# SPECIFICATIONS

# FOR

# PROPOSED REYNOLDS FIELD
# PLAYGROUND PEDESTRIAN WALKWAY IMPROVEMENTS
# VILLAGE OF HASTINGS-ON- HUDSON, NY

**Prepared By**

**Hahn Engineering**
**Putnam Business Park**
**1689 Route 22**
**Brewster, New York 10509**

**August 2022**

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# NOTICE TO BIDDERS

Sealed proposals for performing the work herein described will be received by the Village Board of Hastings-on-Hudson, New York, at the Office of the Village Clerk, Village Hall, 7 Maple Avenue, Hastings-on-Hudson, New York 10706, on September 29, 2022 at 10:00 a.m. and immediately thereafter the bids will be publicly opened and read aloud in said office.

The work consists of the removal and construction of asphalt and concrete sidewalks and ramps, adjusting manhole frame and cover, and construction of asphalt sidewalks. The project is located in the Village of Hastings-on-Hudson. Other related work shall include the construction of a chain link fence, drainage improvements, maintenance access, preparing, restoring and cleaning the project area all in accordance with the plans and specifications as directed by the Engineer.

Specifications and Bid proposal forms may be obtained online at https://www.hastingsgov.org/village-clerk/pages/rfps-and-bid-documents or by emailing the Village Clerk at Acostantini@hastingsgov.org on or after 2:00 P.M., September 8, 2022.

In addition to the above, the Village of Hastings-on-Hudson has partnered with BidNet as part of the Empire State Purchasing Group and will post our bid opportunities and any addendums to this site. As a vendor, you can register with Empire State Purchasing Group and be sure that you see all of the Village's available bids, addendums, and opportunities. Detailed plans and specifications for said bid may be obtained through the Empire State Purchasing Group at the following link: www.bidnetdirect.com/new-york/hastings-on-hudson.

Bids shall be made on the separate Bid Proposal Forms furnished with the Specifications.

Proposals shall be enclosed in a sealed envelope bearing the name and address of the Bidder, addressed to the Village of Hastings-on-Hudson, 7 Maple Avenue, Hastings-on-Hudson, New York and endorsed "Proposed Reynolds Field Playground Pedestrian Walkway Improvements", Hastings-on-Hudson, New York.

The Village of Hastings-on-Hudson reserves the right to reject any and all Bids, to waive any informality in any Bid, and to award the Contract to other than the lowest Bidder if deemed in the best interest of the Village to do so.

Dated September 8, 2022
By Order of the Village Board
By Anthony Costantini, Village Clerk

**PROJECT TITLE:**
**Proposed Reynolds Field Playground Pedestrian Walkway Improvements**
**Village of Hastings-on-Hudson**
**September 8, 2022**

**NOTICE TO BIDDERS:**
**Village of Hastings-on-Hudson, Westchester County, New York**

**VILLAGE CONSULTING ENGINEER:**

**JAMES J. HAHN ENGINEERING, P.C.**
**1689 Route 22**
**Brewster, NY 10509**
**Phone: 845-279-2220**

## DESCRIPTION OF BID:

The Village of Hastings-on-Hudson, New York (the "Village") is requesting a proposal to install concrete and asphalt sidewalks that connect the pedestrian walkway on Chauncy Lane between Broadway and Croton Avenue. The walkway will not be on the side of the roadway, but through the existing park.

## PROPOSED WORK:

The proposed work includes for the removal and construction of concrete sidewalks and ramps, adjusting manhole frame and cover, and construction of concrete and asphalt sidewalks. The project is located in the Village of Hastings-on-Hudson. Other related work shall include, the installation of a chain link fence, drainage improvements, maintenance access, preparing, restoring and cleaning the project area all in accordance with the plans and specifications as directed by the Engineer.

The Contractor is responsible to become familiar with the site and to verify all measurements and conditions in the field.

## SHOP DRAWINGS:

Shop drawings are required for all manufactured items and any item directed by the Engineer. Shop drawings shall be submitted to the Engineer for review sufficiently in advance of requirements to afford ample time for checking, correcting, resubmitting, and rechecking as necessary.

No construction, purchase, delivery, installation, or work shall be done or made on any part or feature of this Contract which is dependent upon shop drawing review, until such review has been received from the Engineer. If the Contractor proceeds without reviewed shop drawings, it shall be at his own risk.

Note, all concrete shall contain twenty percent (20%) ground granulated blast furnace slag (GGBFS).

## BID SUBMITTAL DATE AND TIME OF COMPLETION:

The bid shall be submitted no later than September 29, 2022. All bids for performing the work herein described must be submitted to the Engineer.

The Contractor shall provide the required Village insurance documents. All documents are required to be complete for this agreement within ten (10) business days (in the State of New York) of notice of award.

References of work similar in size and scope shall be submitted upon the request of the Engineer. Work shall proceed in the field within five (5) business days of the Contract signing. Once work has started, it shall proceed continuously and diligently. All items of work shall be completed and approved within forty-five (45) calendar days of the Contract date.

## AWARD AND AGREEMENT

The Contract will be awarded to the lowest responsible bidder with a formal written agreement pursuant to the provisions of the General Municipal Law. The Village reserves the right to determine responsibility based on an evaluation of the Contractor's qualifications, experience, organization, finances, past performances, and other applicable factors. The Village further reserves the right to reject any or all bids.

## SALES TAX EXEMPTION

Under Chapter 513 of the Laws of New York 1974, all materials and supplies sold to a Contractor and which are to become an integral, component part of a structure, building or real property owned by an exempt organization such as the municipality, are exempt from the payment of New York State Sales or compensatory use taxes. Therefore, the Contractor should not include any amount in its bid price to cover sales taxes for the above items.

## WAGES AND LABOR

The Contractor shall ensure that workers are paid the appropriate wages and supplemental (fringe) benefits. Throughout the contract, the Contractor shall obtain and pay workers in accordance with periodic wage rate schedule updates from the NYS Department of Labor (NYSDOL).

The Contractor shall comply with the applicable provisions of the "Labor Law" as amended, of the State of New York. This Contract shall be void unless applicable sections of said Labor Law are complied with. Each and every provision of law and clause required by law to be part of this Contract shall be deemed to be included herein and this Contract shall be read and enforced as though it were included herein, and if through mere mistake or otherwise any such provision is not included, then upon the application of either party hereto, the Contract shall forthwith be physically amended to make such inclusion.

Specifically, section 200-e, of the Labor Law, as so amended, prohibits in contracts, discrimination on account of race, creed, color, or national origin in employment of citizens upon public works.

All contractors and vendors retained to perform services in connection with the project shall be authorized to do business in the State of New York and/or filed such documentation, certifications, or other information with the State or County as required in order to lawfully provide such services in the State of New York. In addition, said contractor/vendors shall possess and maintain all professional licenses and/or certifications required to perform the tasks undertaken in connection with the project.

## COMPLIANCE WITH IRAN DIVESTMENT ACT

Each bidder/proposer, any person signing on behalf of any bidder/proposer and any assignee or subcontractor and, in the case of a joint bid/proposer, each party thereto, certifies, under penalty of perjury, that to the best of its knowledge and belief, that each bidder/proposer and any subcontractor or assignee is not identified on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the New York State Finance Law (the "Prohibited Entities List").

During the term of any contract awarded pursuant to this bid, should the Village receive information that a bidder/proposer is in violation of the above-referenced certification, the Village will offer the person or entity an opportunity to respond. If the person or entity fails to demonstrate that he/she/it has ceased engagement in the investment which is in violation of the Act within 90 days after the determination of such violation, then the Village shall take such action as may be appropriate including, but not limited to, seeking compliance, recovering damages or declaring the bidder/proposer in default.

The Village reserves the right to reject any bid or proposal from a bidder/proposer that appears on the Prohibited Entities List prior to the award of a contract and to pursue a responsibility review with respect to any bidder/proposer that is awarded a contract and subsequently appears on the Prohibited Entities List.

## COMPLIANCE WITH NYS SEXUAL HARASSMENT PREVENTION LAW

By submission of this 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 the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section 201-g of the labor law.

# BID PROPOSAL

**PROPOSED REYNOLDS FIELD PPLAYGROUND PEDESTRIAN WALKWAY IMPROVEMENTS**
**HASTINGS-ON-HUDSON, NY**

**Name of Bidder** _____ **Email:** _____

**Address** _____ **Telephone:** _____

**City, State Zip** _____ **Fax:** _____

**Note: The Lump Sum and Unit Price amount is to be written in both words and numbers. In case of discrepancy, the amount shown in words shall govern. The price shall be in dollars and cents. The Lump Sum amount shall include all labor, materials, equipment, services, etc. required to complete the work in accordance with the Plans, Specifications and all other Contract Documents within the specified completion date**

| SECT | BID | UNIT | EST. QUANT. | UNIT PRICE | UNIT PRICE | TOTAL PRICE |
|---|---|---|---|---|---|---|
| | | | | (IN NUMBERS) | (IN WORDS) | |
| ADMF | Adjust Drainage Manhole and Frame | EA | 1 | | | |
| BBC | Bituminous Base Course | TON | 10 | | | |
| BTC | Bituminous Top Course | TON | 18 | | | |
| CC | Concrete Curbs | LF | 60 | | | |
| CEDS | Connection to Existing Drainage Structure | EA | 2 | | | |
| CLF | Chain Link Fence (4 ft) | LF | 160 | | | |
| CLF | Chain Link Fence (4 ft gate) | EA | 2 | | | |
| CLF | Chain Link fence (8 ft) | LF | 100 | | | |
| CPP | Corrugated Polyethylene Pipe (French Drain- 8”perf., gravel, fabric) | FT | 75 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| CSG | Crushed Stone and Gravel (Item 4) | CY | 30 | | | |
| CSR | Concrete Sidewalks and Ramps (5”) | SF | 340 | | | |
| CSR | Concrete Sidewalks and Ramps (7”) | SF | 115 | | | |
| DR | Demolition and Removal (drainage struc, fencing, line striping) | LS | 1 | | | |
| DS | Drainage Structures (DI #1,2,3) | EA | 3 | | | |
| PM | Pavement Markings (12”) | LF | 100 | | | |
| R | Restoration | NP | NP | NP | NON-PAYMENT | 0.00 |
| SCP | Saw Cutting Pavement | NP | NP | NP | NON-PAYMENT | 0.00 |
| TSP | Traffic and Posts | EA | 2 | | | |
| TSS | Furnish and Place Top Soil and Seed | SF | 800 | | | |
| | | | | **TOTAL BASE BID** | | |

The total bid shall be the sum of the extensions (unit price multiplied by estimated quantity, for each item). It is stated here only as a convenience for comparison of bids. If there are any errors in addition or multiplication, the unit prices for each item shall govern, and the bid comparison will be made on the basis of correct arithmetic applied to these unit prices. In case of a discrepancy between the unit price in words and the unit price in numbers, the unit prices in words shall govern.

The estimated quantities are not guaranteed and are only for bid comparison purposes and final payment will be made for actual quantities regardless of the estimated quantities contained herein.

The contractor is further advised that the estimated quantities shown in the Bid Sheets may be reduced or deleted in order to insure that this Contract can be completed within the budget established for this work. In the event that certain work is deleted or reduced, the Unit Price Bid shall remain in effect for this work.

# BID PROPOSAL

**PROPOSED REYNOLDS FIELD PLAYGROUND**
**PEDESTRIAN WALKWAY IMPROVEMENTS**
**HASTINGS-ON-HUDSON, NY**

**BID PROPOSAL:**

The Bid Proposal information must be provided and signed by the contractor's representative. NYSDOL Prevailing Wage Rate requirements must be included in the bid amount. The Contractor must visit the site and understand any site constraints prior to submission of this bid.

_____
(Signature)

_____
(Print Name)

_____
(Title)

_____
(Date)

**VILLAGE OF HASTINGS-ON-HUDSON (the "Village")**
**7 Maple Avenue, Hastings-on-Hudson, NY 10706**

**MINIMUM INSURANCE REQUIRED BY CONTRACTORS & SUBCONTRACTORS**

**Insurance Exhibit**
The Contractor/Subcontractor shall purchase and maintain insurance of the following types of coverage and limits of liability:

1) Commercial General Liability (CGL) coverage with limits of Insurance of not less than $1,000,000 Per Occurrence/$2,000,000 Annual Aggregate and including a Waiver of Subrogation.
   a) If the CGL coverage contains a General Aggregate Limit, such General Aggregate shall apply separately to each project.

   b) CGL coverage shall be written on ISO Occurrence form CG 00 011093 or a substitute form providing equivalent coverage and shall cover liability arising from premises, operations, independent contractors, product-completed operations, and personal and advertising injury, blanket contractual including injury to subcontractors employees.

**Note**: c) The Village and their agents, officers, directors and employees shall be included as additional insured on the CGL, using ISO Additional Insured Endorsement CG 20 10 1185 or an endorsement providing equivalent or broader coverage to the Village and their agents, officers, directors and employees. The coverage must be underwritten by an Insurance Company with at least 'A 7' Best rating as defined by A.M. Best. Coverage for the additional insured shall apply as Primary and Non-Contributing Insurance before any other insurance or self-insurance, include any deductible, maintained by, or provided to, the additional insured's.

   d) Contractor/Subcontractor shall maintain CGL coverage for itself and all additional insureds for the duration of the project and maintain Completed Operations coverage for itself and each additional insured for at least 2 years after completion of the Work.

   e) XCU may not be excluded

2) Automobile Liability
   a) Business Auto Liability with limits of at least $1,000,000 each accident.
   b) Business Auto coverage must include coverage for liability arising out of all owned, leased, hired and non-owned automobiles.
   c) The Village and their agents, officers, directors and employees shall be included as additional insured on the auto policy.
   d) Also needs to include waiver of subrogation

3) Workers Compensation and Employers Liability and N.Y.S Disability
   a) Statutory Workers' Compensation, Employers' Liability and N.Y.S. Disability Benefits Insurance for all employees.
   b) Where applicable, U.S. Longshore and Harborworkers Compensation Act Endorsement shall be attached to the policy.
   c) Where applicable, the Maritime Coverage Endorsement shall be attached to the policy.
   d) Workers Compensation must include a waiver of subrogation.

