COR Review comments 5/19/14

City of Rochester, New York

DRAFT
4-25-14

Contract Proposal Book for

# PORTLAND AVENUE REVITALIZATION

## Lux Street to Norton Street

## Project No. 14105


Department of Environmental Services
Bureau of Architecture and Engineering Services

James R. McIntosh, P.E., City Engineer


Issued:

THIS CONTRACT CONTAINS BID ALTERNATE(S) AND WILL BE AWARDED TO THE LOWEST RESPONSIBLE BIDDER IN THE ORDER OF PRIORITY AS LISTED UNDER SUBSECTION SIB 12 BASIS OF AWARD

March 17, 2014

missing bottom text - MWBE / Apprenticeship info

THIS CONTRACT CONTAINS M/WBE AND APPRENTICESHIP TRAINING REQUIREMENTS

- belongs on cover sheet (bottom)
- adjust page break / line spacing

(Remove page)

# PROJECT SUMMARY

## PROJECT TITLE

Street Improvement Program
**PORTLAND AVENUE REVITALIZATION (Lux Street to Norton Street)**
Project No. **14105**

## PROJECT DESCRIPTION

This Project consists of the improvements to **PORTLAND AVENUE REVITALIZATION**, ~~between~~ from **Lux Street to Norton Street**.

driveway aprons

The scope of the work consists of installation of new granite curb and underdrain pipe, new drainage structures and lateral pipes, new water services, new lighting foundations and conduit, asphalt pavement trench restoration, new concrete sidewalk and ~~driveways~~, new brick paver sidewalk, new exposed aggregate sidewalk, new bus shelter pad, new decorative bollards, new brick veneer concrete landscape walls, new street trees and plantings, ~~new signs~~, temporary striping, and installation of a new traffic signal controller cabinet.

We should alert the contractor of ~~why~~ the reasons why we are only doing "X" and not "Y".

(*) generally describe bumpouts and M&R project to be completed w/additional curb & sidewalk work as part of that contract...

## PROJECT DESIGN

KCI Engineering of New York, PC
One HSBC Plaza
100 Chestnut Street, Suite 1110
Rochester, NY 14604

## CONTRACT TYPE

(*)

This is a UNIT PRICE contract, and includes Bid Alternate(s) 1 thru [ENUMERATE].

## CONTRACT DOCUMENTS

A. *NYSDOT Standard Specifications: Construction and Materials January 2, 1990, and Addenda*

B. *NYSDOT Standard Specifications (US Customary Units) May 1, 2008, and Addenda* – specifications as referenced

C. *City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition*

D. Contract Proposal Book for **PORTLAND AVENUE REVITALIZATION**

E. Contract Proposal Forms for **PORTLAND AVENUE REVITALIZATION**

F. Contract Drawings 1 thru 47

(no numbering on this page)

## WORK BY OTHERS

The intent of the "WORK BY OTHERS" portion of the Project Summary section is to advise the prospective Bidder of any anticipated work to be done by others for informational and coordination purposes. The information is furnished solely for the convenience of the Contractor, without any warranty expressed or implied as to its accuracy or completeness.

**City of Rochester DES, Street Lighting Division** – City Street Lighting will be removing all existing 30' tall street light poles and fixtures on Portland Avenue within the project limits, and purchasing and installing new decorative 30' tall street light pole and fixtures. These poles and fixtures will be installed on the new pole foundations (supplied and installed under the Project), as well as on the existing light pole foundations. New decorative lighting fixtures will also be installed on the existing traffic signal poles at the Lux Street, Durnan Street, and Norton Street signalized intersections. This Work will be coordinated with the Project work and will be completed by the end of December 2014.

**Rochester Genesee Regional Transit Authority** – RGRTA will be supplying and installing a standard bus shelter on the new concrete pad installed during the Project at the existing bus stop at Durnan Street.

**City of Rochester Water Bureau** – The City Water Bureau will supply and install a new hydrant marker on the new hydrant installed as part of the Project on the west side of Portland Avenue just south of Norton Street.

(*) need to verify water work & hydrant replacements

- Gas work? - should add
- Electric work?
- any other work?

(no numbering)

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# SUPPLEMENTARY INSTRUCTIONS TO BIDDERS


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# SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

These Supplementary Instructions to Bidders amend or supplement the Instructions to Bidders of the City of Rochester Standard Construction Contract Documents and other provisions of the City's Contract Documents as are indicated below. All provisions which are not so amended remain in full force and effect.

## A. RECENT CHANGES TO THE CONTRACT DOCUMENTS

The following is a brief recap of the major changes that have been made to the Contract Documents:

- Revised subsection STC 9.7 Resolution of Disputes (1/1/2014)
- Updated multiple items on the Contingent Item List on pages P-6A thru P-6D of the Proposal (1/1/2014)
- Revised subsection STC 13.3 Review of Applications for Progress Payments (9/1/2013)
- Revised subsection STC 10.2 Asphalt Price Adjustment (6/1/2013)
- Revised form AP1 Apprenticeship Training in Construction Contracts on page P-10 of the Proposal, and SLR-5 of the Supplementary Laws and Regulations (5/17/2013)

**An incomplete package will be declared informal and will not be considered for award. No required apprenticeship material will be accepted after Bids have been opened.**

The Bidder should familiarize themselves not only with these major changes, but also should thoroughly review all of the Contract Documents as other minor changes may also have been made that are not specifically noted herein.

The Bidder is to comply not only with these new requirements, but with all of the other requirements that are listed within the Contract Documents.

## B. PROJECT SPECIFIC INFORMATION

needs to be scheduled

### 1. Pre-Bid Conference

A pre-bid conference will be held on **at in Room** , City Hall, 30 Church Street, Rochester, New York 14614.

All Bidders are urged to attend so that their bid is not rejected due to lack of adequate documentation. Any statements made at the pre-bid meeting do not constitute changes in the Contract Documents. Amendments to the Contract Documents can only be accomplished by means of addenda issued by the City Engineer.

### 2. Time and Location of Bid Opening

Sealed Proposals for the following improvement:

**PORTLAND AVENUE REVITALIZATION (Lux Street to Norton Street)**
Project No. **14105**

2:00 PM

endorsed with the name of the Bidder and stating the Bidder's address must be received by the Office of the Purchasing Agent, City Hall Room 105-A, 30 Church Street, Rochester, NY 14614 prior to the Bid opening. The Bid opening is scheduled at **local time on** , at City Hall, 30 Church Street, Rochester, NY, at which time and place all Bids will be publicly opened, read and recorded. When the Bidder submits their Bid, the Purchasing Office will inform the Bidder of the room location where the Bids will be opened.

need to be determined based on Pre-bid mtg

### 3. Apprenticeship and Subcontractor Data, M/WBE Form P

Submit Apprenticeship Agreements and Subcontractor Data as required by SIB-9 and SLR-17, and M/WBE Form P pages 1 and 2 with the bid as required by SIB-9 and SLR-19.

Complete and sign the checklist on page P-5a of the proposal and submit all required documents. The City will reject bids that lack any of the required documents.

### 4. Start and Completion of the Work

The Contractor will start the work within ten (10) days of receipt of the written Notice to Proceed as issued by the City Engineer.

