3. Court lines and Markings - Submit "Line Layout Drawing" prior to applying line markings.

4. Basketball Court layout

5. Pickleball Court layouts

6. Plantings & Trees:

   a. Manifests or delivery tickets for all plant material delivered to site.

   b. Certification: Submit certificates of inspection as required by governmental authorities, and manufacturer's or vendor's certified analysis for soil amendments. Submit other data substantiating that materials comply with specified requirements.

   c. Planting Schedule: Submit planting schedule showing schedule dates for each type of planting in each area of site. Schedule is subject to modification by the Engineer, Landscape Architect, or Town in accordance with accepted horticultural practice.

B. Samples

1. Topsoil - 5-pound sample along with an independent lab test result indicating the particle size analysis of the material specified. All test shall be performed in accordance with ASTM F1632

2. Samples

   a. Submit color samples of each type and color of acrylic overlay on asphalt base.

   b. Submit color samples of each type and color of line marking.

   c. Submit a sample of the brick and grass paver.

   d. Submit a sample of the native stone and decorative rock for the paths.

1.05 QUALITY CONTROL

A. Manufacturer/Fabricator: Minimum of 3 years successful experience in the manufacture/fabrication of the type of equipment specified.

B. Installer: Minimum of 3 years successful experience in construction of basketball courts.

C. Acrylic Overlay Applicator: Company performing the Work of this Section shall have had a minimum of three years' experience and at least three projects with similar square footage of placement.

D. Line Markers: Personnel with a minimum of three years' experience.

E. Ship landscape materials with certificates of inspection required by governing authorities. Comply with regulations applicable to landscape materials.

1. Do not make substitutions. If specified landscape material is not obtainable, submit a proof of non-availability and proposal for use of equivalent material. When authorized, adjustment of contract amount will be made. Analysis and Standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

F. Trees and Shrubs: Provide trees and shrubs grown in a recognized nursery in accordance with good horticultural practice. Provide healthy, vigorous stock free of disease, insects, eggs, larvae and defects such as knots, sun-scald, injuries, abrasions or disfigurement.

G. Sizes: Provide trees and shrubs of sizes shown or specified. Trees and shrubs of larger size may be used if acceptable to Architect, and if sizes of roots or balls are increased proportionately.

H. Inspection: Owner reserves right to inspect trees and shrubs either at place of growth or at site before planting for compliance with requirements for name, variety, size and quality. Contractor shall notify Architect when all plants are tagged at the nursery and ready for inspection.

1.06 QUALITY ASSURANCE

A. Regulatory Requirements - Town of Yorktown: Work of this Section shall conform to all requirements of the Town of Yorktown, Department of Parks and Recreation regulations and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Town of Yorktown, Department of Parks and Recreation regulations are given in this Section, the requirements of this Section shall govern.

B. The Contractor shall guarantee an 80% survival rate of all vegetation for one (1) year. In lieu of a bond, The Town will retain five percent (5%) of the payment for this item. The retainer will be returned to the Contractor at the end of one (1) year.

C. NYS Department of Environmental Conservation - Part 205 on "Architectural Surface Coatings" - for Volatile Organic Compounds (VOC).

D. Do not perform application during rain, if rain is imminent, or if the surface is wet or covered with frost. Air temperature during application must be 50°F and rising.

E. Subcontract landscape work to a single firm specializing in landscape work.

F. Field Example: Prior to construction of the stonewall, construct a wall panel at the site. When approved, the panel will be the standard of workmanship required for all stonework constructed of the same materials.

1. Start a section of wall panel 5 feet long by 3 feet high by full wall thickness, showing the approved color range, bond, mortar joints, exposed surfaces conditions, and workmanship.

2. Do not start stonework until the example panel has been approved by the Town.

1.07 DELIVERY, STORAGE AND HANDLING

A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.

B. Trees and Shrubs: Provide freshly dug trees and shrubs. Do not prune prior to delivery. Do not bend bind- tie trees of shrubs in such manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery.

C. Deliver trees and shrubs after preparations for planting have been completed and plant immediately. If planting is delayed for more than six (6) hours after delivery, set trees and shrubs in shade and protect from weather and mechanical damage; keep roots moist

D. Do not remove container grown stock from containers until planting time.

E. Label at least one (1) tree and one (1) shrub of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

PART 2: PRODUCTS AND MATERIALS

2.01 MANUFACTURERS

A. Concrete Vertical Overlay – Surecrete Design Products, 15246 Citrus County Drive, Dade City, Florida 33523, www.SURECRETEDESIGN.com

1. Refer to the Manufactures Specifications contained herein at the end of this section.

B. Acrylic Overlay

1. California Products Corporation, Andover, MA. "Plexipave" system.

2. Nova Sport USA, Milford, MA. "Novacrylic Combination Surface" system.

3. SportMaster Sport Surfaces, Sandusky, OH. "SportMaster Color Concentrate" system; including Acrylic Patch Binder C1480, Acrylic Resurfacer C1300, "Color Concentrate With Sand" filler coat, and "Color Concentrate" finish coat.

C. Court Lines and Markings

1. Sherwin Williams (800 524-5979) for markings on resilient surfacing and asphaltic concrete pavement. Latex traffic marking paint such as Setfast Latex Traffic Marking paint by Sherwin Williams, or preformed thermoplastic marking coating by Surface Signs.

2. California Products Corp. (800 225-1141) for markings on athletic wearing surface. 100% acrylic latex paint such as Plexicolor by California Products Corp.

3. Surface Signs (718 507-5437) for markings on asphaltic concrete pavement.

4. SportMaster Sport Surfaces, Sandusky, OH. "SportMaster Color Concentrate" system; including Acrylic Patch Binder C1480, Acrylic Resurfacer C1300, "Color Concentrate With Sand" filler coat, and "Color Concentrate" finish coat.

D. Brick Pavers: Hollandstone by Unilock or approved equal. Color – Rustic Red

E. Grass Paver System - CORE Systems, Tel: 1.855.777.2673 (CORE)
E-mail: info@coregravel.ca

F. Expansion Joints: Sika Corporation, 201 Polito Avenue Lyndhurst, NJ 07071, Tel: 800-933-7452.

2.02 TREES AND PLANTINGS

A. Provide trees, shrubs and other plants complying with recommendations and requirements of ANSI Z60.I "Standard for Nursery Stock" and as specified.