**NOTE:** ACORD forms are not acceptable proof of workers compensation coverage; must provide C-105.2 and Disability to be provided on DB-120.1.

4) The Contractor shall not sublet any part of his work without written approval of the Village, and without assuming full responsibility for requiring similar insurance from his subcontractors and shall submit satisfactory evidence to that effect to the Village. Each such insurance policy, except the Workers' Compensation and Disability policies, shall include the Village and their agents, officers, directors and employees as an additional insured.

5) Policy shall be endorsed to provide that 30 days written notice prior to cancellation be given to the Village. Policies that lapse and/or expire during the term of occupancy shall be re-certified and received by Village no less than 30 days prior to cancellation or renewal.

6) Contractor acknowledges that failure to obtain such insurance on behalf of the Village constitutes a material breach of contract and subjects it to liability for damages, indemnification and all other legal remedies available to the Village. The contractor/permittee is to provide the Village with a certificate of insurance, evidencing the above requirements have been met, prior to the commencement of work or use of facilities. The failure of the Village to object to the contents of the certificate or absence of same shall not be deemed a waiver of any and all rights held by the Village.

**Safety Provisions**
The safety provisions of applicable laws, building and construction codes and the safety rules approved by the State Labor Commissioner shall be observed.

The provisions of the Federal Occupational Safety and Health Administration's "Occupational Safety and Health Standards" and "Safety and Health Regulations for Construction" shall be observed.

Should at any time during the work under this Contract any Local/State/Federal safety inspector visit the site for the purpose of a safety inspection, the Contractor shall immediately notify the Village representative on the job site.

**Hours**
No laborer, worker or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The work must be performed between 7:30 a.m. and 4:30 p.m. Monday through Friday. Any exceptions out of these hours must have prior approval by the Department Head in charge of the public work project.

**Wages and Supplements**
The wages and supplements to be paid and/or provided to laborers, workers and mechanics employed in a public work project shall not be less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. The prime contractor shall obtain a Prevailing Rate Schedule from the: New York State Department of Labor, Bureau of Pubic Work, Sate Office Campus, Bldg. 12, Albany, NY 12240. The prime contractor must provide copies of this schedule to all subcontractors and obtain an affidavit certifying such schedule was received.

**VILLAGE OF HASTINGS-ON-HUDSON**
**7 Maple Avenue, Hastings-on-Hudson, NY 10706**

**INDEMNIFICATION AND HOLD HARMLESS AGREEMENT**

To the fullest extent permitted by law, Contractor/Subcontractor will indemnify and hold harmless the Village of Hastings-on-Hudson (the "Village"), their officers, representatives, agents and employees from and against any and all claims, suits, liens, judgments, damages, losses and expenses, including reasonable legal fees and all court costs and liability (including statutory liability) arising in whole or in part and in any manner from injury and/or death of person or damage to or loss of any property resulting from the acts, omissions, breach or default of Contractor/Subcontractor, its officers, directors, agents, employees and subcontractors, in connection with the performance of any work by or for Contractor/Subcontractor pursuant to any contract, Purchase Order and/or related Proceed Order. Contractor/Subcontractor will defend and bear all costs of defending any actions or proceedings brought against the Village, their officers, representatives, agents and employees, arising in any employee of the Contractor/Subcontractor and shall not be limited in any way by an amount or type of damage, compensations, or benefits payable under any applicable workers' compensation, disability benefits or other similar employees benefit act.

The Contractor/Subcontractor hereby expressly permits the Village to pursue and assert claims against the Contractor/Subcontractor for indemnity, contribution and common law negligence arising out of claims for damages for death and personal injury.

Company Title/Name: _____

Name: _____ Signature: _____

Date: _____

Nature/Scope of Work Being Performed: _____

Please sign, date, and return to:

**Anthony Costantini**
**Village Clerk**
**Village of Hastings-on-Hudson**
**Village Hall**
**7 Maple Avenue**
**Hastings-on-Hudson, NY 10706**

## NON-DISCRIMINATION CLAUSE

During the performance of the Contract, the Contractor agrees as follows:

a. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin, sex, sexual orientation, age, disability or marital status, and will take affirmative action to insure that they are afforded equal employment opportunities without discrimination because of race, creed, color, or national origin, sex, sexual orientation, age, disability or marital status. Such action shall be taken with reference, but not limited to: recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training.

b. The Contractor will send to each labor union or representative of workers with which he has or is bound by a collective bargaining or other agreement or understanding, a notice, to be provided by the Commission of Human Rights, advising such labor union or representative of the Contractor's agreement under clauses "a." through "h." hereinafter called "non-discrimination clauses", and requesting such labor union or representative to agree in writing, whether in such collective bargaining or other agreement or understanding or otherwise, that such labor union or representative will not discriminate against any member or applicant for membership because of race, creed, color, or national origin, sex, sexual orientation, age, disability or marital status, and will take affirmative action to insure that they are afforded equal membership opportunities without discrimination because of race, creed, color, or national origin, sex, sexual orientation, age, disability or marital status. Such action shall be taken with reference, but not be limited to: recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of pay, or other forms of compensation, and selection for training or retraining including apprenticeship and on-the-job training. Such notice shall be given by the Contractor, and such written agreement shall be made by such labor union or representative, prior to the commencement of performances of this contract. If such labor union or representative fails or refuses so to agree in writing, the Contractor shall promptly notify the Commission for Human Rights of such failure or refusal.

c. The Contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the Commission for Human Rights setting forth the substance of the provisions of clauses "a." and "b." and such provisions of the State's Laws against discrimination as the Commission for Human Rights shall determine.

d. The Contractor will state, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, or national origin, sex, sexual orientation, age, disability or marital status.

e. The Contractor will comply with the provisions of Sections 291-299 of the Executive Law and the Civil Rights Law, will furnish all information and reports deemed necessary by the Commission for Human Rights under these non-discrimination clauses and such sections of

the Executive Law, and will, permit access to his books, records, and accounts by the Commission of Human Rights, and Owner representatives/counsel for purposes of investigation to ascertain compliance with these non-discrimination clauses and such sections of the Executive Law and Civil Rights Law.

f. The Contract may be forthwith cancelled, terminated, or suspended in whole or in part, by the contracting agency upon the basis of a finding made by the Commission of Human Rights that the Contractor has not complied with these non-discrimination clauses, and the Contractor may be declared ineligible for future contracts made by or on the behalf of the Owner/Contracting Agency until he satisfied the Commission for Human Rights that he has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such finding shall be made by the Commission for Human Rights after conciliation efforts by the Commission have failed to achieve compliance with these non- discrimination clauses and after a verified complaint has been filed with the Commission, notice thereof has been given to the Contractor and an opportunity has been afforded him to be heard publicly before three members of the Commission. Such sanctions may be imposed and remedies otherwise provided by law.

g. If this Contract is cancelled or terminated under clause "f.", in addition to other rights of the Owner provided in this contract upon its breach by the Contractor, the Contractor will hold the Owner harmless against any additional expenses or costs incurred by the Owner in completing the work or in purchasing the services, materials, equipment, or supplies contemplated by this contract, and the Owner may withhold payments from the Contractor in an amount sufficient for this purpose and recourse may be had against the surety on the performance bond if necessary.

h. The Contractor will include the provisions of clauses "a.", through "g." in every subcontract or purchase order in such a manner that such provisions will be binding upon each subcontractor or vendor as to operations to be performed within jurisdictional locale of the Project being contracted by the Owner. The Contractor will take such action in enforcing such provisions of such subcontract or purchase as the Owner/Contracting Agency may direct, including sanctions or remedies for noncompliance. If the Contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the Contracting Agency/Owner, the Contractor shall promptly so notify the Owner's representatives/counsel, requesting him to intervene and protect the interests of the Owner (Contracting Agency's jurisdictional area).

**STATEMENT OF NON-COLLUSION**
**(To be Completed by Each Bidder)**

In accordance with Section 103-d General Municipal Law, effective September 1, 1966, every bid or proposal hereafter made to a political subdivision of the State or any public department, agency or official thereof or to a fire district or any agency or official thereof for work or services performed or to be performed or goods sold or to be sold, shall contain the following statement subscribed to by the bidder and affirmed by such bidder as true under the penalties or perjury; non-collusive bidding certification.

a. By submission of this 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 knowledge and belief:

(1) 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 any competitor.

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

(3) 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.

b. The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder, as well as the person signing in its behalf.

c. That attached hereto (if a corporate bidder) is a certified copy of resolution authorizing the execution of this certificate by the signature of this bid or proposal in behalf of the corporate bidder.

Signed:_____ Firm:_____

Title:_____ Date:_____

# TECHNICAL SPECIFICATIONS

# ADJUST DRAINAGE MANHOLE & FRAME

## WORK

Under this item the Contractor shall furnish all labor, materials and equipment necessary to adjust manhole covers and frame to one-quarter (1/4") inch below finished grade of final paving course. The work required to adjust existing manhole covers within sidewalks shall be performed under the specification for the particular type of sidewalk to be installed.

## METHOD AND MATERIALS

The Contractor shall determine the elevation of finished pavement grade and shall set the rim of the manhole one-quarter (1/4") inch below said finished grade. The pavement and any subgrade material shall be carefully and neatly excavated around the manhole frame to the elevation of the bottom of the frame. The pavement shall be cut, a minimum of two (2') feet from the edge of the frame, by means of a pneumatic drill with spade-shaped bit or other means to provide a neat, even edge. The frame shall be lifted out and a ring of mortar or brick and mortar shall be placed on the top of the manhole and below the casting so as to adjust it. The outside of the ring shall extend at least as far as the outer edge of the flange of the casting. The inside of the ring shall not extend any further than the inside diameter of the existing manhole opening, and shall not obstruct the opening in any way. If the required thickness of the ring to bring the manhole frame to the proper elevation is greater than the thickness of a brick, the ring shall be constructed of bricks with mortar joints and with a leveling course of mortar. If the required ring thickness is less than one brick, the entire ring shall be of mortar. The mortar shall be allowed to harden thoroughly before traffic or rollers are permitted to pass over the frame. The use of wooden wedges is not be permitted.

After the frame has been set to grade, the excavated space shall be filled with a sandy or gravelly material free of clay, organic material or large stones and topped with six (6") inches of asphalt binder course material so as to be flush with the adjoining existing pavement. This material shall be thoroughly tamped to a density equal to that of the adjoining material. Before placing this material, the casting shall be primed with a liquid asphalt so as to provide a tack coat.

Signs and barricades shall be installed immediately after adjustment of manhole covers and shall be maintained until paving is complete.

## MEASUREMENT AND PAYMENT

Payment shall be for "EACH" manhole adjusted to grade, and shall include all labor, materials and equipment for the excavation, mortar, brick, resetting of casting, backfill with paving material and any other construction described above. The use of metal rings or adaptors will not be accepted as a substitution for the above.

# BITUMINOUS BASE COURSE

## WORK

Under this item the Contractor shall furnish all labor, materials and equipment necessary to place an asphaltic concrete base course on top of a prepared subgrade in accordance with the plans and specifications. The thickness of this course shall be as shown on the plans or as directed in the field by the Engineer.

## MATERIALS

The base course material used shall be Base Course Type 402.378903 of the State of New York Department of Transportation most recent specifications and all subsequent addenda. Tack coat, if required, shall be NYSDOT Item 407.01. Product data, mix design and shop drawings shall be provided for the asphalt and, if required, tack coat.

## CONDITIONS

The laying of this course shall not be allowed if the temperature is below forty (40°F) degrees Fahrenheit in the shade, or if there is any indication of possible rain, or if the bottom course is wet, except by permission of the Engineer.

The subgrade shall be dry, protected from water that might run onto it, and properly installed.

Manhole frames, catch basin frames, valve boxes and other structures shall be adjusted to finished grade, if necessary, prior to placing of this paving course. Adjustment of structures are specified under a separate section.

When the conditions, equipment, plant and force is, in the opinion of the Engineer, proper for the work, the operation may proceed.

## METHOD

Curbs and other structures shall be protected at all times from asphaltic materials and caution shall be taken to prevent damage to curbs and other structures by rollers and other equipment.

The materials shall be hauled to the site in steel bodied trucks and covered with tarpaulins to prevent cooling. Any base course that is poorly mixed, separated, dirtied or cooled to a point of beginning to stiffen shall be rejected and removed from the site.

Unless otherwise permitted by the Engineer, the base course shall be placed by means of a mechanical spreader so operated that the mixture as spread, is free from lumps, is of uniform

density, and is to the desired cross section.

After spreading, the mixture shall be thoroughly and uniformly compressed by a power-driven two-wheel tandem roller weighing not less than ten (10) tons, as soon after being spread as it will bear the roller without undue displacement. Delays in rolling freshly spread mixture will not be tolerated. Rolling shall be longitudinal, starting at the sides and proceeding toward the center of the pavement, overlapping on successive trips. At intersections and other widened areas, the pavement shall be subject to diagonal rolling in two directions. Where roller width is limited, the Engineer shall determine the equipment to be used.