The Contractor shall complete the work within **one hundred twenty(120)** calendar days from the date the Notice to Proceed was issued less the number of days by which one (1) or more of the following submittals are overdue: Completed M/WBE Utilization Forms; performance and payment bonds required by Article 4.1.2 of the General Terms and Conditions; and certificates of insurance required by Article 4.2 of the General Terms and Conditions.

## C. MODIFICATIONS TO THE INSTRUCTIONS ON THE USE OF THE STANDARD CONSTRUCTION CONTRACT DOCUMENTS

### SIN 1. Standard and Supplementary Documents

**Delete** the fourth paragraph of Subsection 1 Standard and Supplementary Documents on page IN-1 in its entirety, and **Replace** with the following:

The Supplementary Documents pertain to specific conditions that exist for a particular Project and list any deviations from the Standard Documents. When a Bidder purchases Supplementary Documents from the City of Rochester for a particular Project, the Bidder will receive one (1) set of Proposal sheets. This set of Proposal sheets is bound separately from but included with the Contract Proposal Book. The Bidder shall submit this set of Proposal sheets along with a bid bond as the bid.

## D. MODIFICATIONS TO THE INSTRUCTIONS TO BIDDERS

### SIB 2. Qualifications of Bidders

**Add** the following at the end of Subsection 2 Qualifications of Bidders on page IB-1:

Upon request by the City of Rochester (City Engineer or Purchasing Agent), Bidders will be required to fill out a Confidential Questionnaire - Statement of Bidder's Qualifications. The Confidential Questionnaire is not attached to the Proposal as stated on Page IB-1, Subsection 2. Qualifications of Bidders of the Instruction to Bidders in the *City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition.*

In the event that the City shall require certified supporting data regarding the qualifications of the Bidder in order to determine whether the Bidder is a responsible Bidder, the Bidder will be required to complete and furnish a Confidential Questionnaire within forty-eight (48) hours of the request by the City Engineer or Purchasing Agent. On the Confidential Questionnaire the Bidder will be required to list:

a. The Bidder's performance record;
b. The address and description of the Bidder's plant and place of business, principals of the firm and detailed account of work committed;
c. An itemized list of equipment in inventory. Such list shall include the age and condition of the equipment;
d. Dollar value of the largest contract that the Bidder has been awarded and completed within the last 5 years;
e. Description of other contract work the Bidder is engaged in at present time;
f. Manner in which the Bidder inspected this Project;
g. Names and experience of personnel responsible for field work on this Project;
h. Description and dollar value of work to be performed on site with the Bidder's forces;
i. Number of the Bidder's workers to be assigned to this Project;
j. Name of the Bidder's bonding company;
k. Description and dollar value of work to be sublet;
l. A description of any similar projects which the Bidder has constructed in a satisfactory manner and other pertinent information;
m. Type of equipment to be rented for this Project.

The City Engineer or Purchasing Agent may also request the Bidder to furnish within forty-eight (48) hours a certified or authenticated financial statement, dated within thirty (30) days prior to the opening of bids. The City may require that any items be further verified. The Bidder agrees to permit the City to verify the line of credit extended to the Bidder by banks or other financial institutions. The City may also use the services of a national mercantile agency such as Dunn & Bradstreet, Inc, in checking financial responsibility. The Bidder agrees further that the City will incur no liability as a result of this procedure. A copy of the Confidential Questionnaire is available in the City of Rochester Purchasing Office, City Hall.

**SIB 3. Inspections and Review of Contract Documents before Submitting Bid**

**Add** the following at the end of Subsection 3 Inspections and Review of Contract Documents Before Submitting Bid on page IB-1:

The following Contract Documents shall be components of the Agreement between the City of Rochester and the Contractor by reference:

a. *The City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition*:

1. Instructions on the Use of the Standard Construction Contract Documents (pages IN-1 thru IN-3)
2. Instructions to Bidders (pages IB-1 thru IB-6)
3. Bonds and Insurance Forms (pages BI-1 thru BI-10)
4. Laws and Regulations (pages LR-1 thru LR-7)
5. General Terms and Conditions (pages GC-1 thru GC-55)
6. Specifications (pages S-1 thru S-266)
7. Details (No.R206-1 thru R917-3)

b. *New York State Department of Transportation Standard Specifications: Construction and Materials, January 2, 1990 Edition, and Addenda*; and *State of New York Department of Transportation Standard Specifications (US Customary Units), May 1, 2008 Edition, and Addenda;* specifications as referenced.

c. Notice to Bidders (Advertisement)

d. The Contract Proposal Book:

no numbering the proj summary

1. Project Summary ~~(pages thru )~~
2. Supplementary Instructions to Bidders (pages SIB-1 thru SIB-00)
3. Proposal (pages P-1 thru P-14)
4. Supplementary Laws and Regulations (pages SLR-1 thru SLR-24)
5. Supplementary Terms and Conditions (pages STC-1 thru STC-00)
6. Supplementary Specifications (pages SS-1 thru SS-00)

e. Additional Contract Documents:

1. Drawings (number 1 thru 47)
2. Addenda (as issued)
3. Agreement, Bonds and Insurance Forms (pages A-1 thru A-11)
4. Any Change Orders Issued after execution of this Agreement

*The City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition* is issued separately in a bound volume. Copies of this book can be purchased from the City of Rochester Purchasing Office, City Hall, for $25.00.

*The City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition* references the *New York State Department Standard Specifications: Construction and Materials, January, 2, 1990, Edition.* Copies of this book can be purchased from the City of Rochester Purchasing Office, City Hall, for $25.00.

Certain Supplementary Specifications may make reference to *State of New York Department of Transportation Standard Specifications (US Customary Units), May 1, 2008 Edition.* Copies of this book may be obtained by contacting NYSDOT Plan and Publication Sales, (518) 457-2124.

The Water Bureau maintains a list of *Materials Approved for Use by the City of Rochester, NY - Water Bureau.* It is recommended that the Bidder obtain a copy of this list before preparing and submitting a bid. Copies of this list may be obtained either by calling the Water Bureau, at (585) 428-7569, or on the City of Rochester's website at ***http://www.cityofrochester.gov/waterbureaul***, under Helpful Documents for Contractors.

Any conflicts or questions between these documents are to be identified by the Bidder at the pre-bid meeting.

## SIB 6. Subcontractors and Assignments

**Add** the following after the first paragraph of Subsection 6 Subcontractors and Assignments on page IB-2:

The Contractor shall perform with its own organization contract work amounting to not less than twenty percent (20%) of the original total contract bid price, except that any items designated by the City as "Specialty Items" may be performed by subcontract and the amount of any such "Specialty Items" so performed may be deducted from the original total contract bid price before computing the amount of work required to be performed by the Contractor with its own organization. The contract amount upon which the twenty percent (20%) requirement is computed includes the cost of materials and manufactured products which are to be purchased or produced by the Contractor under the contract provisions.

"Its own organization" shall be construed to include only workers employed and paid directly by the Contractor and equipment owned or rented by it, with or without operators. Employee leasing and other similar arrangements under which workers are employed by a service organization are not considered part of the Contractor's "own organization".

"Specialty Items" shall be construed to be limited to work that requires specialized knowledge, skill or equipment not ordinarily available in contracting organizations qualified to bid on the contract as a whole, and in general are to be limited to minor components of the overall contract.