B. Evergreen Trees: Provide trees of height and caliper listed or shown and with branching configuration recommended by ANSI Z60.I for type and species required. Provide single stem trees except where special forms are shown or listed.

1. Provide balled and burlapped (BB) evergreen trees.

2. Container grown deciduous trees will be acceptable in lieu of balled and burlapped deciduous trees subject to specified limitations of ANSI Z60.I for container stock.

C. Deciduous Trees : Provide trees of height and caliper listed

1. Provide balled and burlapped (BB) deciduous trees.

2.03 TOPSOIL AND FERTILIZER

A. Topsoil furnished from off the site shall be natural, fertile, friable agricultural soil, capable of sustaining vigorous plant growth, free from stones, roots, sticks, and other foreign substances and shall pass a 1/4-inch screen.

B. The topsoil shall have an acidity range of pH 5.0 to pH 7.0 and shall contain not less than 6 percent organic matter.

C. Topsoil (loam) shall contain between 7 and 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

D. The Engineer reserves the right to reject any topsoil with too high a percentage of clay.

E. Fertilizer - All fertilizers (either granular or liquid) shall be uniform in composition, free flowing and suitable for application with approved equipment. Fertilizers shall be delivered to the site fully labeled, according to applicable fertilizer laws and shall bear the name, trade name or trademark, and warranty of the producer or manufacturer.

i. Shall be as follows: 100% organic: (15-0-10) shall be applied as per label directions. All fertilizer shall be phosphorus free.

ii. Low pH Correction Materials: Lime material shall be ground limestone (hydrated or burnt lime may be substituted), which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Ground limestone shall be ground to such fineness that at least 50% shall pass through an IDO-mesh sieve and 98% to 100% shall pass through a 20-mesh sieve.

2.04 GRASS SEED

A. The seed used on this project shall be fresh, re-cleaned and of the latest crop year.

B. The seed shall conform to Federal and state standards.

C. Each type of grass in the mixture shall meet or exceed the minimum percentage of purity and germination listed for that type of grass with a maximum weed content of 0.1 percent.

The table below presents the suggested seed mixture to be used on this Project. A turf grass specialist may submit variations from these suggestions subject to the Engineers review. The suggested mixture listed shall be provided if the Engineer does not review a variation.

% by Weight	Variety	Purity %	Germination
50	Kentucky Blue Grass	85	80
20	Red or Chewing Fescue	97	80
30	Red Top	92	90
100	---	---	---

2.05 WILDFLOWER SEED

A. NEW ENGLAND WILDFLOWER MIXTURE

1. This mixture contains a selection of native wildflowers and grasses that ensures a variety of species.
2. Application rate 23 LBS per acre.
3. Fertilization of rootzone is NOT required.
4. Seed is available from New England Wetland Plants, Inc., 820 West Street, Amherst, MA 01002 Phone (413) 548-8000, Fax (413) 549-4000, info@ newp.com.

2.06 WALL STONE

A. Sound natural site stone in range of sizes required by the Work. It is the intent to re-use excavated site stone and rock.

2.07 MORTAR TYPES

A. Type S: For setting stonework.

B. Type N: For pointing stonework.

C. Cement: One of the following complying with the indicated requirements:

1. Portland Cement: ASTM C 150, Type 1, of natural color or white as required to produce the desired color.
2. Masonry Cement: ASTM C 91, of natural color or custom color as required to produce the desired color.

D. Hydrated Lime: ASTM C 207, Type S.

E. Mortar Sand: ASTM C 144, except that for joints less than 1/4 inch thick use sand graded with 100 percent passing the No. 16 sieve.

PART 3: METHOD

3.01 AREAS AND FEATURES TO BE RESTORED

A. All areas, including natural and artificial features occurring thereon, which are damaged or disturbed by the Contractor's operations, shall be restored, repaired or replaced to the same or superior condition which existed prior to construction unless otherwise shown on the Contract Drawings.

B. Grassed or lawn areas shall be dressed with topsoil, raked, fertilized, seeded, mulched, and maintained as specified in later part. Existing cultivated or landscape items such as trees, shrubs, hedges, saplings, vines, ground cover vegetation, etc., shall be reestablished or replaced with new materials.

C. Walls, fences, ditches, drains, culverts, roadways, drives, posts, and all other artificial features shall be repaired, restored or replaced to the same or superior condition which existed prior to construction.

3.02 AREAS TO BE DEVELOPED

A. When the project site is to be modified and developed to meet new conditions, the Contractor shall perform all required grading, top soiling, fill, fertilizing, seeding, planting, mulching of construction and maintenance of areas, all in accordance with the Contract Drawings and as specified herein. This includes and shall not be limited to landscape areas shown, basketball courts, pickle ball courts, soccer fields, parking area etc. including all excavation and grading, plants, soil mixes, and geotextiles required to meet that specified in the Contract Documents.

3.03 RECONSTRUCTION OF BASKETBALL COURTS

A. This work shall be limited to reconstruction of the basketball courts. All work shall be in accordance with NCAA and as shown on the Contract Drawings. Materials furnished under this work shall meet the requirements specified under Item 0203 and Item 0204. Sub base material shall be compacted to 90% of the maximum dry density as specified by a Standard Proctor Test (ASTM D 689).

B. The compacted subgrade shall be installed in accordance with the final slope and shall mirror finish grade in order to ensure an: even depth of material once placement has occurred.

C. Place the material in 8" lifts and compact with a 10-ton vibratory compactor until an optimum compaction of 90 % of maximum dry density as specified by a Standard Proctor Test (ASTM D 689). Scarify the surface to facilitate bonding of the next lift and repeat until finish grade elevation is achieved.

D. Watering/Dewatering: The Contract shall add water or dry the soil as necessary to achieve the optimum moisture content and optimum compaction.

E. Grading

1. Finish grading shall be accomplished using a laser device that allows accuracy to +/- 1/8 inch. A slope of 1/2 percent to 1 percent shall be placed on the infield surface in order to facilitate drainage.

2. The finished surface of the infield shall be smooth and free from any visible dips, humps, bumps or other blemishes which would hinder the removal of water through positive surface drainage.

3. The Contractor shall perform an as-built survey of the finished field showing all elevations and improvements.

F. Apply Acrylic Overlay – See Section 3.06

3.04 REHABILITATION OF HANDBALL COURTS

A. Prior to any work clean the wall faces. Specifically, powerwash and clean off painted graffiti and clean out cracks and spalled areas.