The speed of the roller shall not exceed three (3) miles per hour and shall at all times be slow enough to avoid displacement of the mixture. Any displacements occurring as a result of reversing the direction of the roller, or from any other cause, shall at once be corrected by the use of rakes and of fresh mixtures where required. Rolling shall proceed continuously until all roller marks are eliminated and until the finished course shall have a density not less than ninety-five (95%) percent of the laboratory compacted density. If the course is being placed at a rate in excess of three hundred (300) square yards per hour, the Contractor shall use an extra roller. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened, but excess of either water or oil will not be permitted.

**MEASUREMENT AND PAYMENT**

The quantity to be paid for under this item shall be the number of "TONS" of asphaltic material placed in accordance with the plans and specifications and directions of the Engineer. This quantity shall be subject to verification by field measurements and calculations. Batch tickets from the asphalt plant shall be provided to the Engineer for review.

The unit price bid for this item shall be full payment for furnishing all labor, equipment and materials, including the preparation, the mixing, transportation, placing and rolling, necessary to complete this course as shown on the drawings and specified herein.

# BITUMINOUS TOP COURSE

## WORK

Under this item the Contractor shall furnish all labor, materials and equipment necessary to place an asphaltic concrete top course on top of a shim course, base course and/or existing pavement in accordance with the plans and specifications. The thickness of this top course will be as specified in the Plans or as directed in the field by the Engineer.

Also included under this item shall be saw cutting concrete and asphalt for keyways at all roadway, driveway and abutting pavements intersecting the new work.

The Contractor shall perform all roadway preparation work required to condition existing pavements.

## MATERIALS

The top course material used shall be Top Course Type 6F of the State of New York Department of Transportation most recent specifications and all subsequent addenda. Tack coat - New York State Item 407.0103. Product data, mix design and shop drawings shall be provided for the asphalt and, if required, tack coat.

## CONDITIONS

The laying of this course shall not be allowed if the temperature is below forty (40) degrees Fahrenheit in the shade, or if there is any indication of possible rain, or if the bottom course is wet, except by permission of the Engineer.

The shim course, base course and/or existing pavement shall be dry, protected from water that might run onto it, and properly installed. It shall be cleaned by hand and mechanical brushing and, if necessary, by flushing with a strong jet of clean water, and permitted to dry thoroughly before the top course is laid.

Manhole covers, catch basin frames, valve boxes and other structures shall be adjusted to finished grade, if necessary, prior to placing of this paving course.

When conditions, equipment, plant and force is, in the opinion of the Engineer, proper for the work, the operation may proceed.

**METHOD**

Curbs and other structures shall be protected at all times from asphaltic materials and caution shall be taken to prevent damage to curbs and other structures by rollers and other equipment.

The materials shall be hauled to the site in steel bodies trucks and covered with tarpaulins to prevent cooling. Any top course that is poorly mixed, separated, dirtied or cooled to a point of beginning to stiffen shall be rejected and removed from the site.

Unless otherwise permitted by the Engineer, the top course shall be placed by means of a mechanical spreader so operated that the mixture as spread, is free from lumps, of uniform density, and to the desired cross section.

The shim course, base course and/or existing pavement shall be primed with approximately one-tenth (0.1) gallon per square yard of asphalt emulsion tack coat.

The tack coat shall only be sprayed on the surface to be paved with a distributor pipe or a hose nozzle to control the rate of flow. Hand application shall not be permitted except by permission of the Engineer.

To prevent equipment from picking up the tack coat it may be applied sparingly to just the areas requiring priming. Special consideration is to be given to the vertical surfaces of castings, curbs and gutters.

After spreading, the mixture shall be thoroughly and uniformly compressed by a power-driven two wheel tandem roller weighing not less than ten (10) tons, as soon after being spread as it will bear the roller without undue displacement. Delays in rolling freshly spread mixture will not be tolerated. Rolling shall be longitudinal, starting at the sides and proceeding toward the center of the pavement, overlapping on successive trips. At intersections and other widened areas, the pavement shall be subject to diagonal rolling in two directions.

The speed of the roller shall not exceed three (3) miles per hour and shall at all times be slow enough to avoid displacement of the mixture. Any displacements occurring as a result of reversing the direction of the roller, or from any other cause, shall at once be corrected by the use of rakes and of fresh mixture where required. Rolling shall proceed continuously until all roller marks are eliminated and until the finished course shall have a density of not less than ninety-five (95%) percent of the laboratory compacted density. If the surface course is being placed at a rate in excess of three hundred (300) square yards per hour, the Contractor shall use an extra roller. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened, but excess of either water or oil will not be permitted.

Heated smoothing irons shall be used to finish the pavement along curbs, around manhole heads, and elsewhere where necessary.

Traffic shall be kept off the surface until it is completely cooled and until it has set so that it will not be marked by traffic.

A sixteen (16') foot straight edge and four foot carpenters level shall be made available by the Contractor for testing. The Engineer shall be assured that the profile is true to one-quarter (1/4") inch, or the pavement shall be removed and relaid. No surface patches are to be allowed.

**MEASUREMENT AND PAYMENT**

The quantity to be paid for under this item shall be the number of "TONS" of top course pavement placed as documented by batch tickets from asphalt plant. This quantity shall be subject to verification by field calculation.

The unit price bid for this item shall be full payment for furnishing all labor, equipment and materials, including the preparation, the mixing, transportation, placing and rolling, necessary to complete this course as shown on the drawings and specified herein. Also included for payment shall be any work required for saw cutting keyways, removing and disposing of keyway pavement material and for preparing all roadways as specified in specification "Conditioning Existing Pavement".

# CONCRETE CURBS

## WORK

Under this item the Contractor shall furnish all labor, materials and equipment necessary to install concrete curbing as shown on the plans and as specified herein. This work shall include the removal of existing curb that is being replaced and/or other curb as indicated on the plans.

The Contractor shall perform all necessary saw cutting, removing and disposing of existing curbs, asphalt and concrete, excavating, preparing subgrade, furnishing and placing of crushed stone, concrete forming, pouring of concrete for curbs, providing joints and jointing material, reconstruction of existing roof and footing drains, removing of forms, finishing, sealing, backfilling, curing and protecting the curb, and any other work required to provide a complete and finished concrete curb. The Contractor shall also remove and dispose of all excess excavated material in accordance with State and local requirements. Materials shall be disposed of in a legal manner. The Contractor shall pay all labor, materials and equipment necessary to complete this work.

## MATERIALS

Concrete for curb shall be Class A using Type 2 Portland Cement, with an air entraining compound added to provide five (5%) to eight (8%) percent (maximum) air entrainment. Curb surfaces are to be finished by rubbing with Carborundum stone. Brush finishing of curb surfaces will not be accepted.

Exposed curb surfaces shall receive two (2) coats of A-H 3 Way Clear Sealer as manufactured by the Anti-Hydro Company or approved equal, applied in accordance with directions of the manufacturer. The curing compound must comply with ASTM C309, Type 1, Class A&B.

A three-quarter inch by eight inch by eighteen inch (3/4" X 8" X 18") approved premolded expansion joint shall be installed every twenty (20') feet or as required. The premolded bituminous joint filler shall conform to requirements of ASTM D1751.

Where the curb is located adjacent to the sidewalk the contractor shall provide self leveling caulk to seal the joint over the expansion joint.

## METHOD

For construction areas that require replacement of existing concrete curbs, the Contractor shall proceed with particular care as not to disturb roadways adjacent to concrete curb to be removed. The Contractor shall be responsible for the protection of adjacent pavement, removal of existing curbs to be replaced, disposal of all excavated materials and, if required, roadway repairs.
The Contractor shall excavate the curb trench to the proposed line and grade. The subgrade shall be compacted to the satisfaction of the Engineer by a vibrating mechanical tamper or other approved method.

If the sub-grade is of unsuitable materials, all such materials shall be removed and replaced with select materials, as called for by the Engineer, tamped, and brought up to the proper grade. The removal of the unsuitable material and the replacement of select materials shall be included under this item.

Top curb elevation shall be six (6") inches above final pavement grade.

Curb cuts are to be provided at driveways and where directed by the Engineer. The cuts shall be finished smooth, and provide a uniform reveal as specified on the plans, with a slope of one to one to the top of the normal curb.

It is required that where the curb is installed on roads with vertical curves, the curb grade must be laid out and curb constructed to the same parabolic vertical curvature as the road. Vertical tangents will not be accepted.

Concrete curbs shall be one foot six inches (1'-6") high with a top width of six (6") inches, a bottom width of eight (8") inches, with a one (1") inch batter on the street side of the curb.

Concrete drop curbs shall be one foot six inches (1'-6") high with a minimum top width of approximately seven (7") inches; a bottom width equal to the top width. Top curb elevation shall be one and one-half (1-1/2") inches above final pavement grade.

## REINFORCING MATERIALS

Reinforcing materials shall be provided as shown on construction details.

## OTHER REQUIREMENTS

The Contractor shall reconstruct existing roof drains that fall within the areas of new concrete curbs. The method and materials for reconstruction or replacement of existing drainage facilities shall be determined by the Engineer and shall be in accordance with the details of the contract

documents and in conformance with these specifications.

The Contractor will be required to remove any sealant or other compounds that discolor the sidewalk. Any sidewalk permanently stained by sealant or other compounds will be removed and replaced at the Contractor's expense.
The Contractor shall include in his bid price any expenses for providing labor, materials, and equipment required to maintain in proper order at all times, all private and public utility pipes, lines and services and service boxes within his work area; and any damaged article shall be promptly replaced by the Contractor to the satisfaction of the Engineer.

The Contractor shall not leave the concrete wet and susceptible to marks by passersby, and must provide adequate protection to discourage this. Concrete marked in anyway will not be accepted by the Owner and will be the responsibility of the Contractor to remove blemished concrete and repour sections as directed by the Engineer.

The Contractor shall verify location of existing utilities whether underground or overhead and shall maintain in proper operating condition these utilities. If temporary utility services are required, the Contractor shall see to it that it is provided and it shall be his responsibility to maintain such temporary facilities unless they ask specifically to be maintained by others by prior written agreement.

The Contractor shall also verify the location of existing utility service valves and shall include in his bid price any costs related to relocating valves and related pipe work which may intersect the new work. This work is not anticipated but if encountered the Contractor shall be responsible to relocate these utilities within the right-of- way as directed in the field by the Engineer.

**MEASUREMENT AND PAYMENT**

The quantity of concrete curb and drop curb measured for payment under this item shall be the actual number of "LINEAR FEET" of curb placed in accordance with the plans or as directed by the Engineer including all saw cutting and the removal and legal disposal of existing curb.

The unit price bid shall include the cost of all labor, materials, and equipment necessary to complete the work. This shall include but not be limited to all saw cutting of concrete and asphalt, removal and disposal of curbs, concrete and asphalt, excavating, preparing subgrade, furnishing and placing crushed stone, tamping, concrete forming, providing concrete for curbs, pouring concrete curbs, providing joints and jointing material, reconstruction of existing roof and footing drains, removing forms, finishing, sealing, backfilling, curing and protecting the curb, and any other work required to provide a complete and finished concrete curb. The Contractor shall also remove and dispose of all excess excavated material in accordance with State and local requirements. Materials shall be disposed of in a legal manner.

# CONNECTION TO EXISTING DRAINAGE STRUCTURE

## WORK

Under this item the Contractor shall furnish all labor, materials, and equipment necessary to connect the new work into an existing drainage structure. An existing drainage structure shall be defined as any structure labeled "existing" on the plans.

## METHOD

The Contractor shall make such excavation at the existing drainage structures as may be required to make the connection. An opening shall be carefully made into the existing structure, of size sufficient to receive the new work.

The Contractor shall exercise reasonable care in opening the existing drainage structure. He will be completely responsible for and shall be required to repair any resulting damage to the existing facilities.

Upon completion of the opening, the Contractor shall insert the new drain line into the existing drainage structure and set the invert specified on the plans. The sides of the facility shall be repaired to provide a structurally sound and water tight repair using non-shrink concrete and an asphalt waterproofing compound if necessary.

## MEASUREMENT AND PAYMENT

The unit of measurement for this item shall be for "EACH" connection made to existing drainage structures as indicated on the plans and directed by the Engineer.

Payment for this item shall be at the unit price bid and shall include the cost of all labor, materials and equipment necessary to connect the new work with drainage structures to provide a connection complete and ready to use as specified and shown on the plans.

# CHAIN-LINK FENCE

## GENERAL

The Contractor shall furnish all labor, materials and equipment necessary to erect the chain-link fence and gates as indicated on the plans and as herein specified.

The fence shall be of the heights indicated and shall have a top rail, mid rail, and bottom rail.

Fence materials and installation shall meet or exceed the standards of the Chain Link Fence Manufacturers Institute, New York, NY, except as otherwise specified in this section; also fence materials shall meet or exceed Federal Specification RR-F-191H/GEN for Fencing, Wire and Post Metal (and Gates, Chain-Link Fence Fabric, and Accessories), and shall conform to the ASTM Standard Specifications hereinafter noted.

## MATERIALS

All ferrous metal fittings, posts, fence and gate framework, and all accessories shall be galvanized with a heavy coating of 2.0 oz. pure zinc spelter per square foot of surface area to be coated using the hot-dip process. Thinner zinc coatings and electro-galvanizing will not be acceptable. Zinc paint or cold galvanizing compounds shall not be used as a substitute for the specified hot-dip galvanized finish.

All fittings, posts, fence and gate framework, and all accessories shall be galvanized, then epoxy phenolic primed and top coated with matching PVC by thermal bond process. Color shall be **BLACK**.

The fence fabric shall be galvanized steel chain-link fabric conforming to ASTM Standard Specification for Zinc Coated Steel Chain-Link Fence Fabric, Designation A392-74, with Class 2 zinc coating (2.0 oz. of zinc per square foot of uncoated wire surface); the fabric shall be woven in two inch mesh from No. 6 gauge wire.