## SIB 9. Requirements for Preparation and Submission of Bids

**Add** the following after the first paragraph of Subsection 9 Requirements for Preparation and Submission of Bids on page IB-3:

No Bidder will be allowed to price unit items in increments less than one hundredths of a dollar ($0.01). Bidders must assign unit prices to the nearest penny. Submission of unit prices in increments of less than one hundredths of a dollar ($0.01) will result in those increments being dropped from the unit prices and the total cost for that unit item recalculated, and the subtotal and total base bids adjusted accordingly. Figures will not be rounded up or down. For example, a unit price submission of $1.759 will be considered a bid of $1.75.

The Bidder shall note that the Proposal contains both a Base Bid and Bid Alternate(s) 1 thru [ENUMERATE] which may contain multiple bid items with the same item number. The Bidder is to use the same unit bid price for those duplicated bid items in both the Base Bid and in the Bid Alternate(s). If a different unit bid price has been used for any of the duplicated bid items, the City reserves the authority to modify the unit price bid for the duplicated bid item(s) in the Bid Alternate(s) by applying the unit price bid from the appropriate bid item(s) in the Base Bid.

**Add** the following after the fifth paragraph of Subsection 9 Requirements for Preparation and Submission of Bids on page IB-3:

Submit with the Proposal, copies of the appropriate apprenticeship agreements for the Bidder, Bidder's Form AT-10 or if not self-sponsoring the apprenticeship program, Form AP3 and the associated Form AT-10, Form AP1 and appropriate Subcontractor apprenticeship agreements as required by the Rules and Regulations for the "Apprenticeship Training Program for Construction Projects", if:

1. This contract involves work described in the Rules and Regulations for the "Apprenticeship Training Program for Construction Projects"; and

2. The amount of the contract to be awarded is in excess of $250,000. If any add/deduct alternates alone or in combination with the base bid could result in a contract amount award that exceeds $250,000, regardless of the base bid amount, submit the apprenticeship documentation.

A Contractor who submits a bid for such a City contract shall include with its bid package the following complete apprenticeship documents which meet the requirements of these Rules and Regulations:

1. Bidder's Form AT-10 or, if not self-sponsoring the apprenticeship program, Form AP3 and the associated Form AT-10.

2. Bidder's Form AP1.

Submit with the Proposal the complete Subcontractor apprenticeship documents:

1. Subcontractor's Form AT-10 or, if not self-sponsoring the apprenticeship program, Form AP3 and the associated Form AT-10.

If no such subcontracts are proposed which exceed $100,000 in value, submit the completed City Form AP1 with the word "NONE" inserted under "Subcontract Scope of Work or Work Items" column for subcontractors.

**An incomplete package will be declared informal and will not be considered for award. No required apprenticeship material will be accepted after Bids have been opened.**

The apprenticeship agreement requirement also applies to subcontracts proposed following contract award; see the Rules and Regulations for the "Apprenticeship Training Program for Construction Projects" for details.

The Rules and Regulations for the "Apprenticeship Training Program for Construction Projects" are included in the Supplementary Laws and Regulations section, pages SLR-3 thru SLR-10. An Excel spreadsheet version of City Form AP1 is available for download from the City of Rochester's website at ***http://www.cityofrochester.gov/constructiondocuments/***.

**Add** the following after the fifth paragraph of Subsection 9 Requirements for Preparation and Submission of Bids on page IB-3:

Submit with the Proposal, M/WBE Form P pages 1 and 2 in a separate sealed envelope labeled "M/WBE Form P".

**SIB 11. Owner's Discretion to Accept, Reject, or Waive Bid**

**Add** the following under paragraph 3 of Subsection 11 Owner's Discretion to Accept, Reject, or Waive Bid on page IB-5:

J. Failure to submit Apprenticeship Agreements in accordance with the Rules and Regulations for the "Apprenticeship Training Program for Construction Projects". See the Supplementary Laws and Regulations section, pages SLR-3 thru SLR-9.

K. Failure to submit M/WBE Form P pages 1 and 2.

**SIB 12. Basis of Award**

* Need to agree to Bid Alt. structure then update all sections.

**Delete** Subsection 12 Basis of Award on page IB-6 in its entirety, and **Replace** with the following:

The contract will be awarded to the lowest responsible Bidder complying with all of the provisions of the Instructions to Bidders and the Supplementary Instructions to Bidders.

The City of Rochester requires any Contractor, prior to entering into a construction contract with the City of Rochester, to have an M/WBE Utilization Plan submitted to and approved by the City.

The Bidder shall note that the Proposal contains both a Base Bid and Bid Alternate(s) 1 thru [ENUMERATE]. ~~The funds available for this project are limited and cannot be exceeded~~. The contract will be awarded to the lowest responsible Bidder in the order of priority as listed below: ~~and within the budget limitations:~~

- PRIORITY 1 – ~~If any of the Bids for the~~ Total Base Bid plus Add Alternates 1 and 2 ~~come in under the budget limit, the award will be made based on the Total Base Bid plus Add Alternates 1 and 2; however,~~ or
- PRIORITY 2 – ~~If all of the Bids for the Total Base Bid plus Add Alternates 1 and 2 exceed the budget limit, the award will be made based on the~~ Total Base Bid plus Add Alternate 1; ~~however,~~ or
- PRIORITY 3 – ~~If all of the Bids for the~~ Total Base Bid ~~plus Add Alternate 1 exceed the budget limit, the award will be made based solely on the Total Base Bid; however,~~ ; or
- PRIORITY 4 – If all of the Bids for the Total Base Bid exceed the budget limit, the award will be made based on the Total Base Bid minus Deduct Alternate 3: however,

- PRIORITY 5 – If all of the Bids for the Total Base Bid exceed the budget limit, the award will be made based on the Total Base Bid minus Deduct Alternates 3 and 4.

The City of Rochester requires any Contractor, prior to entering into a construction contract with the City of Rochester, to have apprenticeship agreements, appropriate for the type and scope of work to be performed, which have been registered with and approved by the New York State Commissioner of Labor in accordance with Article 23 of the New York State Labor Law. The Bidder must submit complete and appropriate apprenticeship documentation with the Bid proposal.

For purposes of this article, Contractor shall mean an entity which directly employs labor under a construction contract. A construction contract shall mean a City of Rochester public works contract for an amount in excess of $250,000 for construction, reconstruction, or improvement of any building, facility or physical structure of any kind, or any subcontract thereto which exceeds $100,000 in value.

The Rules and Regulations for the "Apprenticeship Utilization Requirement" are included in the Supplementary Laws and Regulations section, pages SLR-3 thru SLR-10.

The City may conduct such investigations as it may deem necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications and financial ability of the Bidders, in accordance with the Contract Documents to the City's satisfaction within the prescribed time.