B. After properly drying follow the Contract Drawings to repair all cracks and spalls.

C. Next apply Surecrete as per manufacturers specifications included at the end of this section. The Town shall select color pigment of product.

1. A minimum of 2 coats is required (Base + Finish). Each coat shall be 3/16" in thickness.

2. Smooth finish

3. Seal

D. Resurface asphalt base area as per Contract Drawings. Install Tensar GlasGrid CG100L over existing asphalt. Place 2" asphalt overlay. This work shall be paid under Item # 0301.4

E. Apply acrylic overlay and lines as per Contract Drawings. Colors to be provided by Town. See Item 3.04 for details of applying overlay.

F. Apply new expansion joint material: Sikaflex – 1a

G. Lines

3.05 PICKLEBALL COURT – PLAYING SURFACE

A. This work shall be limited to the playing surface of the pickleball courts.

B. The finished surface of the pickleball courts shall be smooth and free from any visible dips, humps, bumps or other blemishes which would hinder the removal of water through positive surface drainage.

C. Apply Acrylic Overlay – See Section 3.06

D. Lines

3.06 ACRYLIC OVERLAY

The materials and execution methods described below are based on the "SportMaster" ColorPlus™ System in order to establish a basis of design, performance and quality. The Color Plus System consists of resurfacer layer, color coat and lines. Adjust materials and execution methods as required to conform to written installation procedures of other manufacturers.

A. Protection: Protect adjacent surfaces not to receive coating during application.

B. Surface Preparation - Allow the asphaltic concrete base to cure and the oils to dissipate to a degree acceptable to the manufacturer (a minimum of 14 days) prior to commencement of the surfacing procedure. Clean area to be surfaced of any lose or foreign particles (dirt, oil, and other contaminants) prior to commencement of work.

C. Mix ingredients in a suitable container.

D. Patch depressions and irregularities as follows:

1. Apply tack coat to depressions to be patched and allow to dry.

2. Fill depression with the Court Patch Binder and allow to cure.

3. After patching, the surface shall not vary more than 1/8" in 10 feet measured in any direction.

E. Application – See SportMasters Manufacturer's Installation Instructions at the end of this specification.

F. Color Coat - See SportMasters Manufacturer's Installation Instructions at the end of this specification.

1. Surface shall have a uniform appearance and be free of ridges and tool marks.

G. Playing Lines: Lines will be applied under Specification Section 201. Allow a minimum of 4 hours after finish coat is placed before lines are painted.

3.05 FINE GRADING

A. Areas requiring topsoil shall be fine graded to within 4 inches of finished grade to provide a minimum compacted thickness of 4 inches of topsoil at all locations.

All such areas, whether in cut or fill, shall be raked to a depth of one (1) inch, be parallel to finished grade as shown or required, and shall be free of all stones, roots, rubbish, and other deleterious material.

3.06 TOP SOILING

A. Topsoil shall be furnished and spread in the required areas to a minimum depth of 4 inches.

B. Stockpiled topsoil may be used if it is acceptable to the Town. In the event this topsoil is not satisfactory, or is inadequate to cover the required areas, the Contractor shall furnish the required amount of satisfactory topsoil from approved sources off the site.

C. Tilling: After the area(s) to be top soiled have been brought to grade, compacted where necessary and immediately prior to the dumping and spreading of topsoil. The subgrade shall be loosened by disking or by scarifying to a depth of at least 2 inches (50 mm) to permit bonding of the topsoil to the subsoil.

D. Topsoil shall not be delivered or placed in a muddy condition. The soil shall be uniformly compacted with a light hand roller to a final depth of not less than 4 inches. When finished, the surface shall conform to the finished grades shown or required and shall have a smooth pulverized surface at the time of seeding. Any irregularities shall be corrected before the fertilizer and seed are placed. Any subsequent settlement or displacement of the topsoil shall be restored to an acceptable condition at the Contractor's expense.

3.07 FERTILIZING

A. The fertilizer shall be uniformly spread by a mechanical spreader at the rate of 25 pounds per 1,000 square feet.

   i. The fertilizer shall be incorporated into the upper 2 inches of topsoil immediately after spreading. Fertilizer shall be 100% organic: (15-0-10) shall be applied as per label directions. All fertilizer shall be phosphorus free.

3.08 SEEDING

A. Seed shall be applied at a rate of not less than 5 pounds per 1,000 square feet, using a mechanical spreader.

B. All seed furnished under this item shall be delivered in standard size, unopened bags of the vendor, showing the weight, mixture, vendor=s name and guaranteed analysis.

C. Seed shall be properly stored by the Contractor at the site of the contract and any seed damaged during storage shall be replaced by him.

D. Seeding is to be done in dry or moderately dry soil and at times when the wind velocity does not exceed 5 mile per hour.

E. After the finished grading is completed and just before seeding, the areas to be seeded shall be loosened to a depth of 1 inch and raked to true lines, free from all variations, bumps, ridges and depressions which will hold water.

F. All sticks, stones, roots, or other objectionable materials, which might interfere with the formation of the fine seed bed, shall be removed from the soil.

G. Upon completion of the seeding, the area shall be raked lightly and rolled with a light hand roller.

H. The process of spraying grass seeds, water, fertilizer and mulch known as hydro-seeding or hydro-mulching may be utilized.

I. Presoaking, the spraying of the materials, and watering after spraying shall be in strict accordance with the manufacturer's instructions.

J. All materials, protection, maintenance, etc., shall be in conformance with this specification. The mulch may be a wood fiber material compatible with the spray equipment.

3.09 MULCHING, PROTECTION AND MAINTENANCE

A. The Contractor shall protect and maintain seeded and areas of sod to assure a full even stand of grass.

D. Immediately after seeding and rolling, the Contractor shall apply oat, wheat, or rye straw, free from noxious weeds, as a mulch to a loose depth of about one (1) inch. This is established as a minimum requirement for seeded areas. Where required by weather and/or site conditions the Contractor shall provide additional or anchored mulch as necessary to maintain the seedlings. The mulching shall be in accordance with the Standard Specifications for mulching, as included within the New York Guidelines for Urban Erosion and Sediment Control.

C. The Contractor shall perform all watering, mowing and reseeding as necessary for a minimum of 30 days, and until final acceptance of the Contract, to ensure the establishment of a uniform stand of specified grasses.