The tension wire shall be No. 7 gauge coil spring steel wire with galvanized finish having a minimum of 0.80 oz. of zinc coating per square foot of uncoated wire surface.

Tie wires for fastening fence fabric to line posts and rails shall be not less than No. 6 gauge aluminum wire.

Line posts shall be 2-3/8 inches outside diameter steel pipe weighing not less than 3.65 pounds per foot, or 1-7/8 inches high carbon steel H-beams weighing not less than 2.70 pounds per foot.

End, corner, and pull posts shall be 2-7/8 inches outside diameter steel pipe weighing not less than 5.79 pounds per foot, of 2-1/2 inch square steel tube weighing not less than 5.14 pounds per foot, or 3-1/2 inches by 3-1/2 inches roll-formed steel corner section weighing not less than 5.14 pounds per foot.

Gate posts for gate leaves up to and including six foot wide shall be 2-7/8 inches outside diameter steel pipe weighing not less than 5.79 pounds per foot, or 2-1/2 inches square steel tube weighing not less than 5.14 pounds per foot, or 3-1/2 inches by 3-1/2 inches roll-formed steel corner section weighing not less than 5.14 pounds per foot.

Gate posts for gate leaves over six foot wide and up to and including thirteen foot wide shall be four inches outside diameter steel pipe weighing not less than 9.10 pounds per foot.

Top, middle, and bottom railings between terminal posts and adjacent line posts shall be 1-5/8 inches outside diameter steel pipe weighing not less than 2.27 pounds per foot, of 1-5/8 inches by 1-1/4 inches, 14 gauge roll-form section.

Diagonal truss braces between terminal and adjacent line posts and for gate framework shall be 3/8 inches diameter steel rod.

Fittings shall be heavy duty malleable iron or pressed steel of suitable size to produce strong construction.

Stretcher bars for attaching fabric to terminal posts such as end, corner, pull, or gate posts and gate frames shall be flat bars with minimum cross section dimensions of not less than 1/4 inch by 3/4 inch. The stretcher bars shall be the full height of the fabric and shall be secured with bar bands of not less than eleven gauge sheet steel, spaced approximately fifteen inches on centers and bolted with 3/8 inch diameter bolts.

Concrete for post foundation bases shall be Class A concrete with a compressive strength of 3000 psi.

Grout for posts set in solid rock shall consist of one part Portland Cement and three parts of clean, sharp, well graded sand with just enough water for proper workability.

**METHOD**

The fence and gates shall be erected by skilled mechanics. Post spacing shall be uniform with maximum spacing of 10 feet in fences erected long straight lines. All posts shall be placed plumb and centered in the concrete foundations.

Post foundations in earth shall be concrete cylinders with a minimum diameter of twelve inches,

crowned at grade to shed water, and shall not be less than 36 inches deep in the ground. Posts shall be set in the full depth of the foundations except for three inches of concrete under the posts.

If foundation holes are excavated in peat or other unstable soil, the Engineer shall be notified for determination of suitable construction precautions.

If solid ledge is encountered without overburden of soil, posts shall be set into the rock a minimum depth of twelve inches for line posts and eighteen inches for terminal posts. Post holes shall be at least one inch greater in diameter than the post and the grout shall be thoroughly worked into the hole so as not to leave voids, and shall be crowned at the top to shed water. Where solid rock is covered by an overburden, the total setting depth shall not exceed the depths required for setting in earth, and the posts shall be grouted into the rock as described.

Any change in direction of the fence line of 30 degrees or more shall be considered corners. Pull posts shall be used at any abrupt change in grade.

Maximum area of unbraced fence shall not exceed 1,500 square feet.

Terminal posts shall be braced to adjacent posts with horizontal brace rails and diagonal truss rods brought to proper tensions so that posts are plumb.

There shall be no loose connections or sloppy fits in the fence framework. The fence framework shall withstand all wind and other forces due to the weather.

Fabric shall be stretched taut and tied to posts, rails, and tension wires with the bottom edge following the finished grade not more than two inches above the grade. The fabric shall be installed on the security side of the fence and shall be anchored to the framework so that the fabric remains in tension after pulling force is released. The fabric shall be attached to line posts with ties spaced at not more than fifteen inch intervals and to rails and braces at not more than twenty-four inch intervals. The fabric shall be attached to the tension wire with hog ring ties on twenty-four inch centers.

Gates shall be installed plumb, level, and secure for the full width of the opening and the hardware adjusted for smooth operation.

**SUBMITTALS**

The Contractor shall submit to the Engineer for review, shop and erection drawings of the fence and gates, and the manufacturer's installation recommendations. He shall also submit samples of fence fabric posts and caps for review.

**MEASUREMENT AND PAYMENT**

The unit of measurement for payment shall be per "LINEAR FOOT" of fence installed for the height shown on the Bid Sheets and for "EACH" chain link gate installed in the size shown on the Bid Sheets. The work shall include, but not be limited to providing all labor, materials and equipment required for the installation of PVC coated chain link fence, and for excavating, backfilling and tamping for the installation of concrete footings as specified and shown on the plans.

# CORRUGATED POLYETHYLENE PIPE

## WORK

Under this item the Contractor shall furnish all labor, materials and equipment necessary to furnish and install either corrugated polyethylene (PE) pipe or corrugated perforated PE pipe in accordance with the plans. The Contractor shall remove the existing pipe, dispose of surplus excavated materials, excavate and maintain the trench, properly install the pipe, gravel, polyethylene coupling bands, covers, fittings and properly backfill and tamp the trench as hereinafter specified.

Perforated pipe shall include work necessary to complete underdrains as shown in the plans. This work includes but is not limited to remove and dispose of surplus excavated material, excavate and maintain the trench, properly install the pipe, remove existing pipe, polyethylene coupling bands, fittings, installation of filter fabric, gravel, swale, underdrain filter material and properly backfill and tamp the trench as shown in plans and hereinafter specified.

## MATERIALS

Type S - This pipe shall have a full circular cross-section with an outer corrugated pipe wall and a smooth inner liner. Corrugations shall be helical.

Type SP - This pipe shall be Type S with perforations as specified.

The pipe shall be either Type S or Type SP, as specified on the bid sheets high density corrugated polyethylene pipe with N-12 Dual Wall smooth flow interior as manufactured by Advanced Drainage Systems, Inc. of Ludlow, MA or approved equal. The PE pipe shall be provided with exterior corrugations of dimensions recommended by the manufacturer for the sizes of pipe indicated on the plans. It shall conform in all respects to the requirements of ASTM standards and all subsequent addenda for N-12 Corrugated Polyethylene Pipe.

Extruded Pipe and Blow Molded Fittings: Pipe and fittings shall be made of virgin PE compounds which conform with the requirements of Type III, Category “4” or “5”, Grade P33, Class C; or Grade P34, Class C, as defined and described in ASTM D1248.

Rotational Molded Pipe and Fittings: Pipe and fittings shall be made of virgin PE compounds which conform with the requirements of Type III, Category “3”, Grade P33, Class C; or Grade P34, Class C, as defined and described in ASTM D1248.

Reworked Material: Clean reworked material generated form the manufacturer’s own production may be used by the manufacturer provided that the pipe or fittings produced meet all requirements of this specification.

Gravel: See Specification Section CSG, “FURNISH AND PLACE CRUSHED STONE OR GRAVEL”.

## APPLICABLE STANDARDS

ASTM Standards:

| | |
|---|---|
| D 618 | Conditioning Plastics and Electrical Insulating Materials for Testing. |
| D 883 | Terms Relating to Plastics. |
| D 1248 | Polyethylene Plastics Molding and Extrusion Materials. |
| D 1693 | Environmental Stress Cracking of Ethylene Plastics. |
| D 2122 | Determining Dimensions of Thermoplastic Pipe and Fittings. |
| D 2412 | External Loading Properties of Plastic Pipe by Parallel-Plate Loading. |
| D 2444 | Test for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight). |
| F 412 | Terms Relating to Plastic Piping Systems. |

## PIPE REQUIREMENTS

Workmanship: The pipe and fittings shall be free of foreign inclusions and visible defects as defined herein. The ends of the pipe shall be cut squarely and cleanly so as not to adversely affect joining or connecting.

Visible Defects: Cracks, creases, unpigmented or non-uniformly pigmented pipe are not permissible in the pipe as furnished.

Nominal Size: The nominal size for the pipe and fittings is based on the nominal inside diameter of the pipe. Nominal diameters shall be as shown on the plans and/or as directed by the Engineer.

Inside Diameter Tolerances: +3% and -1.5%.

Length: Corrugated PE pipe is an extruded product and may be sold in any length agreeable to the user. Lengths shall not be less than 99 percent of the stated quantity.

Perforations: When perforated pipe is specified, the perforations shall be cleanly cut so as not to restrict the inflow of water and uniformly spaced along the length and circumference of the pipe. Circular perforations shall not exceed 5/16 inch in diameter. The width of slots shall not exceed 1/8 inch. The length of slots shall not exceed 2.5 inches for 12 inch and 15 inch pipe and 3.0 inch for 18 inch and 24 inch pipe. Perforations shall be placed in the valleys of the corrugations. The water inlet area shall be a minimum of 1.0 square inch per linear foot of pipe.

Pipe Stiffness: The pipe shall have minimum pipe stiffness at five percent deflection as follows:

| Diameter *(inches)* | Pipe Stiffness *(psi)* |
|---|---|
| 12 | 45 |
| 15 | 42 |
| 18 | 40 |

| Diameter *(inches)* | Pipe Stiffness *(psi)* |
|---|---|
| 21 | 38 |
| 24 | 34 |
| 30 | 28 |

Pipe Flattening: There shall be no evidence of wall buckling, cracking, splitting, or delamination, when the pipe is tested.

Environmental Stress Cracking: There shall be no cracking of the pipe when tested.

Brittleness: Pipe specimens shall not crack or split when tested. Five (5) non-failures out of six (6) impacts will be acceptable.

**FITTING REQUIREMENTS**

The fittings shall not reduce or impair the overall integrity or function of the pipe line.

Common corrugated fittings include in-line joint fittings, such as couplings and reducers, and branch or complimentary assembly fittings such as tees, wyes, and end caps. These fittings are installed by various methods, such as snap-on, screw-on, and wrap around.

Only fittings supplied or recommended by the pipe manufacturer should be used.

All fittings shall be within an overall length dimensional tolerance ±0.5 inch of the manufacturer's specified dimensions.

Fittings shall not reduce the inside diameter of the pipe being joined by more than 0.5 inch. Reducer fittings shall not reduce the cross-sectional area of the small size.

Couplings shall be corrugated to match the pipe corrugations and shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints. Couplings shall be bell and spigot, split collar, or screw-on collar. Split collar couplings shall engage at least one full corrugation on each pipe section and screw on collars shall be in width at least one-half the nominal diameter of the pipe.

Pipe connections shall not separate to create a gap exceeding 3/16 inch when measured in a radial direction between pipe and coupling, or between tongue and groove portions of pipe. Fittings shall not crack or delaminate.

The design of the fittings shall be such that when connected with the pipe, the axis of the assembly will be level and true.

## JOINTS

The joining of the pipes shall be done using coupling bands. The size, material, and method of installation shall be as recommended by the manufacturer and accepted by the Engineer.

## INSPECTION AND RETEST

Inspection: Inspection of the material shall be made as agreed upon by the purchaser and the seller as part of the purchase contract.

Retest and Rejection: If any failure to conform to these specifications occurs, the pipe or fittings may be retested to establish conformity in accordance with agreement between purchaser and seller. Individual results, not averages, constitute failure.

## MARKING

All pipe shall be clearly marked at intervals of no more than ten (10') feet as follows:

- Manufacturer's name or trademark.
- Nominal Size.
- Manufacturer's specification designation, "M-294".
- The plant designation code.
- The date of manufacture or an appropriate code.

Fittings shall be marked with the designation number of the manufacturer's specification, "AASHTO M 294", and with the manufacturer's identification symbol.

## QUALITY ASSURANCE

A manufacturer's certificate that the product was manufactured, tested, and supplied in accordance with this specification, together with a report of the test results, and the date each test was completed, shall be furnished upon request. Each certification so furnished shall be signed by a person authorized by the manufacturer.

## CUTTING PAVEMENT

Before making any excavation, the Contractor shall cut the edges of the trench. Ripping of pavement by means of excavating equipment will not be permitted.

In the case of asphalt pavement, cutting of the edge shall be done by means of pneumatic drill with spade-shaped bit, or saw cut at the Contractor's option. Concrete pavements shall be saw cut by the Contractor.

## EXCAVATION OF TRENCH

The Contractor shall excavate a trench to the depth shown on the plans and to a width one (1) foot outside the pipe. The Contractor shall not use equipment which will excavate a trench wider than that specified. Hand excavation shall be employed wherever in the opinion of the Engineer it is necessary for the protection of existing utilities, trees, pavements or other structures.

All excavation shall be open cut method unless tunneling is authorized by the Engineer.

Excavation of the trench under this item shall include the necessary removals of existing drainage pipes or culverts that will be replaced, curbs, gutters, walks and driveways and the cutting, removal and disposal of asphalt and concrete pavement. See Section R, "Restoration" for replacement of existing site features upon completion of the work.

The Contractor shall keep the trenches free from water.

Trench rock shall be excavated to a depth of six (6") inches below the pipe.

At least twenty (20') feet of trench shall be excavated in front of the laying of the pipe. No more than fifty (50') feet of trench shall remain open over night without the express approval of the Engineer.