**Add** the following new subsections after Subsection 13 Notice of Award on page IB-6:

**SIB 14. Execution of the Agreement**

The successful Bidder shall be required to execute an agreement upon award of the contract. This agreement provides specific information and highlights contract requirements in the General Terms and Conditions of the *City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition.* The following articles are included in this agreement:

- Article 1. Scope of Work
- Article 2. City Engineer, Design Professional, Project Manager (responsibilities of in accordance with Article 9)
- Article 3. Contract Time
- Article 4. Liquidated Damages (in accordance with Article 10.4)
- Article 5. Contract Price
- Article 6. Payment Procedures (in accordance with Article 13)
- Article 7. Final Payment (in accordance with Article 14)
- Article 8. Availability of Funds (in accordance with Article 15)
- Article 9. Contractor's Representations (in accordance with Article 9)
- Article 10. Accounting Records (the Contractor shall maintain accounting records in accordance with Article 6.10)
- Article 11. Contract Documents (the Contract Documents that comprise the Agreement shall be the same as those stated under SIB 3.d and SIB 3.e with addenda as issued)
- Article 12. Miscellaneous (terms used in this agreement shall have the meaning as defined in Article 1.1)

A Performance Bond and Labor and Material Payment Bond shall be submitted in accordance with Article 4.1 of the General Terms and Conditions. Samples of the City forms are available in the *City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition.*

A Certificate of Insurance shall be submitted in accordance with Article 4.2 of the General Terms and Conditions. A sample of the Certificate of Insurance Form is in the *City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition.*

In addition the approved M/WBE Utilization Plan and Apprenticeship agreements submitted and accepted by the City shall be incorporated into this agreement, along with any amendments to the M/WBE Utilization Plan and Apprenticeship agreements approved during the period of this agreement.

**SIB 15. Incentive Program for Public Works Contracts**

The City of Rochester provides an Incentive Program for hiring City residents residing within certain ZIP code areas for public works contracts for which the final contract price is for an amount in excess of $250,000. The Contractor may apply for a monetary incentive of seven percent (7%) of the payroll paid to disadvantaged City residents residing within these ZIP code areas, up to a maximum incentive amount of $50,000, provided that more than seventeen percent (17%) of the gross payroll for the Project was paid to disadvantaged City residents. The Incentive Program is described in detail in the Supplementary Laws and Regulations section, pages SLR-11 thru SLR-14.

# PROPOSAL

(*) · Proposal to be inserted separately into the contract

(*) single side, staple top left corner and print on colored paper (anything but white) ↳ the cover should also be printed on cardstock the same color as the proposal.

# PORTLAND AVENUE REVITALIZATION

## Project No. 14105

(*) please refer to the accompanying example "P" sheets

(*) "P" sheets should be numbered: P4.01 of P4.XX if say 30 sheets: P4.01 of P4.30

**ISSUED:**

**This contract contains bid alternate(s) and will be awarded to the lowest responsible bidder in the order of priority as listed under SIB 12 Basis of Award**

**Submit with the bid proposal copies of:**

**M/WBE Form P M/WBE Participation Plan, pages 1 and 2, as required by the "Minority and Women Business Enterprise (M/WBE)"; and**

**Apprenticeship agreements and subcontractor data required by the rules and regulations for the "Apprenticeship Training Program for Construction Projects"**

**NO REQUIRED APPRENTICESHIP MATERIAL WILL BE ACCEPTED AFTER BIDS HAVE BEEN OPENED**

March 17, 2014

remove blank sheet

**PROPOSAL TO**
**THE CITY OF ROCHESTER**
**CITY HALL, 30 CHURCH STREET**
**ROCHESTER, NEW YORK I4614**

For Construction of: **PORTLAND AVENUE REVITALIZATION**

Project Number: **14105**

To the Purchasing Agent of the City of Rochester:

The Bidder affirms and declares:

1. The Bidder is the only one interested in this bid; and no person, firm, or corporation other than herein named has any interest in this bid, or in the Agreement proposed to be taken.

2. This bid is made without any connection with any other person, firm or corporation making a bid for the same work, and is in all respects fair, and without collusion or fraud.

3. No officer or employee or person whose salary is payable in whole or in part from the City of Rochester's treasury is directly or indirectly interested in this bid, or in the supplies, materials, equipment, work or labor to which it relates, or in any of the profits thereof.

4. The Bidder is not in arrears to the City of Rochester, New York, or any other public agency upon any debt or contract, and is not defaulter, as Surety or otherwise, upon any obligation to the City of Rochester, New York, or any other public agency.

5. The Bidder has visited and examined the site of the work and has carefully examined the Contract Documents and is satisfied as to all the quantities and conditions and understands that in signing this Proposal the Bidder waives all rights to pleading any misunderstanding regarding the same.

6. The Bidder will provide, furnish and deliver all work, materials, supplies, tools, equipment, transportation necessary or required for this Project, all in strict conformity with the Contract Documents and in accordance with the prices entered by the Bidder on the attached Proposal form.

7. In a unit price Agreement, the Bidder will accept the unit bid prices in compensation for any additions or deductions caused by variations in quantities due to more accurate measurement or by any change or alterations in the Contract Documents.

8. The Bidder is aware that all interpretations of the Contract Documents are made by means of written addenda. Any objection arising out of an addendum subsequent to the opening of bids will not be considered. Failure of any Bidder to receive any addenda or to attend the reading of the bids will not relieve such Bidder from any obligation under the bid as submitted, including such addenda.

9. The Bidder will execute the Agreement and furnish the necessary bonds and insurance certificates within ten (10) days after written notice of the award of the contract, or forfeit the bid deposit in partial satisfaction of damages.

10. The Bidder will complete the work within the number of calendar days or by the date specified in the Supplementary Instructions to Bidders.

11. The Bidder will comply with all local, state or federal laws, ordinances, rules or regulations controlling or limiting in any way its actions during the submission of bids and performance of the work including the following:

## NON-COLLUSIVE BIDDING CERTIFICATION

A. Every bid herein made to the City of Rochester, or official thereof, where competitive bidding is required by statute, rule or regulation, for work or services performed, or to be performed or goods sold or to be sold, shall contain the following statement subscribed by the Bidder and affirmed by such Bidder as true under the penalties or perjury: Non-collusive Bidding Certification.

(1) By submission of this bid, each Bidder and each person signing on behalf of the 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 their knowledge and belief:

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

(ii) 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; and

(iii) 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.

(2) A bid shall not be considered for award nor shall any award be made where (1) (i) (ii) and (iii) above have not been complied with; provided however, that if in any case the Bidder cannot make the foregoing certification, the Bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore.

Where (1) (i) (ii) and (iii) above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the City of Rochester to which the bid is made, or the designee, determines that such disclosure was not made for the purpose of restricting competition.

The fact that a Bidder: (a) has published price lists, rates, or tariffs covering items being procured; (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items; or (c) has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of subparagraph A (1).

B. Any bid hereafter made to the City of Rochester, or official thereof, by a corporate Bidder for work or services performed or to be performed, or goods sold or to be sold, where competitive bidding is required by statute, rule or regulation, and where such bid contains the certification referred to herein, shall be deemed to have been authorized by the Board of Directors of the Bidder and such authorization shall be deemed to include the signing and submission of the bid, and the inclusion therein of the certificate as to non-collusion as the act and deed of the corporation.

PORTLAND AVENUE REVITALIZATION
Project # 14105

**BID ALTERNATE(S) 1 thru [ENUMERATE]**

Per Subsection SIB 9 Requirements for Preparation and Submission of Bids, the Bidder shall note that the Proposal contains both a Base Bid and Bid Alternate(s) 1 thru [ENUMERATE] which may contain multiple bid items with the same item number. The Bidder is to use the same unit bid price for those duplicated bid items in both the Base Bid and in the Bid Alternate(s). If a different unit bid price has been used for any of the duplicated bid items, the City reserves the authority to modify the unit price bid for the duplicated bid item(s) in the Bid Alternate(s) by applying the unit price bid from the appropriate bid item(s) in the Base Bid.