D. Any portion of the seeded areas failing to produce a full uniform stand of grass from any cause shall be reseeded at full rate and re-fertilized at one-half rate and protected and maintained until such a full stand has been obtained.

3.10 LAWN ESTABLISHMENT

A. Maintain the sod at heights between 1-1/2 and 2-1/2 inches. Include a minimum of 2 mowings.

B. Water sod as required for the duration of the contract. Provide 3 gallons per sq yd per watering. Apply fungicides or use any other horticultural operation necessary for proper establishment and maintenance of sodded areas.

C. Care for sodded areas until all Work of this Contract is completed and accepted.

E. Replace sod in areas which show bare spots, deterioration, or is otherwise deemed unacceptable by the Engineer or Town.

3.11 PLANTING

A. Before mixing, clean topsoil of roots, plants, sods, s1ones, clay lumps and other extraneous materials harmful or toxic to plant growth.

B. Mix specified soil amendments and fertilizers with topsoil at rates specified. Delay mixing of fertilizer if planting will no follow placing of planting soil within a few days.

C. For pit and trench backfill, mix planting soil prior to backfiilling and stockpile at site.

D. Prepared Topsoil (topsoil backfill mixture) for plan pits.

1. Prepared topsoil mixture for backfilling plant pits, beds and planters shall be mixed in a central location on the job site and transported to locations where soil mixture is to be used.

3.12 RESTORATION SCHEDULE

A. It is the intent of this Item to require vegetative restoration on all disturbed areas of earth, in which are disturbed as a result of this Contract, immediately following site disturbance requiring such restoration. This vegetative cover may consist of permanent restoration as specified or alternative temporary cover in accordance with the New York Guidelines for Urban Erosion and Sediment Control. In the event temporary cover is provided, all requirements for permanent restoration will still apply.

3.13 STONE RETAINING WALL

A. Just prior to setting stone, clean surfaces that support the work of this Section.

B. Clean stone before setting. Do not use tools which can mark or damage exposed surfaces.

C. Set stonework to a line and plumb, unless otherwise shown. Set stone in full mortar setting bed, and completely fill spaces between stones with mortar and spalls (except where spalls are restricted) laid in mortar.

D. Bond stonework in both directions. In the case of solid stone walls, there shall be at least one through bond stone for each 10 sq ft of superficial wall area.

E. Set and build in items required to be embedded in the stonework as the Work progresses. Fill space around built-in items with mortar.

F. Select and fit stones as required to form openings, chases, and pockets. Top of walls shall be laid to an even surface, unless otherwise shown.

G. Stone

1. Set stone in a coursed broken range, with arrises field dressed with a stone mason's hammer, and with arrises at jambs and corners dressed true.

2. Select stones for size and shape so that stonework can be laid up without the use of spalls in exposed faces of the Work.

3. Size and dress stone so that no stone with a superficial area of less than 16 sq inches will be exposed in the finished Work, and so the mortar joints will not exceed 3/4 inch in width.

4. Distribute the various sized stones throughout the Work in such a manner as to avoid a mechanical or patterned effect.

H. After mortar has set "thumb-print" hard, rake out exposed joints 5/8 to 3/4 inch deep. Brush face of joints clean.

J. Except where joints are to be pointed with sealant, wet the raked joints and fill full with pointing mortar. Pack and work mortar into voids. Neatly finish surface to flush tooled joint.

K. Remove excess mortar on exposed surfaces of stonework as the Work progresses before the mortar has set.

L. Clean soiled areas with stone cleaner or by other approved method. Use non-metallic tools. Rinse with clean water.

3.14 BRICK PAVERS

A. Apply setting bed (sand or stone dust) over NYSDOT subbase to indicated thickness.

B. Lay brick pavers according to indicated pattern. Avoid surface irregularities by checking with a straight edge at regular intervals.

1. Cut brick with motor-driven saw equipment.

2. Use the largest size brick units possible. Avoid the use of small pieces of brick or large mortar areas.

C. Pack joints full with sand fill as per paver manufacturer's installation instructions.

3.15 GRASS PAVERS

A. Grass pavers shall be installed as per manufacturer's specifications and procedures.

3.16 GRAVEL PATH

A. The subgrade shall be excavated to the required depth and prepared by fine grading and compacted. The edge of the prepared base shall be of constant parallel width and straight or smooth curves.

B. The base material shall be placed to and compacted to the depth as per the detail provided on the Contract Drawings.

C. The native gravel shall then be placed over the base at the specified depth. The stone shall be leveled to as even a grade as possible.

PART 4: MEASUREMENT AND PAYMENT

4.01 DESCRIPTION

The cost for the work under this item shall be at the **Unit Price** or **Lump Sum** bid as shown on the **Itemized Proposal & Project Bid Sheets** and shall include the cost of all labor, laboratory testing, materials and equipment necessary to complete the work specified under this section and as listed below within the limits shown on the Contract Drawings and as directed by the Engineer or Town. The price bid for the work specified below (0906.1, 0906.2, 0906.3, 0906.4, 0906.5, 0906.6, 09006.7, 0906.8, 0906.9 & 0906.10) shall include the cost of all labor, equipment and materials specified herein to restore the site in accordance with the Contract Drawings and Specifications.

Item No.	
0906.1	**Reconstruction of the Basketball Courts**
0906.2	**Rehabilitation of the Handball Courts**
0906.3	**Seeding**
0906.4	**Landscape and Plantings**
0906.5	**Tree Planting**
0906.6	**Stone Retaining Wall**
0906.7	**Brick Pavers**
0906.8	**Grass Pavers**
0906.9	**Gravel Path**
0906.10	**Pickleball Courts – Playing Surface**

SURECRETE
DESIGN PRODUCTS

WWW.SURECRETEDESIGN.COM

OVERLAY BAG MIXES

TECHNICAL DATA SHEET

WALL SPRAY

TECHNICAL DATA SHEET

WALL SPRAY

DESCRIPTION

Wall Spray is a cement-based overlay designed for both interior and exterior vertical surfaces. It offers a wide variety of finishes from a simple knock-down to a sophisticated faux Venetian Plaster. ***Wall Spray*** may be applied by compressed air spray equipment and/or by trowel. Restoration, repair, resurfacing, architectural accenting, and surface protection of existing cladding are all realized through ***Wall Spray***. Typical areas include retention walls, entry/accent walls, columns, gable ends, fireplace accents, and any other vertical surfaces or walls. ***Wall Spray*** is formulated to provide excellent bonding to new as well as existing concrete, concrete block, ICF, polystyrene foam, drywall, plaster, plywood, and even painted surfaces.