Additional depth of trench shall be excavated as required to clear obstructions not shown on plans. Measurement for this extra depth shall be from a point one foot below the design invert of the pipe to the bottom of the excavation. There shall be no payment for the first foot of extra depth under the Section MEE, "Miscellaneous Earth Excavation". Payment for this first foot shall be included under this item.

## SHEETING AND BRACING

Trenches shall be properly sheeted, shored and braced as necessary to prevent shifting of materials, to prevent damage to structures, pavement and pipes, and to provide safe working conditions. The Contractor shall be responsible for providing, installation and for the adequacy of all sheeting and bracing used and for all damage resulting from its failure or from placing, maintaining and removing it. No payment will be made for sheeting and bracing if it is removed, or if it is left in place for the Contractor's convenience. If the sheeting and bracing is ordered to be left in place by the Engineer after having been constructed, the Contractor shall be entitled to the cost of materials so left in place.

If there is a space between the sheeting and the side of the trench, the space shall be backfilled with suitable material thoroughly compacted in place. Where adjacent structures, pavement, or pipes may be damaged by the removal of sheeting, the Contractor shall not remove the sheeting. All sheeting left in place shall be cut off at least two (2') feet below the surface of the ground. Where sheeting or shoring is to be removed, the removal shall be in such a manner as to prevent loss of ground.

Attention is drawn to the New York State Department of Labor Industrial Code Rule #23, and O.S.H.A. regulations. Prefabricated sheeting boxes may be used only with the approval of the Engineer as to the box itself and the method of use.

**PIPE FOUNDATION**

The pipe shall rest on suitable material and a stable bottom. Soft, spongy or other unstable soil encountered at the invert established shall be excavated and removed. Excavation shall be for a width of one (1') foot outside the pipe and to a depth as called for by the Engineer. The pipe shall then receive a foundation of crushed stone, if required by the Engineer. The cost of this crushed stone shall be paid for under Section CSG, "Furnish and Place Crushed Stone or Gravel" except where in rock.

Excavation of the unstable bottom below the designed invert shall be under the Section MEE, "Miscellaneous Earth Excavation".

Measurement for this extra excavation shall be from a point one (1') foot below the invert of the pipe to the bottom of the excavation. There shall be no payment for the first foot of extra depth under the "Miscellaneous Earth Excavation" item. Payment for this first foot shall be included as part of this item.

**HANDLING OF PIPE**

The pipe shall be handled in a manner such that it will not be damaged or overstressed. Properly designed lifting apparatus shall be used in loading, unloading and lowering pipe into place for laying. Any type of mishandling or damage to the pipe during any phase of the work will be cause for rejection by the Engineer.

**LAYING PIPE**

The pipe shall be laid in the trench to conform accurately to the line and grade as called for on the plans. The pipe shall be laid on undisturbed ground supported throughout and shall have a uniform bearing from end to end. The use of blocks shall be strictly forbidden, except upon the express approval of the Engineer.

Pipes shall be deflected where indicated on the plans/or directed by the Engineer. Deflection shall be performed by the use of additional joints and/or elbows, as approved by the Engineer.

Where excavation has been made below the required grade, such areas shall be backfilled with suitable materials and compacted at the expense of the Contractor. All loose or unsuitable materials shall be removed from the trench bottom.

Where a line goes from one condition of bearing to another, as from rock cut to earth, or to gravel bed, special care is to be exercised to see that the less firm bearing ground is tamped and secure.

**BACKFILLING**

Backfill Material: Backfill shall be select granular well-draining material. It shall be free from rocks and hard lumps or clods larger than two (2") inches in diameter, sod, cinders, organic material and frozen fill. A small amount of silt or clay, less than 20 percent, is permissible. Unsuitable materials, as determined by the Engineer, shall be removed from the job site. Excess material and unsuitable material, excavated from the trench, shall be removed from the site by the Contractor as part of this item.

Backfill Around Pipe and Structures: After the pipe has been properly laid and inspected as required, the space between the pipe and the sides of the trench shall be filled to the top of the pipe in six (6") inch layers. Fill material under haunches and around the pipe must be placed alternately in six (6") inch layers on both sides of the pipe to permit thorough tamping. The fill is placed alternately to keep it at the same elevation on both sides of the pipe at all times. Tamping can be done with hand or mechanical equipment, tamping rollers or vibrating compactors, depending upon field conditions. It shall be done carefully to insure a thoroughly tamped backfill.

At this point the Engineer shall be notified and he shall inspect the pipes. Pipes, which in the opinion of the Engineer have deformed or joints which have opened, shall be excavated and satisfactorily repaired or replaced at no additional cost to the Town. After the Engineers approval the backfill operation shall continue, as described above to an elevation one (1') foot above the top of the pipe. The earth above this point shall be backfilled and compacted in nine (9") inch layers and addition of water may be required by the Inspector to achieve the required compaction.

Tamping Equipment:

Hand Equipment - For tamping under the haunches of a pipe or structure, a pole or 2 x 4 is generally needed to work in the small areas. Hand tampers for compacting horizontal layers should weigh not less than twenty (20) pounds and have a tamping face not larger than 6 x 6 inches. Ordinary "sidewalk" tampers are generally too light.

Mechanical Tampers - Most types of power tampers are satisfactory and can be used in all except the most confined areas. However, they must be used carefully and completely over the entire area of each layer to obtain the desired compaction. Avoid striking the structure or pipe with power tamping tools.

It shall be the responsibility of the Contractor to prevent water, earth, stone, sand or debris of any nature from entering the drain lines. Should any material accidentally enter the line, it shall be flushed or dragged until satisfactorily cleaned, and provision shall be made to catch all such matter before it can enter any drain.

## INTERFERING STRUCTURES

The Contractor shall, under this Contract, and as called for in the General Conditions, sustain and protect from direct or indirect injury all pipes, poles, conduits, walls, buildings, roadways and other structures, utilities and property in the vicinity of his work. Such sustaining and supporting shall be carefully done by the Contractor and as required by the Company or party owning the structure. The Contractor shall take all risks attending their presence and he shall be responsible for all damage and assume all expense for direct or indirect injury caused by his work, to any of them or to any person or property by reason of injury to them whether such structures are or are not shown on the drawings.

Should the position of any pipe, conduit, pole or other structure, except structures and pipe specifically shown to be removed, be such as in the opinion of the Engineer to require its removal, realignment or change, such work will be done by the Owner of the obstruction without cost to the Contractor, but the Contractor shall uncover and support the structures, at his own expense, before and after such removal, realignment or change, as part of this contract; and the Contractor shall not be entitled to any claim for damage or extra compensation resulting from any delay in the removal or rearrangement of the same. Wherever so directed, the Contractor shall excavate test pits to locate subsurface obstructions or pipes.

## INSPECTION

Pipes, which in the opinion of the Engineer have deformed or joints which have opened shall be excavated and satisfactorily repaired or replaced at no additional payments by the Town.

## CLEANING PIPES

The Contractor shall prevent earth, stone, sand, or debris of any nature from entering the lines. Should any material enter the line, the line shall be flushed or dragged by approved methods until satisfactorily cleaned, and provision shall be made to catch all such matter before it can enter any drain lines.

## MEASUREMENT

The quantity of pipe to be paid for under this item shall be the actual number of "LINEAR FEET" of pipe line, of the various sizes laid by the Contractor, as measured along the center line of the pipe from inside face to inside face of structures or to end sections without regard to the lengths of the individual pieces of pipe or cuts, or joints required.

The quantity will be "EACH" for the individual end section.

**PAYMENT**

The payment for this item shall be on a "LINEAR FOOT" of pipe and shall be "EACH" per end section. All work under this item shall include all labor, materials and equipment and other miscellaneous expenses including trench excavation and backfill, maintaining and sheeting the trench if required, furnishing and installing of polyethylene coupling bands, and for furnishing and laying the pipe as specified and shown on the plans.

Perforated Pipe shall include work necessary to complete Underdrains as shown in the plans. This work includes but is not limited to remove and dispose of surplus excavated materials, excavate and maintain the trench, properly install the pipe, polyethylene coupling bands, fittings, installation of filter fabric, crushed stone filter material, grading of swale and properly backfilled and tamp the trench as shown in plans and hereinafter specified.

# CRUSHED STONE OR GRAVEL

## WORK

Under this item the Contractor shall supply all labor, material and equipment required to furnish and place crushed stone or gravel as directed by the Engineer. This item will in general cover the use of the material placed to correct unsuitable subgrade conditions in earth or placed as a subbase for asphalt pavement or for use as a foundation for concrete structures and pipe but is not necessarily limited to these purposes.

Recycled or processed material shall not be acceptable for this item.

## MATERIAL

All materials shall conform to the New York State Department of Transportation Standard Specifications dated May 1, 2008 and subsequent addenda, except that no limestone or crushed slag shall be permitted. Stone sizes referred to are as specified in Table 703-4 of the New York State Department of Transportation (NYSDOT) Specifications (703-0203, No. 1). The stone size to be supplied shall be as specified on the plan or as approved in the field by the Engineer. Item 304.12 (Item 4) shall meet NYSDOT Specification Table 304-1, Type 2.

## METHOD

When unsuitable, unstable, mucky foundations for pipes, structures, or roadways are encountered, the Contractor shall notify the Engineer, who shall, if he so deems necessary, order the excavation of the muck to defined lines and grade. The Contractor shall then supply the material ordered by the Engineer and carefully place it within the area excavated. The material shall be placed in six (6”) inch layers and be compacted, in trenches by hand or mechanical tampers and in roadways by roller.

## TESTING MATERIAL

The Engineer may, if he deems it necessary, take samples of the material supplied and have it analyzed to ascertain whether or not it fulfills the requirements of the specifications set forth.

If the material does not meet these specifications and has already been utilized in the construction, payment shall be reduced to fifty (50%) percent of the bid price and the Contractor shall pay for the cost of testing.

**MEASUREMENT**

Measurement shall be by the "CUBIC YARD" of the designated material actually placed within the payment limit lines ordered by the Engineer.

For stabilization of excavated areas, the measurement shall be within the following payment limit lines:

Length: The length measurement shall be the actual length of excavation ordered to be stabilized by the Engineer.

Width: The width measurement shall be one foot, on each side, outside the structure being installed irrespective of actual width of excavation or stabilized area.

Depth: The depth measurement for material placed shall be the depth of the excavation below the normal bottom pay limit for the bottom of a structure as ordered by the Engineer. In no case shall payment be made to depths excavated below those ordered by the Engineer. No payment shall be made for using stone or gravel to fill undercuts below the required grade when not ordered by the Engineer.

**PAYMENT**

The payment shall be at the unit price bid for the material shown on the plans or as designated by the Engineer which shall include all labor, materials and equipment necessary for furnishing the materials and for placing and preparing them in the excavated area as specified or directed.

No payment will be made under this item for gravel or crushed stone used to replace excavated rock. Such gravel or crushed stone shall be included in the unit price for rock excavation.

No payment will be made under this item for gravel or crushed stone used in connection with any item where this material is specified on the plans or in the specifications to be included as part of that item.

# CONCRETE SIDEWALKS AND RAMPS

## WORK

Under this item the Contractor shall furnish all labor, materials and equipment necessary to remove existing sidewalks throughout the project area and completely install the one-course air-entrained concrete sidewalks, vehicle and pedestrian ramps and subbase foundations in the thicknesses as shown on the plans and specified herein. The Contractor shall remove existing sidewalks adjacent to the proposed sidewalk and existing sidewalks which require removal for the installation of the new sidewalks. The cost of the removal and disposal of all existing sidewalks shall be included in the unit price bid for new sidewalks.

The price bid shall be a unit price per square foot of five (5") inch thick concrete with a six (6) inch subbase material for sidewalks and pedestrian ramps and seven (7") inch thick concrete with six (6") inch subbase material for vehicular ramps installed complete and shall include furnishing all labor, materials and equipment required. The Contractor shall do all necessary saw cutting of asphalt and concrete, removal and legal disposal of asphalt and concrete, preparing of subgrade, cutting of roots, excavation, adjust manhole covers, valves boxes, oil fills, existing utility structures, cellar doors and metal plates within sidewalk and ramp areas, replace existing roof and leader drains, providing, placing and tamping of subbase foundation, set forms, install expansion joints and wire mesh, provide and pour concrete, score and broom finish surface, remove forms, protect concrete, backfill sidewalk, apply sealing agent and any incidentals required to complete the work in all respects. All surplus excavated material shall be hauled from the site of the work and legally disposed or as ordered by the Engineer.

## METHOD

After the necessary excavations have been completed to the required subgrade and has been compacted to the satisfaction of the Engineer, a layer of select crushed stone shall be placed thereon and shall be compacted to a compressed thickness of not less than five (5") inches for sidewalks and pedestrian ramps and seven (7") inches for vehicular ramps.

## FORMS

Metal or wood forms shall be used in the construction of the sidewalks and ramp as required. The forms shall be set true to line and grade and shall be installed with sufficient bracing to prevent warping. Before any concrete is poured the Engineer shall approve the form work.

## CONCRETE

The concrete shall be poured in alternate panels and shall be evenly spread and leveled by screeding in such a manner as to obtain the required thickness and be poured in no more than twenty-five (25') foot strips to the width shown on the plans.

The concrete shall consist of Class A Portland Cement, sand, crushed stone, water and admixture. All of the materials and concrete shall conform in every respect to the requirements contained in these Specifications and to the requirements set forth for "Rigid Pavement", Section 500 of the New York State Department of Transportation Specifications except that no gravel or slag will be used for coarse aggregate. A difference in the color of concrete used for a portion of the work shall be cause for the rejection of the sidewalk.

Concrete shall have a compressive strength of 4,000 psi and its slump shall be between two (2") and three (3") inches. The Concrete shall be proportioned in accordance with the aggregate weights specified for Class A concrete in New York State Department of Transportation Table 501-3.