## BID PROPOSAL SUBMISSIONS CHECKLIST

**Complete and sign this checklist to verify that all required submissions are attached to the Bid.**
**An incomplete package will be declared informal and will not be considered for award.**
**No required apprenticeship material will be accepted after Bids have been opened.**

| Included | Item | Notes |
|---|---|---|
| _____ | Bid Proposal | |
| _____ | Addenda issued for the Bid | Sign and date each addendum issued for this Bid |
| _____ | Bid Bond | See page P-7 |
| _____<br>OR<br>_____ | Bidder's Apprenticeship Agreement(s)<br><br>Bid plus add alternates does not exceed $250,000<br><br>OR<br><br>Bid plus add alternates exceeds $250,000<br>_____ AT-10 form(s) of Bidder attached<br>_____ AP3 form(s) of Bidder attached, if needed | Required if Bid is greater than $250,000<br>See Special Instructions for Bidders – SIB-9 and SLR-17 for details<br><br>New York State Department of Labor Form AT-10 for program sponsor<br>City of Rochester Form AP3 if bidder is not the program sponsor |
| _____<br>OR<br>_____ | _____ AP1 form<br><br>_____ Subcontractor AT-10 and AP3, if needed, for subcontractors proposed for each subcontract that exceeds $100,000<br><br>OR<br><br>_____ Write "NONE" in subcontractor data area if no subcontract greater than $100,000 is proposed; and Submit Form | New York State Department of Labor Form AT-10 for program sponsor and City of Rochester Form AP3 if subcontractors are not the program sponsor. Subcontractor AT-10 and AP3 Forms are only required with this proposal if the Bid plus add alternates exceeds $250,000. |
| _____ | M/WBE Form P | Submit M/WBE PARTICIPATION PLAN, pages 1 and 2 (see pages P-13 and P-14) |

I am an authorized representative for the bidder named below. The bidder understands that its Bid may be deemed informal and not considered for contract award by the City if the information required above is not submitted with the Bid.

Signature: _____ Corporate Seal:

Signed By (print) _____

Title: _____ Date: _____

The undersigned proposes to complete:

PROJECT TITLE: **PORTLAND AVENUE REVITALIZATION**
PROJECT NO. **14105**

in accordance with the *City of Rochester Standard Construction Contract Documents, November 1, 1991 Edition* and the Contract Proposal Book for this Project for the UNIT PRICES shown in this Proposal.

This Contract contains Bid Alternate(s) and will be awarded to the lowest responsible bidder in the order of priority as listed under Subsection SIB 12 Basis of Award.

| | WRITTEN | FIGURES |
|---|---|---|
| **SUBTOTAL BASE BID** | _____ | |
| (w/o ITEM 699.04) | _____ | |
| | _____ | |
| | _____ | $_____ |
| **MOBILIZATION** | | |
| **ITEM 699.04** | _____ | |
| (Shall not exceed 4% | _____ | |
| of Subtotal Base Bid) | _____ | $_____ |
| **TOTAL BASE BID** | _____ | |
| (w/ ITEM 699.04) | _____ | |
| | _____ | |
| | _____ | $_____ |

**ADD ALTERNATE #1**

| | | |
|---|---|---|
| **BID** | _____ | |
| | _____ | |
| | _____ | |
| | _____ | + $_____ |

**DEDUCT ALTERNATE #3**

**BID** _____

_____

_____

_____ - $_____

I, the undersigned Bidder, acknowledge and accept that this contract contains M/WBE Goals in the amounts specified in these Contract Documents. In particular I, the undersigned Bidder, affirm that I have read and understand the "Prime Contractor Statement" which is contained in the Contract Documents. Further, I, the undersigned Bidder, affirm that the statements contained in the "Prime Contractor Statement" are true and accurate. I, the undersigned Bidder, further acknowledge and accept that this contract contains a requirement that a minimum of twenty percent (20%) of the contract work must be done by the Bidder's own organization.

_____

LEGAL NAME OF PERSON, FIRM OR CORPORATION

SIGNED BY:

_____

TITLE:

_____

WITNESSED BY: _____

P. O. ADDRESS OF BIDDER:

CORPORATE SEAL

_____ STREET

_____ CITY AND STATE

_____ TELEPHONE NUMBER

_____ PROJECT MANAGER

_____ E-MAIL ADDRESS

**CITY OF ROCHESTER, NEW YORK**
**DEPARTMENT OF ENVIRONMENTAL SERVICES**
**CONTINGENT ITEMS**

Be sure to get the latest From the city website (check w/ Lisa Reyes if you need help)

Need to update when have 100% Estimate

**March 17, 2014**

In the event that a Change Order becomes necessary, the Contractor hereby agrees to furnish and install the following items, complete, in place, and ready for use, in accordance with the specifications and directions of the Project Manager, for the prices stipulated, provided that a different unit price has not been bid for such item as a part of the Proposal. In the event that the Contractor has made a different bid price in the Proposal for any item listed, the bid price in the Proposal will prevail.

(*) Contingency List should not include any item in your bid tab. any items you feel should be added to the list add here. Check w/ the city on unit prices on added items

| Item Number | Item Description | Pay Unit | Stipulated Unit Price |
|---|---|---|---|
| S203.35 | Controlled Low Strength Fill Material | Cubic Yard | $100.00 |
| S203.36 | Controlled Low Strength Fill Material (no Fly Ash) | Cubic Yard | $160.00 |
| S205.04 | Pavement Replacement – Concrete Base | Square Yard | $100.00 |
| S205.05 | Pavement Replacement – Asphalt Base (3 inch) | Square Yard | $80.00 |
| S205.06 | Pavement Replacement – Asphalt Base (6 inch) | Square Yard | $95.00 |
| S205.07 | Pavement Replacement – Asphalt Base (8 inch) | Square Yard | $110.00 |
| R206.05 | Trench and Culvert Rock Excavation | Cubic Yard | $125.00 |
| R206.07 | Excavation for Test Pits | Cubic Yard | $40.00 |
| R206.08 | Rock Excavation for Test Pits | Cubic Yard | $170.00 |
| 304.02 | Subbase Course, Type 1 | Cubic Yard | $70.00 |
| S412.08 | Temporary Pavement with Subbase Course | Square Foot | $5.00 |
| S412.10 | Temporary Pavement - Winter Season - 4" Concrete with Subbase Course | Square Foot | $3.00 |
| S412.12 | Temporary Pavement - Winter Season - 3" Concrete with Subbase Course | Square Foot | $2.50 |
| S504.05 | Class K Concrete | Cubic Yard | $550.00 |
| 555.0103 | Concrete for Structures, Class A (Appurtenant Placements) | Cubic Yard | $450.00 |
| R601.0208 | 8" Polyvinyl Chloride Pipe, SDR21 | Linear Foot | $75.00 |
| R601.0212 | 12" Polyvinyl Chloride Pipe, SDR21 | Linear Foot | $85.00 |
| R601.08 | Lateral Connection to Existing Lateral | Each | $300.00 |
| S601.2608 | 8" Polyvinyl Chloride Lateral Pipe, SDR21 – Installed (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot | $95.00 |
| S601.2708 | 8" Polyvinyl Chloride Lateral Pipe, SDR21 – Installed (Including Excavation, Backfill and Pavement Restoration) | Linear Foot | $100.00 |
| S604.3701 | Type B Catch Basin – Installed (Including Excavation, Backfill and Pavement Base Restoration) | Each | $2,400.00 |
| S604.3702 | Type B Catch Basin – Installed (Including Excavation, Backfill and Pavement Restoration) | Each | $2,500.00 |
| S604.41 | Additional Depth Type B Catch Basin | Linear Foot | $250.00 |
| S604.50 | Adjust Existing Catch Basin Frame and Grate (Including Excavation and Backfill) | Each | $550.00 |
| S604.51 | Modify Existing Capstone Catch Basin (Including Excavation and Backfill) | Each | $600.00 |
| S604.53 | Clean Existing Catch Basin and Lateral Pipe | Each | $150.00 |