SURFACE PREPARATION

The principles for surface preparation for Wall Spray are aligned with other cement-based vertical overlays, the substrate must be:

1. **Clean:** The surface must be free of dust, dirt, oil, grease, curing agents, efflorescence, chemical contaminants, rust, algae, mildew and other foreign matter that may serve as a bond breaker or prevent proper adhesion. Best results may be achieved through the use of ***SCR*** (see TDS).

2. **Cured:** Any concrete surface must be sufficiently cured to have complete hydration, approximately 7 – 14 days depending on temperatures and humidity.

3. **Sound:** No system should be placed on flaking paint or spalling concrete.

4. **Profiled:** Proper profile for concrete surface should follow the standard established by the International Concrete Repair

SURECRETE
DESIGN PRODUCTS

PACKAGING
40 lb. (18.1 kg) bag

MIXING RATIO
3.5 to 4 qts. (3.3—3.8 liter) water to 1 – 40 lb. (18.1 kg) bag of ***Wall Spray***
(optional) .5 pound (227 g) ***Color Pack*** – 30 standard colors (see ***Color Pack*** TDS)
**note will not match color chart*

COVERAGE
Depends upon application and substrate
1 - 40 lb. (18.1 kg) bag of ***Wall Spray***
@ ¼"(6.35 mm) = 28-30 ft² (2.6—2.8 m²)

DENSITY
121 pounds/ft³ (1938 kg/m³)

COMPRESSIVE STRENGTH ASTM C-109
28 day 2870 PSI (19788 kPa)

FLEXURAL STRENGTH ASTM C-348
28 day 950 PSI (6550 kPa)

TENSILE STRENGTH ASTM C-190
28 day 140 PSI (965 kPa)

ABRASION RESISTANCE
28 days %loss –500 cycles – <.40%

MOSAIC SHEAR ANSI A-118.4
28 day 275 PSI (1896 kPa)

WATER PERMEABILITY ASTM D2247
FREZE/THAW 50 cycles - Passes

SHELF LIFE
Under normal conditions: when kept dry and moisture free, out of direct sunlight, the shelf life of an unopened bag is

Mixing and handling

1. Add 3 ½ qts. (3.3 liter) water, to a 5 gal. (18.9 liter) pail.
2. Add ***Color Pack*** if desired.
3. Mix with a handheld concrete mixer, such as an Eibenstock model #EHR 20R or a ½" (12.7 mm) 450 – 600 rpm drill equipped with a cage mixing blade for a minimum of 15 seconds.
4. Slowly introduce ***Wall Spray*** into the pail with mixer running.
5. Scrape side of pail with a margin trowel to ensure all dry product is incorporated into the wet mix.
6. Continue to mix for a minimum of 1 minute after all ingredients are combined to achieve a lump-free consistency. Additional water may be added up to a total of 4 qt. (3.8 liter) water to 1 – 40 lb. (18.1 kg) bag.

Base Coat

All exterior ***Wall Spray*** applications are recommended to have a base coat. Base coats are most commonly sprayed on with compressed air spray equipment, but may also be applied with hawk and trowel.

Concrete, common substrates

1. Common setting for spray gun orifice is approximately ¼" (6.3mm).
2. Setting for air compressor should be approximately 8 ft³(.23m³) per minute at 40 psi (276 kPa) continuous.
3. Spray 100% coverage, leaving no bare spots, a minimum of 1/8-3/16" (3—5 mm) of material.
4. Depending upon desired finished texture, may or may not be troweled.

EFIS, foam, hard coat, or randomly cracked substrate (e.g. concrete block)

1. Minimum 4.5 oz. (127 g) standard fiberglass mesh is required.
2. Spray a minimum of 1/8-3/16" (3—5 mm) of material as a first pass.
3. Trowel the mesh into the wet base coat.
4. Spray a second pass to ensure mesh is completely encapsulated in base coat when troweled flat.

(Optional) Stencils and grout tape patterns

1. Stencils and tape patterns may be placed after scraping base coat, and prior to application of finish coat.
2. Stencils and tape patterns may be removed as soon as product dries sufficiently and prior to sealing.

Finish Coat

1. The base coat must dry sufficiently (minimum overnight). Longer dry times are required on concrete block to prevent joints from "ghosting" through the finish coat.
2. Scrape the surface of base coat and remove any loose material.
3. The finish coat applies as the base coat described above. Alterations of air pressure, spray gun orifice size, and trowel techniques will yield numerous pleasing finish coats.

Secondary coloring

Depending upon the application selected, ***Eco-Stain*** may provide aesthetic appeal to a project.
Refer to ***Eco-Stain*** TDS.

Sealing

To complete a ***Wall Spray*** project sealing is required. While multi-colored, "designer finishes" may seal clear, for the simple single color projects, use a good quality wall paint.
Excellent choices for sealer include:

- A good quality wall paint
- ***Super 20*** – clear 30% solids, 600 g/L solvent
- ***Super WB*** – clear 30% solids water based
- ***Super WB LL*** – clear low luster water based

Refer to the appropriate spec sheet for details.
*Note: never use a solvent based sealer on **Wall Spray** placed over a polystyrene foam substrate*

SUITABILITY SAMPLE

Due to condition specific sites, always prepare an adequate number of test areas. Wear protection system and aesthetic suitability for products' intended use should be included. On site sample approval is especially critical on substantial, heavy traffic situation or custom coloration.

CLEAN-UP

Before ***Wall Spray*** dries; spills and tools can be cleaned up with water.

DISPOSAL

Contact your local government household hazardous waste coordinator for information on disposal of unused product.

LIMITATIONS

For use by trained professionals that have read the complete SDS. A completed ***Wall Spray*** project requires a sealer. The sealer selected may have limitations that affect the finished system. Refer to the appropriate sealer TDS for details.

WARRANTY

Warranty of this product, when used according to the directions, is limited to refund of purchase price, or replacement of product (if defective), at manufacturer/seller's option. SureCrete Design Products shall not be liable for cost of labor or direct and/or incidental consequential damages.