## REINFORCING MATERIALS

Reinforcing materials shall be welded wire fabric, (WWF): ASTM A185, welded steel wire fabric, as shown on the plans.

## EXPANSION JOINTS

A 3/8" X 5" approved premolded expansion joint shall be installed so that the top is 1/4" below the finish grade of the sidewalk, at intervals not greater than twenty-five (25') feet and also adjacent to all buildings, driveways, and other structures, and at such other locations as may be ordered by the Engineer. The premolded bituminous joint filler shall conform to requirements of ASTM D1751.

## FINISH

As soon as the concrete has set sufficiently to permit finishing operations, the surface of the concrete shall be rubbed with a wooden float. The "floating" shall remove all irregularities and produce a smooth and granular finish. The addition of cement to the surface will not be permitted. Unless otherwise directed as shown on the plans, the edges of each panel of segment shall be marked out with a standard edging tool having a radius of one-half (1/2") inch. The concrete walk surface shall be lightly broomed with a standard hair broom to produce a nonskid surface.

## PROTECTION

The Contractor shall apply a curing and protecting agent such as "Durok-Shield" manufactured by Durok or any approved equal. Application shall be in conformance with the manufacturer's instructions. Prior to any applications of the curing agent, the concrete surface shall be dry and cleaned of all dirt and debris. An admixture to achieve the same results may be added to the concrete mix.

## MAINTENANCE AND PROTECTION OF EXISTING UTILITY STRUCTURES

The Contractor shall adjust all existing utility structures to finished grade of new concrete pavement. Utility structures shall include, but not be limited to, manhole covers, valve boxes (water, gas and oil), coal chutes and other resetting within the new construction work as directed by the Engineer. The Contractor shall supply all labor, materials, and equipment necessary to adjust structures to finished grade as directed by the Engineer. The Contractor shall incorporate the cost of these items in the bid price for "Concrete Sidewalks".

The price bid shall be a unit price per square foot of five (5") inch thick concrete with a six (6) inch subbase material for sidewalks and pedestrian ramps and seven (7") inch thick concrete with six (6") inch subbase material for vehicular ramps installed complete and shall include furnishing all labor, materials and equipment required. The Contractor shall do all necessary saw cutting of asphalt and concrete, removal and legal disposal of asphalt and concrete, preparing of subgrade, cutting of roots, excavation, adjust manhole covers, valves boxes, oil fills, existing utility structures, cellar doors and metal plates within sidewalk and ramp areas, replace existing roof and leader drains, providing, placing and tamping of subbase foundation, set forms, install expansion joints and wire mesh, provide and pour concrete, score and broom finish surface, remove forms, protect concrete, backfill sidewalk, apply sealing agent and any incidentals required to complete the work in all respects. All surplus excavated material shall be hauled from the site of the work and legally disposed or as ordered by the Engineer.

## OTHER REQUIREMENTS

The Contractor shall construct Sidewalk Pedestrian and Vehicular Ramps as shown on the plans or as directed by the Engineer.

The Contractor shall reconstruct existing roof drains and underside walk drains located within the areas of new concrete sidewalks. The method and materials for reconstruction or replacement of existing drainage facilities shall be determined by the Engineer and shall be in accordance with the details of the contract documents and in conformance with these specifications.

The Contractor will be required to install an approved sealant between new sidewalk and existing buildings. This sealant shall be a two component polysulfied polymer base material meeting or

exceeding Federal Specification TT-S-0027, Type II such as "DAP Two-Part Flexiseal" as manufactured by DAP, Inc. of Dayton, Ohio or approved equal. Color shall be as selected by the Engineer.

This sealant shall be used in conjunction with a suitable primer. This primer shall be a synthetic resin solution compounded specifically for promoting adhesion to the substrate involved with as DAP Flexiseal Primer or approved equal. Backup material shall be untarred oakum fiberglass, polyurethane foam or polyethylene foam. No oily or asphaltic type materials shall be used. A bond breaker such as polyethylene film must be used between filler and sealant. The fill shall be uniform to provide minimum sealant depth of three (3") inches.

The Contractor will be required to remove any sealant for other compounds that discolor the sidewalk. Any sidewalk permanently stained by sealant or other compounds will be removed and replaced at the Contractor's expense.

The Contractor shall include in his bid price any labor, materials and equipment required to maintain in proper order at all times, all private and public utility pipes, line and services and service boxes within his work area; and any damaged article shall be promptly replaced at the Contractor's expense to the satisfaction of the Engineer.

The Contractor shall not leave the concrete wet and susceptible to marks by passersby, and must provide adequate protection to discourage this. Concrete marked in anyway will not be accepted by the Town and will be the responsibility of the Contractor to be re-poured as directed by the Engineer.

The Contractor shall verify location of existing utilities whether underground or overhead and shall maintain in proper operating condition these utilities. If temporary utility services are required, the Contractor shall see to it that it is provided and it shall be his responsibility to maintain such temporary facilities unless they are specifically to be maintained by others by prior written agreement.

**MEASUREMENT AND PAYMENT**

The quantity of concrete to be paid for under this item shall be the actual number of "SQUARE FEET" of concrete sidewalks, pedestrian ramps and vehicular ramps constructed in accordance with the plans and specifications and directions of the Engineer. The bid price shall be per square foot of concrete and subbase in place complete. The Contractor shall remove existing sidewalks adjacent to the proposed sidewalk and existing sidewalks which require removal for the installation of the new sidewalks. The cost of the removal and disposal of all existing sidewalks shall be included in the unit price bide for new sidewalks.

The price bid shall be a unit price per square foot of five (5") inch thick concrete with a six (6) inch subbase material for sidewalks and pedestrian ramps and seven (7") inch thick concrete with six

(6") inch subbase material for vehicular ramps installed complete and shall include furnishing all labor, materials and equipment required. The Contractor shall do all necessary saw cutting of asphalt and concrete, removal and legal disposal of asphalt and concrete, preparing of subgrade, cutting of roots, excavation, adjust manhole covers, valves boxes, oil fills, existing utility structures, cellar doors and metal plates within sidewalk and ramp areas, replace existing roof and leader drains, providing, placing and tamping of subbase foundation, set forms, install expansion joints and wire mesh, provide and pour concrete, score and broom finish surface, remove forms, protect concrete, backfill sidewalk, apply sealing agent and any incidentals required to complete the work in all respects. All surplus excavated material shall be hauled from the site of the work and legally disposed or as ordered by the Engineer.

# DEMOLITION AND REMOVAL

## WORK

Under this item the Contractor shall furnish all labor, materials and equipment necessary to demolish and remove existing equipment and site features at the project site as required for the construction of the new work as shown on the Plans and specified herein. Any materials demolished for removal and not to be salvaged shall become the property of the Contractor and must be disposed of legally. The Contractor shall submit to the Engineer written permission from the owner of the proposed dump site prior to disposal. The items to be removed included under this section include, but not necessarily limited to, fence, line striping, and drainage structures or pipe not associated with new work.

The Contractor shall at the direction of the Engineer, salvage equipment and materials existing on the site. Any equipment to be salvaged shall be made known to the Contractor in the field prior to demolition operations. These items shall be delivered by the Contractor to a location within the municipality.

Blasting and the use of explosives will not be permitted for any demolition work.

## CONDITION OF STRUCTURES

The Owner and the Engineer assume no responsibility for the actual condition of structures to be demolished and removed.

Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable.

## RULES AND REGULATIONS

The Building Code of the State of New York, shall control the demolition of structures.

## DISPOSAL OF MATERIAL

All removed and demolished material and unwanted items of equipment and pipelines shall become the Contractor's property and must be removed from the site. Any existing equipment to be salvaged shall be made known to the Contractor prior to demolition operations. The Contractor shall be responsible for the careful and proper removal of items to be salvaged and shall not cause damage due to excessive force in disconnecting and removing equipment. The Contractor shall provide safe transportation of salvaged items to the Water Department or Highway Department or a location designated by the Engineer.

The dumping, burial, burning, storage, or sale of removed and demolished items on the site will not be allowed. All materials to be removed shall be disposed of in accordance with all applicable regulations.

**SUBMITTALS**

Submit to the Engineer for approval, a plan of the proposed methods and operations of demolition of the structures in accordance with the General Conditions prior to the start of demolition work.

**TRAFFIC AND ACCESS**

Conduct demolition operations, and the removal of equipment and debris to ensure minimum interference with abutting street and local traffic.

Special attention is directed towards maintaining safe and convenient access to the proposed facilities by the Owners' personnel and associated vehicles.

Do not close or obstruct streets, walks or other occupied or used facilities without permission from the Engineer. Provide alternate routes around closed or obstructed traffic in access ways.

**PROTECTION**

Conduct operations to minimize damage by falling debris or other causes to structures, roadways, and other facilities, including persons.

Exercise precautions for fire prevention. Acceptable fire extinguishers shall be available at all times in areas where demolition work by burning torches is being performed. Burning of demolition debris shall not be permitted on or near the site.

**DAMAGE**

Promptly repair damage caused to existing site features by demolition operations as directed by the Engineer and at no cost to the Owner. Repairs shall be made to a condition at least equal to that which existed prior to construction operations.

**UTILITIES**

Maintain existing utilities as directed by the Engineer to remain in service and protect against damage during demolition operations.

Do not interrupt existing utilities except when authorized by the Engineer. Provide temporary

services during interruptions to existing utilities as acceptable to the Engineer.

The Contractor shall be solely responsible for making all necessary arrangements and for performing any necessary work involved in connection with the discontinuance or interruption of all public and private utilities or services under the jurisdiction of the utility companies.

All utilities being abandoned shall be disconnected and terminated at the service mains in conformance with the requirement of the utility companies or the municipality owning or controlling them.

## DUST AND NOISE CONTROL

The Contractor shall take all measures necessary to minimize the amount of dust and noise resulting from demolition activity.

## MATERIALS

All materials or items of equipment required for the performance of the work of this Section shall be suitable for the intended purpose and shall be equal, where applicable, to similar items and materials specified in other sections of the technical specifications.

## DEMOLITION

Demolition shall be performed to the limits shown on the Drawings or if no limits are shown, to a depth at least two (2') feet below final grade or two (2') feet below any new foundation or pipe.

Wet down work during demolition operations to prevent dust from arising. Provide maximum practical protection from inclement weather for materials, equipment and personnel.

Remove all existing work as indicated on the drawings and prepare adjoining areas for installation of new work. All demolition debris shall become the property of the Contractor and shall be removed from the site and properly disposed of by the Contractor. Demolition debris shall not be used for fill or backfill.

Blasting or the use of explosives will not be allowed for demolition work.

## MEASUREMENT AND PAYMENT

The unit of measurement for payment shall be a "LUMP SUM" amount for furnishing all labor, materials and equipment and for performing all items of work complete as specified and shown on the plans. The cost shall be included with all other items within the specifications and shown on the plans.

# DRAINAGE STRUCTURES

## WORK

Under this item the Contractor shall provide all labor, materials and equipment necessary to construct, rebuild, install, abandon, or remove all drainage structures, including catch basins, drain inlets, and control structures, as indicated on the plans and as specified. The Contractor shall supply all covers, grates, and frames, and also provide all pipe connections as required for a complete installation. The Contractor shall include connecting all existing pipe to the new drainage structures, which shall include all incidental work and material such as pipe, couplers, gaskets, etc.

The work shall include but not be limited to excavation, installation, and backfilling, maintenance of excavation area, dewatering and sheeting, supply and install subbase material, tamping and any incidentals necessary for a complete installation including cast iron castings and concrete lids.

Shop drawings with proposed elevations shall be submitted to the Engineer for approval prior to ordering materials.

## DESCRIPTION

Drainage structures shall conform in shape, size, dimensions, materials, and other respects to the details indicated on the drawings and as specified.

Drainage structures walls shall be precast concrete masonry units. The top of the structure (not to exceed 6 inches) shall be built of brickwork to permit adjustment of the frame to meet the finished surface.

Drainage structures sumps shall be one-piece precast concrete or concrete masonry units on cast in place or precast concrete bases with a minimum sump depth of eighteen (18”) inches, unless otherwise specified.

Unless otherwise specified or indicated, all concrete shall be 3,000 psi.

The cast iron frames and grates shall be standard as indicated on the drawings and as specified.

## PRECAST CONCRETE MASONRY UNITS

Precast concrete masonry units shall be machine made solid segments, conforming to ASTM C139 “Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes”, with the following exceptions and additional requirements:

- Type II cement shall be used except as otherwise permitted.
- The width of the units shall be as indicated on the drawings.

- The inside and outside surfaces of the units shall be curved to the necessary radius and so designed that the interior surfaces of the structures shall be cylindrical, except the top batter courses shall be designed to reduce uniformly the inside section of the structure to the required size and shape at the top.
- Units shall be designed such that only full-length units are required to lay any one course.
- Acceptance of the units will be on the basis of material tests and inspection of the completed product.

**PRECAST CONCRETE SUMPS**

Precast concrete sumps shall conform to the ASTM C478 "Standard Specifications for Precast Reinforced Concrete Manhole Sections", with the following exceptions and additional requirements:

- The wall section shall be not less than six (6") inches thick.
- Type II cement shall be used except as otherwise permitted.
- Sumps shall be cured by subjecting them to thoroughly saturated steam at a temperature between 100- and 130-degrees Fahrenheit for a period of not less than twelve (12) hours or, when necessary, for such additional time as may be needed to enable the sections to meet the strength requirements.
- No more than two lift holes may be cast or drilled in each sump.
- Acceptance of the sumps will be on the basis of material tests and inspection of the completed product.