## CITY OF ROCHESTER, NEW YORK
## DEPARTMENT OF ENVIRONMENTAL SERVICES
## CONTINGENT ITEMS (continued)

| Item Number | Item Description | Pay Unit | Stipulated Unit Price |
|---|---|---|---|
| S604.58 | Catch Basin Wall Repair | Linear Foot | $420.00 |
| S604.60 | Adjust Existing Sewer Manhole Frame and Cover (Including Excavation and Backfill) | Each | $600.00 |
| S604.63 | Replace Sewer Manhole Frame and Cover (Including Excavation and Backfill) | Each | $1,000.00 |
| S605.140106 | 6" Perforated Corrugated Polyethylene Underdrain Tubing | Linear Foot | $10.00 |
| S608.15 | Asphalt Driveway - Light-Duty | Square Foot | $9.00 |
| S608.16 | Asphalt Driveway - Medium-Duty | Square Foot | $11.50 |
| S608.180203 | Brick (Including Excavation and Subbase Course) | Square Foot | $25.00 |
| S608.180503 | Reset Existing Brick (Including Excavation and Subbase Course) | Square Foot | $20.00 |
| S608.34 | Concrete Entrance Walk (Including Excavation and Subbase Course) | Square Foot | $10.00 |
| S608.37 | Exposed Aggregate Concrete (Including Excavation and Subbase Course) | Cubic Yard | $500.00 |
| S608.5803 | Concrete Step (Including Excavation and Subbase Course) | Cubic Yard | $500.00 |
| S609.340101 | Reset Existing Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot | $60.00 |
| S609.35 | Salvage Existing Curb | Linear Foot | $15.00 |
| S609.380101 | Concrete Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot | $55.00 |
| S609.51 | Steel Curb | Linear Foot | $60.00 |
| S609.5301 | Steel Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot | $150.00 |
| S610.0502 | Hydroseeding | Square Foot | $0.20 |
| S613.03 | Topsoil | Cubic Yard | $60.00 |
| S614.43 | Stump Removal - 6" to 11" diameter | Each | $175.00 |
| S614.44 | Stump Removal - 12" to 17" diameter | Each | $200.00 |
| S614.45 | Stump Removal - 18" to 23" diameter | Each | $225.00 |
| S614.46 | Stump Removal - 24" to 29" diameter | Each | $250.00 |
| S614.47 | Stump Removal - 30" to 35" diameter | Each | $275.00 |
| S614.48 | Stump Removal - 36" to 41" diameter | Each | $300.00 |
| S614.49 | Stump Removal - 42" to 47" diameter | Each | $325.00 |
| S614.50 | Stump Removal - 48" diameter and over | Each | $400.00 |
| S616.09 | Landscape Timber | Linear Foot | $25.00 |
| S616.10 | Reset Existing Landscape Timber Planter | Linear Foot | $27.00 |
| R624.05 | Concrete Gutter | Linear Foot | $75.00 |
| R624.07 | Concrete Gutter - Gutter Replacement | Linear Foot | $100.00 |
| S626.04 | Vertical Adjustment of Existing Survey Monument | Each | $1,000.00 |
| S645.41 | Business Sign - Size A (0 to 10 square feet) | Each | $170.00 |
| S645.42 | Business Sign - Size B (11 to 20 square feet) | Each | $280.00 |
| S645.43 | Business Sign - Size C (21 to 40 square feet) | Each | $440.00 |
| S645.44 | Business Sign - Size D (41 to 100 square feet) | Each | $880.00 |

## CITY OF ROCHESTER, NEW YORK
## DEPARTMENT OF ENVIRONMENTAL SERVICES
## CONTINGENT ITEMS (continued)

| Item Number | Item Description | Pay Unit | Stipulated Unit Price |
|---|---|---|---|
| S645.45 | Business Sign - Size E (over 100 square feet) | Each | $1,100.00 |
| R655.07 | Type B Catch Basin Frame and Grate – Fabricated | Each | $270.00 |
| S655.08 | Type C Catch Basin Frame and Grate | Each | $270.00 |
| S655.09 | Type D Catch Basin Access Frame and Cover | Each | $1,200.00 |
| S671.1101 | Adjust Existing Concrete Pullbox | Each | $200.00 |
| S671.1402 | Replace Existing Concrete Pullbox Frame and Cover (Furnished) | Each | $150.00 |
| S671.1701 | Adjust Existing Fiberglass Handhole/Pullbox | Each | $200.00 |
| S671.1901 | Replace Existing Fiberglass Handhole/Pullbox (Furnished) | Each | $350.00 |
| S671.3501 | Extend Existing Light Pole Foundation | Each | $450.00 |
| C686.05 | Sign Sleeve | Each | $150.00 |
| S901.040104 | 4" Ductile Iron Pipe Water Main Class 52 | Linear Foot | $55.00 |
| S901.040106 | 6" Ductile Iron Pipe Water Main Class 52 | Linear Foot | $60.00 |
| S901.040108 | 8" Ductile Iron Pipe Water Main Class 52 | Linear Foot | $65.00 |
| S901.040110 | 10" Ductile Iron Pipe Water Main Class 52 | Linear Foot | $75.00 |
| S901.040112 | 12" Ductile Iron Pipe Water Main Class 52 | Linear Foot | $85.00 |
| S901.07 | Additional Ductile Iron Pipe Fittings | Pound | $2.75 |
| S901.09 | Additional Polyvinyl Chloride Pipe Injection Molded Fittings | Pound | $4.00 |
| S901.12 | Additional High Density Polyethylene Pipe Fittings | Pound | $4.00 |
| S901.15 | Additional Concrete Thrust Blocks | Cubic Yard | $150.00 |
| S909.07 | Adjust Existing Water Valve Box to Grade – Extension Adjustment | Each | $175.00 |
| S912.080075 | New 3/4" Water Service Tap at Water Main, Corporation Stop and Connection (Including Abandonment of Existing Tap) (Including Excavation and Backfill) | Each | $350.00 |
| S912.080100 | New 1" Water Service Tap at Water Main, Corporation Stop and Connection (Including Abandonment of Existing Tap) (Including Excavation and Backfill) | Each | $450.00 |
| S912.080150 | New 1-1/2" Water Service Tap at Water Main, Corporation Stop and Connection (Including Abandonment of Existing Tap) (Including Excavation and Backfill) | Each | $500.00 |
| S912.080200 | New 2" Water Service Tap at Water Main, Corporation Stop and Connection (Including Abandonment of Existing Tap) (Including Excavation and Backfill) | Each | $600.00 |
| S913.020075 | New 3/4" Copper Water Service (Including Excavation and Backfill) | Linear Foot | $50.00 |
| S913.120100 | New 1" Polyethylene Water Service (Including Excavation and Backfill) | Linear Foot | $60.00 |
| S913.120125 | New 1-1/4" Polyethylene Water Service (Including Excavation and Backfill) | Linear Foot | $65.00 |
| S913.120200 | New 2" Polyethylene Water Service (Including Excavation and Backfill) | Linear Foot | $70.00 |