CAUTIONS

KEEP OUT OF REACH OF CHILDREN. Inhalation: Avoid prolonged breathing of airborne dust, particularly present during mixing. Use NIOSH approved respirator for nuisance if threshold limit values are unsafe. Skin Contact: **Skin contact** may cause irritation. Remove contaminated clothing and wash affected skin with soap and water. Launder clothing **before reuse**. If symptoms persist, seek medical attention. **Eyes:** Wear safety eye protection when applying. Contact with eyes may cause irritation. Flush eyes with water for 15 minutes. If symptoms persist, seek medical attention.

SAFETY DATA SHEETS

The following are links to all available safety data sheets related to this product:

- bag mix wall spray sds.pdf

TECHNICAL DATA SHEET

SportMaster SPORT SURFACES

CMT - 3

Acrylic Resurfacer

Revised: 8/09

1. PRODUCT NAME:
Acrylic Resurfacer

2. MANUFACTURER:
ThorWorks Industries, Inc.
2520 S. Campbell St.
Sandusky, OH 44870
Phone: 800-326-1994
Fax: 419-626-5477
www.thorworks.com

Additional Plant Locations:
SealMaster has a nationwide network of manufacturing and distribution facilities.

Phone 1-800-395-7325 or visit www.sealmaster.net to find the location near you.

3. PRODUCT DESCRIPTION & BENEFITS:
SportMaster Acrylic Resurfacer is 100% acrylic emulsion resurfacer designed for on site mixing with silica sand. Acrylic Resurfacer reduces surface porosity allowing for application of an even, full depth color, playing surface.

4. USES:
SportMaster Acrylic Resurfacer is applied to asphalt or concrete surfaces in preparation for SportMaster color finish systems.

Color: Available in Black and Neutral.

5. SURFACE PREPARATION:
Pavement surface must be cleaned entirely of dust, dirt, debris and all loose materials. New asphalt must cure 30 days before application. Repair of pavement surface defects, depressions and cracks must be completed prior to application. All repairs must be flush and smooth to adjoining surfaces.

6. MIXING PROCEDURES:
• For Use As A Coating - Use the following mix design (based on 55 gallons of Acrylic Resurfacer for ease of calculation):

Acrylic Resurfacer	55 Gallons
Silica Sand (50 - 60 mesh)	800 lbs.
Water	33 Gallons

• For Use As A Patching Material - Acrylic Resurfacer may be modified with the following mix design. Patching Mix for applications up to 1/4" lifts:

Acrylic Resurfacer	10 Gallons
Water	5 Gallons
Sand	200 lbs.
Cement	1/2 Gallon

(Always mix cement thoroughly with a small amount of water before adding to patching mix)

NOTE: Silica Sand used in patching should be AFS fineness 30 to 40 mesh.

7. APPLICATION:
Apply Acrylic Resurfacer with a soft rubber squeegee. Apply successive coats in cross directions. Scrape all rough spots and ridges before applying the next coat. Apply one or two coats, depending on surface porosity and condition. Two coats are recommended on new or uncoated asphalt.

8. IMPORTANT:
Stir material thoroughly before using. Temperature must be a minimum of 50° F. and rising before application. Do not apply when rain is imminent or forecast. Keep from freezing. Close container when not in use.

9. DRYING TIME:
30 to 60 minutes under optimum drying conditions.

10. COVERAGE:
Yield calculations are based on undiluted gallons of SportMaster Acrylic Resurfacer and will vary according to surface texture and porosity within the limits below:

.07 to .09 gallons per square yard per coat.

11. CAUTIONS:
KEEP OUT OF REACH OF CHILDREN. Do not take internally. If swallowed, call a physician immediately. In case of contact with eyes, flush immediately with water for 15 minutes and call a physician. When not in use, keep containers tightly closed and upright to prevent leakage.

12. WARRANTY:
The statements made on this technical bulletin are believed to be true and accurate, and are intended to provide a guide for approved construction practices. Manufacturer does not make, nor does it authorize any agent or representative to make any warranty, express or implied, concerning this material as workmanship, weather, construction, equipment utilized

Chemical Characteristics

	% Weight (minimum)
Acrylic Emulsion	44.0
Hiding Pigment	2.0
Mineral Inert Fillers	5.0
Film Formers, Additives	.2
Water	45.0

Product Data

Type	Acrylic Emulsion
Pounds per Gallon @ 77° F.	8.5 ± .5
% Non Volatile Material	27.5 ± 5.0
Odor	Slight Ammonia
Flammability	Non-Flammable
Flash Point	None
Storage Life	One Year

Acrylic Resurfacer CMT-3

SealMaster August 2009 (Supersedes CMT-3 (7/04), CMT-3 (4/05)

SPORT SURFACING

Acrylic Resurfacer

and other variables affecting results are all beyond our control. Manufacturer warrants only that the material conforms to product specifications and any liability to the buyer or user of this product is limited to the replacement value of the product only. In no event shall Manufacturer be liable for any injury, loss or damage, either direct or incidental, special or consequential, however arising, in connection with material or equipment furnished or work performed. Manufacturer shall not, in any manner, be liable for any defects, variations or change in condition in the substructure over which its products are installed.

ThanWorks Industries, Inc.
P.O. Box 2277
Sandusky, OH 44870

Phone: 1-800-326-1994
FAX: 1-419-626-5477

www.sportmaster.net

SportMaster
SPORT SURFACES

Specifications for applying

SportMaster Color Coating Systems over asphalt tennis court surfaces

CMT - 24 Revised: 7/09

PRODUCT NAME:
SportMaster Color Coating Systems over asphalt tennis court surfaces

MANUFACTURER:
ThorWorks Industries, Inc.
2520 S. Campbell St.
Sandusky, OH 44870
Phone: 800-326-1994
Fax: 419-626-5477
www.thorworks.com

Additional Plant Locations: SealMaster has a nationwide network of manufacturing and distribution facilities.

Phone 1-800-395-7325 or visit www.sealmaster.net to find the location near you.

1. SCOPE:

1.1
The following specifications pertain to the application of SportMaster Color Coating Systems over asphalt tennis court surfaces. Refer to Product Technical Data sheets for specific mixing and application instructions.

2. SURFACE PREPARATION:

2.1
New Asphalt surfaces must cure 14 to 30 days prior to application. The surface must be cleaned entirely of dust, dirt, debris, and all loose materials.

2.2
Fill all cracks with SportMaster Crack Magic, Acrylic Crack Patch, Acrylic Patch Binder or other suitable crack filler.