All holes in sumps used for their handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one (1) part cement to 1-1/2 parts sand, mixed slightly damp to the touch (just short of "balling"), hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

**BRICK**

The brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, or compact texture, and satisfactory to the Engineer. Brick shall comply with the ASTM C32 "Standard Specification for Sewer and Manhole Brick (made from Clay or Shale)", for Grade SS, hard brick, except that the mean of five (5) tests for absorption shall not exceed eight (8%) percent by weight.

Rejected brick shall be immediately removed from the work.

**MORTAR FOR BRICKWORK**

The mortar shall be composed of Portland cement, hydrated lime, and sand, in which the volume

of sand shall not exceed three times the sum of the volume of cement and lime. The proportions of cement and lime shall be as directed and may vary from 1:1/4 for dense, hard-burned brick to 1:3/4 for softer brick. In general, mortar for grade SS Brick shall be mixed in the proportions of 1:1/2:4-1/2.

Cement shall be Type II Portland cement as specified for concrete masonry.

Hydrated lime shall be Type S conforming to the ASTM C207 "Standard Specification for Hydrated Lime for Masonry Purposes".

## MORTAR FOR MASONRY UNITS

The mortar shall be composed of one (1) part Portland cement and two (2) parts of sand by volume with sufficient water to form a workable mixture. Cement and sand shall be as specified for mortar for brickwork.

## LAYING BRICKWORK AND MASONRY UNITS

Only clean units shall be used. Bricks shall be moistened by suitable means, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid. Concrete masonry units shall be dry when laid.

Each brick shall be laid in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and shall be thoroughly bonded.

Each concrete masonry unit shall be laid in a full bed and joint of mortar and shall be thoroughly bonded. Vertical keyways shall be completely filled with mortar.

## PLASTERING AND CURING BRICK MASONRY

Outside faces of brick masonry shall be plastered with mortar from 1/4 inch to 3/8 inch thick. If required, the brick masonry shall be properly moistened prior to application of the mortar. The plaster shall be carefully spread and troweled. After hardening, the plaster shall be carefully checked by tapping for bond and soundness. Unbonded or unsound plaster shall be removed and replaced.

Brick masonry and plaster shall be protected from too rapid drying by the use of burlaps kept moist, or by other acceptable means, and shall be protected from the weather and frost, all as required.

## DRAINAGE STRUCTURES FRAMES AND GRATES

The Contractor shall furnish and install all cast iron drainage structures frames and grates conforming to the details indicated on the drawings and as specified.

The castings shall be of good quality, strong, tough, even grained cast iron, smooth, free from scale, lumps, blisters, sand holes, and defects, of every nature which would render them unfit for the service for which they are intended. Contact surfaces of grates and frame seats shall be machined to prevent rocking of grates.

All castings shall be thoroughly cleaned and subject to a careful hammer inspection.

Castings shall be at least Class 25 conforming to the ASTM A48 "Standard Specifications for Gray Iron Castings".

Before being shipped from the foundry, castings shall be given one coat of coal-tar pitch varnish, applied in a satisfactory manner so as to make a smooth coating, tough, tenacious, and not brittle nor with any tendency to scale off.

Unless otherwise specified or indicated on the drawings, castings in paved areas shall be capable of withstanding H-20 loading and shall meet the requirements of the municipality in which they are installed.

## SETTING COVERS, GRATES, AND FRAMES

Cover and grates shall be set with the tops conforming accurately to the grade of the pavement or finished ground surface, or as indicated on the drawings or as directed.

Circular frames shall be set concentric with the top of the masonry. All frames shall be set in a full bed of mortar such that the space between the top of the masonry and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed around the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.

Grates or covers shall be left in place in the frames on completion of all other work at the structure.

## DRAINAGE STRUCTURES ADJUSTED TO GRADE

Existing drainage structures tops shall be adjusted to line and grade as indicated on the drawings or as directed by the Engineer. All drainage structures adjusted to grade shall be provided with brick as required for new catch basins.

**MEASUREMENT AND PAYMENT**

The quantity of drainage structures to be paid for under this item shall be the number of "EACH" drainage structures constructed, in accordance with the plans and specifications and directions of the Engineer. The price bid shall be a unit price per drainage structures in place with grates and frames and for providing all pipe connections required for a complete installation and shall include furnishing all labor, materials and equipment to complete all work.

# PAVEMENT MARKINGS

## WORK

Under this item the Contractor shall furnish all labor, materials and equipment necessary to install epoxy reflectorized traffic line markings, painted symbols, letters and special markings as shown on the plans and as ordered by the Engineer.

## MATERIAL AND METHOD

The Contractor shall conform to the New York State Manual of Uniform Traffic Control Devices, the New York State Department of Transportation Specifications dated May 1, 2016 and all subsequent addenda and revisions, for Specification Section 685 and 727, concerning the materials and installation of the Epoxy Reflectorized Pavement Markings, or as directed by the Engineer. The markings shall be white, yellow and blue as directed by the Engineer.

## MEASUREMENT

Pavement striping will be measured by the "LINEAR FOOT" along the centerline of the strip. Symbols will be measured per "EACH" unit applied. A headed arrow or handicap symbol is considered one unit. Letters shall be measured per "EACH" letter.

## PAYMENT

Payment shall be at the unit price bid per linear foot of epoxy pavement striping actually installed and for each painted symbol and letter actually installed as indicated on the bid sheets and shown on the plans. This payment shall include all labor, materials and equipment necessary to install the work as herein described to the satisfaction of the Engineer. Any pavement markings installed improperly and rejected by the Engineer shall be completely removed and replaced by the Contractor at no additional cost of the Owner.

# RESTORATION

## WORK

Under this item the Contractor shall provide all the labor, material, and equipment necessary to restore the site to its original condition. All man-made and natural features in the construction site disturbed or removed for the proper completion of the work shall be reset or replaced. All man-made or natural features damaged or destroyed shall be repaired or restored to a condition equal to or better than that existing at the start of the work, with materials equal to or better than the original ones.

Physical features damaged outside the limits of the work, as determined by the Engineer, shall be repaired as described in the "GENERAL CONDITIONS".

Restoration of utility lines of private companies or municipalities is covered under the "GENERAL CONDITIONS" and is not included as part of this item.

## SCOPE

After the new work in an area has been completed, tested and accepted, or when ordered by the Engineer, the restoration of all the man-made and natural features disturbed shall proceed.

These features are of the general types outlined below but not necessarily limited to these specific items, as this specification item covers all required restoration work within these general categories:

Trees, shrubbery and bushes.

Gardens (rock gardens, flowers, annual, perennials, etc.) with all soils and mulches.

Ground Covers (pachysandra, myrtle, phlox, ivy, etc.) with all soils and mulches.

Lawns (fescues, bluegrasses, perennial ryes, zoysia, etc.) with all topsoil or sod. See paragraph "GRASS AREAS" below.

Walls and Wall Footings (stone, masonry, brick, dry bound, etc.).

Fences (chain link, picket, board, barbed wire). This shall include such new work as footings, guys or braces as may be required to secure work.

Sidewalks, Pathways, Patios (concrete, flagstone, crushed stone, precast slab, brick, gravel, slate, terrazzo, tile). The Contractor shall provide all labor, materials and equipment required to restore all concrete walkways and sidewalks etc. intersecting the new work as specified on the plans and as directed by the Engineer. The work shall include furnishing crushed stone, concrete and any other replacement material required to restore the disturbed area to the satisfaction of the Engineer.

Curbs and curb footings (concrete, asphalt, granite, stone, brick, metal, etc.).

Driveways (Concrete, slab, gravel, crushed stone and asphalt). The Contractor shall supply all labor, material and equipment required to restore all driveways intersecting the new work as specified on the plans and as directed by the Engineer. The work shall include furnishing and installing crushed stone or gravel, bituminous top course, concrete and reinforcing material, etc. to repave the surface to existing grade.

Private Underground Utilities (footing drains, roof leader drains, dry wells, private electric cables, sprinkler system, swimming pool appurtenances, septic fields, etc.).

Front or Rear Yard Man-Made Features (mail boxes, sign posts, lamp posts, dog houses, bird baths, pigeon coops, storage sheds, fireplaces, barbecue pits, trash burning pits, playing courts, religious creches, awnings, gates, wells, etc.) can best be handled if they are carefully removed and replaced after the construction. Those disturbed, damaged, or destroyed shall be reset, repaired, or replaced.

**EQUIVALENT ITEMS**

All features damaged or destroyed shall be repaired or restored with features equal to or better than the original ones. The Contractor shall make all reasonable attempts to satisfy the Owner but the Engineer shall be the judge as to the reasonableness of equivalency of repaired and restored features.

In cases where it is impossible to replace an item with an equivalent item (large trees, exotic plants), the Contractor may substitute other similar items whose total value shall equal that of the destroyed one. This shall be done to the satisfaction of the Owner. In such cases the Contractor shall secure a written release from the home stating that he is accepting a substitute for the destroyed item and that he releases the Contractor and the Owner from further claims for said item. The Engineer shall be the judge of the value of the destroyed and the value of the restored items and the reasonableness of the substitution.

**GRASS AREAS**

Immediately after backfilling, grass areas shall be temporarily restored using fast germinating annual or perennial rye grass seed. The patched area shall be watered as necessary to insure proper germination.

All disturbed grass areas shall be permanently replaced during the planting seasons from April 7th to May 15th and from August 25th to October 1st as follows:

Harrow the ground. Remove weeds and other undesirable growth.

Furnish and place a minimum of four (4”) inches of screened topsoil obtained from a local nursery.

Rake and grade topsoil to match adjoining area; the Engineer is to approve the grading before fertilizing and seeding.

Furnish and place 15 lbs. of fertilizer containing ten (10) parts Nitrogen, six (6) parts of Phosphoric Acid and four (4) parts of Potash (10-6-4) to every 1,000 square feet of area.

Furnish and place 10 lbs. of grass seed mixture to every 1,000 square feet of area containing, by percentage of weight, the following seed (NYSDOT Standard Specifications):

For Roadside areas, use:

| | |
|---|---|
| 50-70% | Fine Fescue (*Festuca rubra*), 2 varieties min., including "creeping red" |
| 15-40% | Perennial Ryegrass (*Lolium perenne*), 2 varieties min., "turf" type |
| 5-15% | Annual Ryegrass (*Lolium multiflorum*) |
| 5-10% | White Clover (*Trifolium repens*), other varieties may be acceptable |

For Lawn areas, use:

| | |
|---|---|
| 30-50% | Fine Fescue (*Festuca rubra*), 2 varieties min., including "creeping red" |
| 15-40% | Kentucky Bluegrass (*Poa pratensis*), 3 varieties min. |
| 15-40% | Perennial Ryegrass (*Lolium perenne*), 2 varieties min., "turf" type |
| 5-15% | Annual Ryegrass (*Lolium multiflorum*) |

If the above mixtures are unavailable, the Contractor shall request permission to utilize a specific comparable mixture.

The Contractor shall water the new grass until the grass reaches a stand of four (4") inches.

The Contractor shall be responsible for all restored grass areas until final acceptance by the Owner. He shall regrade, reseed, refertilize, etc., any grass that has failed to maintain a dense stand of any area that has lost its grade due to settlement of the trench. The finished restored area shall be free of weeds and shall have the same density of grass as the adjoining areas.

In lawn areas that contain Zoysia grasses, the Contractor shall replace the area with the same.

In lieu of the above method placing topsoil and seeding, the Contractor may substitute sodding at his own option and at no extra cost to the Owner.

**PROTECTION OF TREES**

Tree trunks are to be protected with heavy wooden fences. All trees in the vicinity of construction activity are to be secured, in a manner acceptable to the Engineer, to prevent toppling. The Contractor shall avoid cutting more than one-third (1/3) of a tree root system, as measured by the perimeter of the canopy. The Contractor shall avoid cutting roots greater than one (1") inch in diameter. Under low canopy trees the Contractor shall modify the vertical extension of the

construction equipment boom to avoid injury to the low tree branches. Construction equipment movement in the vicinity of trees shall be kept to a minimum to avoid compaction of the soil around the trunks of trees. During backfill operations the Contractor shall avoid excessive tamping of earth around tree roots and trunks and shall apply an approved mulch to the roots during the operation.

**MAINTENANCE**

All work done as part of this item shall be maintained for a period of two (2) years after completion of the project by this contract and secured by the maintenance bond.

Trenches that have settled shall be refilled to the proper grade. If this refilling operation disturbs the previous restoration of lawns, etc., the lawns, etc., shall again be restored to their original condition under this item and at no additional cost to the Owner.

Items replaced, replanted or restored shall be protected to ensure their proper establishment. This protection may take any form required, such as guying, wrapping, covering, barricading, shoring, signage, etc.

**REGRADING SURFACES TO FINISHED GRADE**

In some instances, grading by machines will not be considered as properly or satisfactorily graded to the required finished grades. In these instances, hand grading such as raking, rolling, trimming, etc., will be ordered by the Engineer to complete the work satisfactorily.

**DELETION OR ADDITION OF WORK**

If the alignment of a pipe line is changed and it results in an increase or decrease of restoration work, adjustment of payment for this item shall be made. In general, the adjustment shall be based on the proportion that the change bears to the total of all the restoration work and the bid price for this item. For any increase in the work, the increase in payment shall in no case exceed the cost of labor, materials and equipment plus percentage allowances computed as outlined in "GENERAL SPECIFICATIONS" section "CHANGES IN THE WORK, COST-PLUS BASIS".

**RELEASES**

The Owner may require the Contractor to obtain a written release from any or all private property owners and/or public agencies as to satisfactory restoration of easement or permit areas, or written acceptance of other considerations or substitutions in lieu of such satisfactory restoration. Final payment may be withheld pending receipt of such releases.