## CITY OF ROCHESTER, NEW YORK
## DEPARTMENT OF ENVIRONMENTAL SERVICES
## CONTINGENT ITEMS (continued)

| Item Number | Item Description | Pay Unit | Stipulated Unit Price |
|---|---|---|---|
| S914.1101 | Replace Existing Curb Box Assembly (3/4" to 1-1/2") (Including Excavation and Backfill) | Each | $350.00 |
| S914.14 | Adjust Existing Curb Box (Including Excavation and Backfill) | Each | $150.00 |
| S914.23 | Adjust Existing Water Meter Box (Including Excavation and Backfill) | Each | $300.00 |
| S917.0601 | Hydrant Marker (Furnished) | Each | $50.00 |
| S917.07 | 6" Hydrant Extension Kit | Each | $550.00 |
| S917.08 | 12" Hydrant Extension Kit | Each | $600.00 |
| S917.09 | 18" Hydrant Extension Kit | Each | $650.00 |
| S917.10 | 24" Hydrant Extension Kit | Each | $700.00 |
| S962.01 | Joint Bond | Each | $75.00 |
| S966.0305 | 5 pound Magnesium Anode | Each | $150.00 |
| S966.0309 | 9 pound Magnesium Anode | Each | $200.00 |
| S966.0317 | 17 pound Magnesium Anode | Each | $250.00 |
| S966.0332 | 32 pound Magnesium Anode | Each | $275.00 |
| S966.0348 | 48 pound Magnesium Anode | Each | $300.00 |

**BID BOND**

Bond Number _____

KNOW ALL PERSONS BY THESE PRESENTS:

That _____ of _____ _____ as Principal, and _____ a corporation organized and existing under the laws of _____ and authorized to do business in the State of New York, as Surety, are held and firmly bound unto _____ as Obligee, in the full and just sum of _____ Dollars ( $ _____ ), lawfully money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

WHEREAS, the said Principal is herewith submitting its Proposal.

THE CONDITION OF THIS OBLIGATION is such that if the aforesaid Principal shall be awarded the contract the said Principal will, within the time required, enter into a formal contract and give a good and sufficient bond to secure the performance of the terms and conditions of the contract, then this obligation to be void; otherwise the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former, but in no event shall liability hereunder exceed the penal sum hereof.

Signed, sealed and delivered _____
date

_____
(Seal)

_____
(Seal)

_____

Attorney-in Fact

## Apprenticeship Training Program for Construction Contracts

### 1. Policy and Regulations.

By Ordinance 2003-347 of the City Council, as amended by Ordinance 2009-76, the City of Rochester established a policy to promote apprenticeship training programs, as authorized by Section 816-b of the New York State Labor Law. This policy applies to any City construction contract for an amount in excess of $250,000, or if any add/deduct alternates alone or in combination could result in a contract amount award that exceeds $250,000, regardless of the base bid amount, for construction, reconstruction, or improvement of any building, facility, or physical structure of any kind, and any subcontract thereto in excess of $100,000. Regulations for the implementation and enforcement of the apprenticeship policy follow.

### 2. Requirement for Contractors and Subcontractors.

For any bids subject to the apprenticeship requirements as defined in Section 1, the City of Rochester requires the Contractor, prior to entering into the construction contract, and any Subcontractor proposed to perform a subcontract thereto in excess of $100,000, to have apprenticeship agreements, appropriate for the type and scope of work to be performed and which have been registered with and approved by the New York State Commissioner of Labor in accordance with Article 23 of the New York Labor Law.

### 3. Submittals with Bid Proposal.

The Bidder shall submit for itself and for any Subcontractor(s) whom the Bidder proposes at the time of the bid to perform a subcontract in excess of $100,000 in value, copies of the following documents with the bid Proposal for each apprenticeship training program, approved by the New York State Department of Labor, which the Bidder or Subcontractor(s) will need to satisfy the requirements of the Apprenticeship Training Program requirement:

1. If the Bidder is sponsor of an apprenticeship training program, a copy of the Form AT-10, "New York State Department of Labor Apprenticeship Training Program Registration Agreement", issued to the Bidder in approval of that apprenticeship training program.

2. If the Bidder does not self-sponsor an apprenticeship program but is party to an agreement with the sponsor of apprentices who are enrolled in an apprenticeship training program that is sponsored by a trade union, a joint apprenticeship committee, or other organization other than the Bidder,

   a. An "Agreement to Utilize Apprentices for a City Construction Contract" form (City Form AP3) signed by the Bidder and the apprenticeship training program sponsor; and
   b. A copy of the current "New York State Department of Labor Apprenticeship Training Program Registration Agreement", Form AT-10, issued to the sponsor in approval of that program.

3. The Bidder shall also submit with the bid package, the following:

   a. City Form AP1, "Schedule of Subcontracts and Apprenticeship Agreements," a listing of any contractor proposed to hold a subcontract that exceeds $100,000 in value, including the name of the subcontractor, the scope and value of work proposed to be performed, and the name of any apprenticeship trade for which an approved apprenticeship agreement will be submitted; and

b. Copies of approved apprenticeship agreements as detailed in 2.a and 2.b above that are held by the proposed subcontractors and intended to meet the requirements of the Apprenticeship Training Program.

c. An Excel spreadsheet version of City Form AP1 is available for download from City of Rochester's web site at ***http://www.cityofrochester.gov/constructiondocuments/***.

4. Any apprenticeship agreement submitted shall be:

   a. Submitted completely with Bid;
   b. Current and valid;
   c. Represent an apprenticeship training program that is active and in good standing with the New York State Department of Labor; and
   d. Appropriate to the scope and nature of the work to be performed under the contract.

5. Submit complete apprenticeship documentation with Bid proposal. An incomplete package will be declared informal and will not be considered for award. No required apprenticeship material will be accepted after Bids have been opened.

## 4. Enforcement.

If the Bidder fails to comply with the requirements of the "Apprenticeship Training Program for Construction Contracts", the City will deem the Bidder non-responsive and disqualify the Bidder from consideration for the pending contract.

# Apprenticeship Training in Construction Contracts

## Schedule of Subcontracts and Apprenticeship Agreements

AP1 (5/2013)

This applies to City Construction Contracts subject to the Apprenticeship Training in Construction Contracts requirement of Ordinance 2003-347, as amended

® If the bid or award value for this contract exceeds $250,000, Apprenticeship Training in Construction Contracts requirements may apply. Consult the Rules and Regulations.