2.3
Level depressions or "bird baths" (1/8 inch or deeper) with SportMaster Acrylic Patch Binder or Acrylic Resurfacer patching mix.

2.4
Apply one or two coats of SportMaster Acrylic Resurfacer as required by surface roughness and porosity to provide a smooth underlayment for application of the SportMaster Color System.

3. APPLICATION OF SPORTMASTER COLOR SYSTEM:

3.1
Over properly prepared asphalt surface apply a minimum of two coats of SportMaster Color Concentrate or ColorPlus System in accordance with manufacturer's mixing and application instructions.

4. LINE MARKINGS:

4.1
Line markings shall be laid out according to United States Tennis Association specifications.

4.2
After masking tape has been laid apply SportMaster Stripe Rite line primer to seal voids between masking tape and court surface to prevent "bleed under" when SportMaster Line Paint is applied.

4.3
Apply a minimum of one coat of SportMaster Line Paint.

5. GENERAL:

5.1
All work shall be performed in a workmanlike manner. All containers and debris shall be removed from job when completed.

SealMaster
JAN 2009
Supercedes: CMT-24 (7/04), CMT-24 (6/00)

END OF SECTION

SECTION 0907

TRAFFIC SIGNS

PART 1: WORK

1.01 DESCRIPTION

Under this item, the Contractor shall furnish and install all traffic signs and posts to the types and sizes shown on the Contract Drawings.

Included in this Work shall be the installation of the wood posts and cable at the Service Road entrance to the Outdoor Pavilion. No additional payment will be made for this work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0102 Survey and Stakeout
C. Section 0206 Gravel Parking Area
D. Section 0301 Asphalt Pavement
E. Section 0401 Cast-In-Place Concrete
F. Section 0906 Site Restoration

1.03 REFERENCES

A. "National Manual of Uniform Traffic Control Devices," New York State Department of Transportation Supplement;" (MUTCD);

B. New York State Department of Transportation Internet Site "Work Zone Traffic Control Manual" (WZTCM);

C. ASTM A492, "Specification for Stainless Steel Rope Wire."

1.04 DEFINITIONS

A. NYS DOT Standard Specifications- This shall refer to the New York State Department of Transportation Standard Specifications of September 4, 2014 or latest edition of addendums.

1.05 SUBMITTALS

A. Shop Drawings: provide drawings, not necessarily to scale, but sufficient enough in detail to show color, wording, lettering size and style, overall sign size, construction details and installation details for each type of sign.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver traffic signs fully wrapped in protective plastic. Stack components so as not to damage the signs.

1.07 QUALITY ASSURANCE

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PART 2 MATERIALS

2.01 TRAFFIC SIGNS

A. Construction Materials: Comply with the applicable requirements of NYSDOT Section 645.

B. Posts: Galvanized steel.

2.02 WOOD POST & CABLE

A. Dressing: Provide timber which has been dressed on 4 sides (S4S) at the mill, prior to grading. Comply with grade sizes.

B. Timber Species: Douglas Fir, Western Larch or Southern Pine, at fabricator's option.

C. Timber Grade: For the species indicated, comply with the following grade (or grades if more than one species specified at fabricator's option):

1. SPIB Grade: No. 1 SR
2. WCLIB Grade: Select Structural
3. WWPA Grade: Select Structural

D. Preservative Treatment: Pressure treat fabricated wood members in accordance with the following applicable AWPB Standards:

1. Douglas Fir or Western Larch: LP-33, LP-44.
2. Southern Pine: LP-22.

E. Size: 8" x 8" – Provide post reflectors

F. Cable: ¼" 7X19 Galvanized Wire with galvanized eye hooks and cable terminations.

PART 3: METHOD

3.01 INSTALLATION

A. Erect signs in their designated locations, as indicated and in accordance with the approved shop drawings and the applicable requirements of NYSDOT Section 645.

B. Protect surfaces and finishes from abrasion and other damage during handling and installation.

C. Wood Posts: Excavate and set wood posts in ground as indicated. Machine tamp backfill in 4 inches layers around posts.

D. Cable – Attach cable using galvanized eyehooks

E. Rails: Attach to posts as indicated with the alignment resulting in a smooth continuous rail.

F. Replace damaged or faulty signs.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Traffic Signs will be measured per each with no distinction made for the type or size of the sign including reinstallation of existing traffic signs.

Wood Posts and Cable required for the Service Road entrance to the Outdoor Pavilion will considered incidental to the work under this item and shall be included as part of the costs of the traffic signs.

4.02 BASIS OF PAYMENT

Payment for Work under this item shall be at the **Unit Price** bid for traffic signs to the types and sizes shown on the Contract Drawings. All labor, materials and equipment including but not limited to the new metal poles, anchor bolts, foundation piers, wood post, cable, reflectors, locks, excavation and backfill, disposal of surplus materials, reinstallation of traffic signs and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer or Town.

END OF SECTION

SECTION 0908

TIMBER GUARD RAILS

PART 1: WORK

1.01 DESCRIPTION

Under this work, the Contractor shall furnish and supply all materials; labor and equipment required for wood guard rails in accordance with the Contract Drawings and Specifications.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 0101 Site Preparation and Removals
B. Section 0103 Erosion and Sediment Control
C. Section 0201 Earthwork
D. Section 0301 Asphalt Pavement
E. Section 0401 Cast-In-Place Concrete
F. Section 0402 Cast-In-Place Concrete Curbs
G. Section 0501 Water Main
H. Section 0502 Force Main

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work in this Section unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. Timber: American Softwood Lumber Standard PS 20 by the U.S. Department of Commerce. Comply with applicable provisions for each indicated use.

B. Grading Rules:

1. Douglas Fir, Western Larch, and other Western Woods: Western Wood Products Association (WWPA) or West Coast Lumber Inspection Bureau (WCLIB).

2. Southern Pine: Southern Pine Inspection Bureau (SPIB).

C. Preservative Treatment: American Wood Preservers' Association (AWPA) and American Wood Preservers Bureau (AWPB) Standards, quality control methods, and inspection requirements.

1.04 SUBMITTALS

A. Shop Drawings: Show application to project. Include joint and connection details and erection drawings.

B. Quality Control Submittals:

1. Preservative Treatment Certificates: Certification by treating plant stating chemicals and process used, net amount of chemical preservative retained, and conformance with specified standards.