**MEASUREMENT AND PAYMENT**

No measurement for payment under this item shall be made, as this item includes all work or materials that may be required to restore the site.

Deductions shall be made for work improperly or unsatisfactorily done. The Owner reserves the right to use such funds to hire other contractors to properly complete the work.

Payment for this item shall be included in the base bid for all other items in this Contract, whether called for on the plans or not, as required to restore the site to its original condition. The price bid shall include the cost of furnishing all labor, materials and equipment necessary to complete the work as specified herein, and to maintain it.

If any restoration work is covered by a separate item listed on the proposal sheet, it shall be paid for under such item and shall not be included under this item.

# SAW CUTTING PAVEMENT

## WORK

Under this item, the Contractor shall furnish all required labor, material and equipment necessary to saw cut existing concrete and asphalt pavement, roadways, driveways, curbs and other pavements shown on the plans and as directed by the Engineer.

## METHOD

The Contractor shall use an approved saw, which will result in a neat clean, straight cut. Lines shall be drawn on the existing pavement at the Engineer's direction, and the concrete shall be cut to a depth which will ensure the required edge. Care shall be taken so as not to damage existing pavement or curbs adjacent to the section being removed. The use of fire hydrants to supply the water for the operation of the saw shall not be permitted.

Workers shall wear necessary safety clothing and eye protection while operating saw cutting equipment and shall be thoroughly familiar in the safe operation of the equipment. The Contractor shall be responsible for all safety practices.

## MEASUREMENT AND PAYMENT

There will be no separate payment made under this item. All costs related to this work shall be included in the cost of other items of work in this Contract. Saw cuts will be required at all driveways and roadways intersecting the proposed work.

# TRAFFIC SIGNS AND POSTS

## WORK

Under this item the Contractor shall furnish all material, labor and equipment necessary to completely furnish and install aluminum panel reflective traffic signs and posts as shown on the plans and specified herein, and/or as directed by the Engineer.

## SUBMITTALS

Submittals for all proposed materials shall be provided to the Engineer for review and approval prior to ordering or installing materials. Submittals shall include product information, shop drawings, material samples, color samples, certifications, and similar information. Any material installed without the prior approval of the Engineer shall be cause for rejection and shall be replaced by the Contractor to the satisfaction of the Engineer at no additional cost to the Owner.

## MATERIALS

Sign posts and sign panels shall be constructed in conformance with the Americans with Disabilities Act (ADA) requirements, the Manual of Uniform Traffic Control Devices (MUTCD), latest edition, and the New York State Department of Transportation (NYSDOT) Standard Specifications, latest edition.

All materials delivered to the site shall be examined thoroughly for damage or defects. Any defects shall be noted and reported to the Engineer. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule. Materials shall be stored above the ground under protective cover or indoors so as to provide sufficient protection. Any damage or defects occurring during handling or storage shall be the responsibility of the Contractor and shall be replaced by the Contractor at no additional cost to the Owner.

### *Aluminum Sign Panels and Sheeting*

A. Panel Material: Aluminum Alloy 6061-T6 and conforming to the requirements of NYSDOT Standard Specifications Section 715-04, Wrought Aluminum. The Engineer reserves the right to conduct tests upon aluminum panels supplied.

B. Reflective Sheeting (Class B):

1. Colored, flexible, weather resistant and shall have a flat outer surface. If sheeting contains spherical lens elements, the lens elements shall be embedded within a transparent plastic o as to produce a smooth, flat outer surface. All sheeting shall be of good appearance, free from ragged edges, cracks, scales, blisters or other defects.

2. The back of the reflective sheeting shall be protected by a removable liner and shall include a precoated pressure sensitive adhesive or a tack free heat activated adhesive, either of which may be applied without necessity of additional adhesive coats of the reflective sheeting or applications surface.

3. Brightness shall conform to the minimum brightness values listed in NYSDOT Standard Specifications. The brightness of Class B reflective sheeting, when totally wet by rain, shall not be less than 80% of the dry measured brightness values.

4. Color shall conform to the requirements established in NYSDOT Standard Specifications.

5. Engineer reserves the right to conduct tests upon reflective sheeting supplied.

C. Panel Surface Preparation for Reflective Sheeting: NYSDOT Standard Specifications Section 730-05 Method I or II in strict accordance with the recommendations of the manufacturer of the reflective sheeting.

D. Adhesion of Reflective Sheeting: vacuum applicator process or mechanical process in strict accordance with the manufacturer's recommendations.

The adhesive bond produced shall be tough enough to resist scuffing and marring of the sheeting during handling; elastic enough at low temperatures to prevent the sheeting from being "shocked" off; strong enough to make the sheeting vandal resistant and to resist peeling of the reflective sheeting from the application surface; shall have no staining effect on the outside face of the reflective sheeting; and shall be mildew resistant.

***Steel Sign Posts***

A. Steel posts for ground mounted signs shall meet the requirements of NYSDOT Standard Specifications Section 715-01, except that ASTM A 1 or rerolled axle steel may be used for small angle posts and ASTM A 36, A 242, A 441, A 572, Grade 50 and A 588 steel may be used for posts.

B. All steel posts after fabrication (punching, drilling, etc.) shall be galvanized in accordance with applicable requirements of NYSDOT Standard Specifications Section 719-01, Galvanized Coatings and Repair Methods.

***Aluminum Sign Posts***

A. Aluminum posts shall meet the requirements of NYSDOT Standard Specifications Section 715-04, and shall be fabricated of alloys 6061 T6.

B. Welding shall be in conformance with applicable provisions and general recommendations of the latest edition of the American Welding Society's "Standard Specifications for Welded Highway and Railway Bridges". All aluminum welding shall be performed in the shop using

an inert gas metal arc welding process. Welders shall be qualified in accordance with the latest edition of the ASME Boiler and Pressure Vessel Codes, Section IX, Welding Qualification, Part B. Field welding shall not be allowed.

C. The portions of the posts that will be in contact with the concrete shall be coated with Zinc Chromate Primer, NYSDOT Standard Specifications Section 708-04 and the primer shall be thoroughly dry before the concrete is placed.

***Concrete Footings***

Embedded footings for signs with metal posts shall be constructed of Class A Concrete without reinforcement. Unless otherwise specified on the drawings, footings shall be 12" in diameter and 36" deep, set on 6" of crushed gravel. Precast footings submittals shall be submitted to the Engineer for review.

## METHOD

Prior to ordering materials, sign design, dimensions, materials, colors, and lettering and post material and dimensions shall be reviewed and approved by the Engineer. Contractor shall review the location of each sign and post in the field with the Engineer before installation.

There shall be no breaking and patching of new impervious surface materials for the installation of posts. Post footings shall be set prior to the placement of new surface materials. Contractor shall install posts plumb and attach signs in accordance with NYSDOT Standard Specifications, manufacturer's recommendations and Engineer's directions. Care shall be taken to maintain proper height of signs, especially signs which shall meet ADA requirements.

Contactor shall protect signs and posts from damage for the duration of construction until final acceptance. The Engineer shall inspect work for quality of material and installation. Any defects as determined by the Engineer shall be replaced or repaired by the Contractor as directed by the Engineer at no additional cost to the Owner. Crooked posts or signs shall be cause for rejection.

## MEASUREMENT AND PAYMENT

The measurement and payment for this item shall be the number of "EACH" sign and post systems installed complete. This item shall include furnishing all materials, labor, and equipment necessary to completely provide and install aluminum panel reflective traffic signs and posts in accordance with the plans, specifications, and directions of the Engineer. This shall include submittals, excavation, concrete foundation, backfilling, posts, sign panels, fasteners, handling, storage, protection, and any other related work and materials.

No payment shall be made for work that has not been accepted by the Engineer or that has become defective due to the Contractor's negligence, ignorance, error, material failure, or improper storage or handling of materials.

# FURNISH AND PLACE TOPSOIL AND SEED

## WORK

Under this item, the Contractor shall furnish all labor, material, and equipment place topsoil and grass seed in all areas as indicated on the plans or as directed by the Engineer. The work shall include but not be limited to: preparing the areas for topsoil and seed, placement of a minimum of four (4") inches of topsoil, removal of objectional material from harrowed ground, placing seed and fertilizer, and maintenance of seeded areas.

## MATERIAL

Topsoil shall be the surface layer of soil and shall be free from refuse, any material toxic to plant growth, subsoil, woody vegetation, stumps, roots, brush, stones, clay lumps, or similar objects larger than two (2") inches in greatest dimension. Sod and herbaceous growth, such as grass, need not be removed but shall be thoroughly broken up and mixed with the soil during handling operations. Invasive species and noxious weeds shall be removed and disposed. Topsoil shall not be delivered or used in a frozen or muddy condition.

Topsoil shall meet the following requirements:

1. The pH of the material shall be 7.0.

2. The organic content shall be between six (6%) and twenty (20%) percent.

3. Gradation:

| Sieve Size | Percent Passing by Weight |
|---|---|
| 2 inch | 100 |
| 1 inch | 85-100 |
| 1/4 inch | 65-90 |
| No. 200 mesh | 20-80 |

   Topsoil in which more than sixty percent (60%) of the material passing the USS No. 200 mesh sieve consists of clay as determined by hydrometer, or by the decantation method shall not be used. All percentages are to be based on dry weight samples.

The Contractor may amend natural topsoil with approved materials and by approved methods to meet the above specifications. Topsoil containing foreign material may be rejected on the basis of a visual examination prior to testing.

Acceptance of topsoil will be based on the test results unless otherwise specified. Tested topsoil must be approved in writing by the Engineer before any material is used.

Grass seed shall be high-quality commercial grade grass seed. Prior to purchasing materials and placement, the Contractor shall submit his proposed seed to the Engineer for review.

Lawn Area Seed:

30-50% Fine Fescue (Festuca rubra), 2 varieties min., including “creeping red”
15-40% Kentucky Bluegrass (Poa pratensis), 3 varieties min.
15-40% Perennial Ryegrass (Lolium perenne), 2 varieties min., “turf” type
5-15% Annual Ryegrass (Lolium multiflorum)

Roadside (Right-of-Way) Area Seed:

50-70% Fine Fescue (Festuca rubra), 2 varieties min., including “creeping red”
15-40% Perennial Ryegrass (Lolium perenne), 2 varieties min., “turf” type
5-15% Annual Ryegrass (Lolium multiflorum)
5-10% White Clover (Trifolium repens), other varieties may be acceptable

Acceptable material in a seed mixture other than pure live seed consists of nonviable seed, chaff, hulls, live seed of crop plants and inert matter. The percentage of weed seed shall not exceed 0.1 percent by weight. All seed will be rejected if the label or test analysis indicates any of the following contaminates: Timothy, Orchard Grass, Sheep Fescue, Meadow Fescue, Canada Blue Grass, Alta Fescue, Kentucky 31 Fescue, and Bent Grass.

**METHOD**

Grass areas shall be permanently established during the periods of April 7 to May 15 or August 25 to October 1 or as directed by the Engineer.

The Contractor shall harrow the ground and remove all weeds and other undesirable growth. He shall furnish and place a minimum of four (4”) inches of topsoil which shall be raked and graded to match existing ground as specified on the Plans. The Engineer shall approve the grading of all areas prior to fertilizing and seeding.

The Contractor shall furnish and place an approved fertilizer containing 10 parts of nitrogen, 6 parts of phosphate and 4 parts of potash (10-6-4) at a rate of 15 pounds of fertilizer per 1,000 square feet of area or per manufacturer’s recommended rate.

The Contractor shall then furnish and place the approved grass seed evenly over the entire area at a rate of at least 10 pounds per 1,000 square feet. Grass seed shall be sown in such manner that a uniform stand will result. The Contractor will be required to present all empty seed bags to the Engineer to verify that the required amount of seed has been placed.

Mulch shall be applied within one day after seeding, cover the seeded areas with a uniform blanket of straw mulch at the rate of 100 pounds per 1,000 square feet of seeded area. Mulch shall be stalks of oats, wheat, rye or other approved crops which are free of weeds and weed seed. Weight

shall be based on a 15 percent moisture content.

The Contractor shall water the newly planted grass until the grass reaches a stand of four (4") inches and shall cut the new grass to a height of two (2") inches a minimum of three times or as directed by the Engineer.

The Contractor shall be responsible for all grass areas until final acceptance by the Owner. He shall regrade, reseed, refertilize, etc., any grass that has failed to maintain a dense stand. The finished area shall be free of weeds.

In lieu of the above method of placing topsoil and seeding, the Contractor may substitute sodding, at his own option and at no extra cost to the Owner. Sod shall constitute a mixture of grasses equivalent to the seed mixture specified herein. Sod shall be viable and of uniform density, color, height, and texture that is strongly rooted and capable of vigorous growth and development when planted. Sod shall be free of deleterious material, noxious weeds, and anything that may inhibit the establishment of the sod.

The Contractor shall also have the option of hydroseeding the lawn areas at no increased cost to the Owner and subject to the approval of the Engineer. If the Contractor selects this option, he shall submit to the Engineer for approval a complete specification of the hydroseeding operation he intends to follow. Hydroseeding with a cellulose fiber mulch is acceptable.

**MEASUREMENT AND PAYMENT**

The quantity of topsoil and seed to be paid for under this item shall be the number of “SQUARE FEET” installed, in accordance with the plans and specifications and directions of the Engineer.

The price bid shall be a unit price per “SQUARE FOOT” of topsoil and seed in place, and shall include the cost of furnishing all labor, materials (including peat moss and organic fertilizer) and, equipment necessary to prepare areas for topsoil and seed, removal of objectionable material, raking, fertilizing, installation of topsoil and seed, straw mulch, and maintenance all in accordance with the plans and specifications and to the satisfaction of the Engineer.