1.05 QUALITY ASSURANCE

A. Mill and Producers Mark: Each piece of timber shall be grad stamped indicating type, grade, mill, and grading agency certified by the Board of Review of the American Lumber Standards Committee. Mark shall appear on unfinished surface, or ends of pieces with finished surfaces.

1. Preservative Treated Material: AWPB quality mark on each piece of timber indicating treatment.

PART 2: MATERIALS

2.01 WOOD POSTS AND RAILS

A. Dressing: Provide timber which has been dressed on 4 sides (S4S) at the mill, prior to grading. Comply with grade sizes.

B. Timber Species: Douglas Fir, Western Larch or Southern Pine, at fabricator's option.

C. Timber Grade: For the species indicated, comply with the following grade (or grades if more than one species specified at fabricator's option):

1. SPIB Grade: No. 1 SR
2. WCLIB Grade: Select Structural
3. WWPA Grade: Select Structural

D. Preservative Treatment: Pressure treat fabricated wood members in accordance with the following applicable AWPB Standards:

1. Douglas Fir or Western Larch: LP-33, LP-44.
2. Southern Pine: LP-22.

2.02 HARDWARE

A. Steel Shapes and Plates: ASTM A36.

B. Bolts and Nuts: ASTM A 307

C. Galvanized Finish: ASTM A 153

PART 3: METHOD

3.01 INSTALLATION

A. Wood Posts and Rails: Where treated members must be cut during erection, apply a heavy brush coat of the same treatment solution to the cut surfaces in accordance with AWPA Standard M4.

B. Posts

1. Wood: Excavate and set wood posts in ground as indicated. Machine tamp backfill in 4 inches layers around posts.

C. Rails: Attach to posts as indicated with the alignment resulting in a smooth continuous rail.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

Timber Guard Rail will be measured per linear foot along the face of the guard rail for the entire length of the work.

4.01 DESCRIPTION

Payment for the Work under this item shall be at the **Unit Price** bid for timber guard rail and shall include the cost of all labor, materials, and equipment necessary to complete the work as shown on the Contract Drawings. All labor, materials and equipment including but not limited to excavation, repair or patching, removal and disposal of surplus material, concrete, plates, rails, posts, bolts, nuts, backfilling and compaction and any incidental work required to complete the work as specified in the Contract Documents and Specifications, and to the satisfaction of the Engineer.

END OF SECTION

SECTION 1001

SITE MOBILIZATION & DEMOBILIZATION

PART 1: WORK

1.01 DESCRIPTION

The work under this item consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract including the office trailer and port-o-san. It does not include mobilization and demobilization for specific items of work for which payment is provided elsewhere in the contract. Mobilization will not be considered as work in fulfilling the contract requirements for commencement of work.

Special Note: The Staging Area for the Project has been established to be the existing north parking lot and basketball court. See the Erosion & Sediment Control Plan.

1.02 RELATED WORK SPECIFIED ELSEWHERE

THIS SECTION LEFT BLANK

1.03 REFERENCES

THIS SECTION LEFT BLANK

1.04 DEFINITIONS

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1.05 SUBMITTALS

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PART 2: MATERIALS

2.01 FIELD OFFICE

The Engineer's/Village Field Office shall be within a secured, weatherproof building or mobile trailer. Mobile trailers shall be in new or like new condition. The Contractor may furnish equivalent facilities in an existing building, provided that the building is located to provide convenient service.

A. Size – 20' x 8' Minimum

B. Potable Water - From a local municipal water supply, certified well or bottled with a heating/refrigerator unit to provide hot and cold water.

C. Electrical - The electrical system shall be able to continuously operate all equipment and be provided with adequate receptacles.

D. Heating/Cooling - Electric baseboard heat and thru-wall AC unit or combination heat/AC unit

E. Furniture
   1. Two fully assembled freestanding office desks and chairs. Desks shall have 2 lockable drawers and shall have a dedicated electrical outlet receptacle.

   2. Office/Conference Table – 1 Commercial grade rectangular table with weather/spill resistant top a minimum of 8 feet long by 2 1/2 feet wide by 30 inches high.

   3. Folding Chair - Four commercial-grade, folding steel.

   4. Fire Resistant Cabinet – 1 fully assembled fire resistant file cabinet with locking draws.

F. Wastebasket – Two wastebaskets, minimum one per desk.

G. Fire Extinguishers - Fire extinguishers and smoke and carbon monoxide detectors shall be provided and installed.

H. First Aid Kit - A Type III kit in accordance with ANSI Z308.1 Minimum Requirements for Workplace First Aid Kits.

I. Parking Area - The Contractor shall provide a minimum of 2 hard surfaced (gravel) parking area with dedicated parking spaces adjacent to the Engineer's/Village's Field Office. Each parking space shall be 9 feet by 18 feet.

PART 3: METHOD

3.01 DESCRIPTION

Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable; and other items specified in this contract.

Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

THIS SECTION LEFT BLANK

4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** and consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract including the office trailer and port-o-san. The amount bid for mobilization shall not exceed four percent (4%) of the total contract bid price excluding the bid price for mobilization. The amount bid shall be payable to the Contractor on a monthly basis as a percentage of the work complete beginning with the first progress estimate made for other contract work.

END OF SECTION

SECTION 1002

ADDITIONAL MISCELLANEOUS WORK

PART 1: WORK

1.01 DESCRIPTION

Under this item, each Contactor shall furnish all labor, material and equipment required to accomplish miscellaneous additional work:

A. Necessitated by encountering during the course of the work field conditions of a nature not determinable during design; or

B. For which no unit prices are applicable; or

C. For work ordered by the Engineer or Town.

PART 2: MATERIALS

This Section Left Blank

PART 3: METHOD

3.01 DESCRIPTION

All work performed and materials utilized shall be as specified in the contract documents and shall be to the satisfaction of the Engineer.

PART 4: MEASUREMENT AND PAYMENT

4.01 DESCRIPTION

The cost for work under this item shall be deducted from the Stipend Amount included in the **Itemized Proposal & Project Bid Sheet** and shall include the cost of all labor, materials and equipment necessary to perform the work. The work under this item shall be performed only as directed by the Town. No payment will be made for any additional work specified by the Town without the prior written authorization of the Town. Authorization shall be given to the Contractor prior to the commencement of any work under this item. The total amount paid the Contractor will be determined in accordance with the provisions of the General Terms and Conditions of Bid, Section 1.6.

END OF SECTION