*INSTRUCTIONS:* *Complete and submit this form for approval on the following occasions. Do not execute a subcontract prior to City approval of this form.*

| | |
|---|---|
| Bid | List all proposed apprenticeship agreements and list the firms and work for subcontracts that exceed $100,000; state "NONE" if none are proposed. Attach subcontractor apprenticeship agreements to this form. ***Submit prime contractor apprenticeship agreements with bid proposal.*** |
| Pre-Award | Submit to the City Project Manager following approval of the M/WBE plan--list M/WBE subcontractors and update data and apprenticeship agreements for firms proposed for subcontracts that exceed $100,000 |
| Pre-Construction | Submit to the City Project Manager at or before the Pre-Construction Meeting--list all proposed subcontracts of any value and update apprenticeship agreements when necessary. |
| Update | Submit to the City Project Manager prior to executing any subcontract proposed subsequent to the Pre-Construction meeting--list all current and proposed subcontracts of any value; update apprenticeship agreements when necessary. |

*SUBMIT THIS FORM WITH BID. AN INCOMPLETE PACKAGE WILL BE DECLARED INFORMAL AND WILL NOT BE CONSIDERED FOR AWARD.*

Excel Spreadsheet available at 585-428-6828 or www.cityofrochester.gov/ApprenticeshipTraining

| | |
|---|---|
| Project Number | |
| Project Name | |
| Contract Number | |
| Contractor | |
| Bid/Award Value | |

| Purpose and Date of Submission | | |
|---|---|---|
| __Bid | Date | |
| __Pre-Award | Date | |
| __Pre-Construction | Date | |
| __Update | Date | |

### Apprenticeship Data for Prime Contractor and Subcontractors

| Name of Subcontractors | Subcontract Scope of Work or Work Items<br>*List description of work or specific pay items to be performed under the subcontract* | Subcontract Value (Est'd/Actual) | Apprenticeship Agreement(s) Submitted for Prime Contract and Subcontracts > $100,000<br>*(Note dates of previous submissions and approvals; do not resubmit)* | | | |
|---|---|---|---|---|---|---|
| | | | NYSDOL AT10 | For Trade | City AP3* | Approved by PM |
| PRIME CONTRACTOR | --- | --- | | | | |
| SUBCONTRACTORS *If none, state "NONE"* | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| (Insert additional lines as needed) | | | *AP3 required if subcontractor does not directly sponsor the apprenticeship training program named in the NYSDOL AT10 | | | |

**Certification by Contractor Representative**

I certify that the data reported above are complete and accurate, and that apprenticeship agreements are valid, at the time of submittal.

Name

Date

Signature

**Approval by Project Manager.**

The subcontractors listed are acceptable to the City. Apprenticeship Agreements listed are current, valid and appropriate to the type and scope of work to be performed.

Name

Date

Signature

Keep in the "P" section (here) (nothing more needed to be done)

**Schedule of Subcontracts and Apprenticeship Agreements.**
A copy of this form may be downloaded from the City of Rochester's website at ***http://www.cityofrochester.gov/constructiondocuments/***, or by calling (585) 428-6860.

Form AP3 (11/12)

For contractor to fill out

**Agreement to Utilize Apprentices**
**on a**
**City of Rochester Construction Contract**

To be used when a Bidder on a City of Rochester construction contract utilizes one or more apprentices supplied by an apprenticeship training program that the Bidder does not sponsor to satisfy the requirements of the City of Rochester Apprenticeship Training Program.

Bidder: _____, "Bidder"

Apprenticeship Training Program Sponsor: _____, "Sponsor"

**ATTACH VALID NYSDOL AT-10 FORM**

City of Rochester Construction Contract: _____, "Contract"

The Bidder and sponsor agree as follows:

1. The sponsor will provide the Bidder with one or more apprentices for employment on the contract in the following occupation. Each apprentice is enrolled in an active apprentice training program that is registered with, approved by, and is in good standing with the New York State Department of Labor and has an apprenticeship agreement that has been registered with, and approved by, the New York State Commissioner of Labor in accordance with Article 23 of the New York State Labor Law:

Occupation

_____

2. The Bidder will employ the apprentice(s) to perform work on the contract under terms and conditions applicable to construction contract work in New York State.

**Attach a copy of the sponsor's currently valid and signed New York State Department of Labor form AT-10, "Apprentice Training Program Registration Agreement", for the occupation listed above.**

ss/ _____
Bidder Representative

ss/ _____
Sponsor Representative

ss/ _____
Date

_____
Date

## Minority and Women Business Enterprise (M/WBE) Participation Plan

### 1. Requirements.

The City of Rochester requires any Contractor, prior to entering into a construction contract with the City of Rochester, to have an M/WBE Utilization Plan submitted to and approved by the City.

### 2. Submittals with Bid Proposal.

Bidders must submit with their bid a completed M/WBE Form P – the M/WBE Participation Plan, pages 1 and 2.

This Plan indicates the M/WBE subcontractors the bidder intends to utilize if awarded this contract in order to fulfill the M/WBE goals. Form P, Page 1, lists the names of each subcontractor the bidder intends to use, the M/WBE classification, the type of work that the subcontractor will do, the proposed dollar amount of the subcontract and the percentage of the base bid amount. On Form P, Page 2, the bidder must indicate at what stage, or stages, each M/WBE subcontractor is expected to be utilized.

The City may reject the Bidder's submittal as invalid or incomplete if the Bidder fails to submit a completed M/WBE Form P pages 1 and 2.

### 3. Enforcement.

If the Bidder fails to comply with the requirements for the "Minority and Women Business Enterprise (M/WBE) Construction Utilization Goal", the City will deem the Bidder non-responsive and disqualify the Bidder from consideration for the pending contract.

# City of Rochester
## M/WBE Form P
## M/WBE PARTICIPATION PLAN

Bid Number: _____ Title of Bid: _____

| NAME OF SUBCONTRACTOR | Check Minority Classification | | | TYPE OF WORK AND CONTRACT ITEMS TO BE PERFORMED | PROPOSED DOLLAR AMOUNT OF SUBCONTRACT | PERCENTAGE OF BASE BID AMOUNT |
|---|---|---|---|---|---|---|
| | AFRICAN | HISPANIC | WOMAN | | | |
| | | | | | | |
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| | | | | | | |
| | | | | TOTALS: | | |

*The undersigned intends to utilize the M/WBE Contractors listed in this Form P (pages 1 and 2), if awarded the contract for the bid referenced above. The undersigned understands and accepts that the company submitting this bid will enter into contracts with the M/WBE subcontractors listed above to perform the type of work shown on Page 1 at the stage of the work shown on page 2, unless the contractor utilizes alternative M/WBE subcontractors approved by the City on M/WBE Forms A, B and C referenced in the bid documents. The undersigned understands and accepts that only M/WBE contractors listed in the directory of City approved State Certified M/WBE firms may be used to meet the M/WBE requirements of this contract. The undersigned also understands and accepts that the City will require submission of a final W/MBE Form A - Schedule of M/WBE Participation and related Forms B and C, all of which will be incorporated into the executed contract with the City, and that the bidder may be required to utilize additional M/WBE firms approved by the City if the Form P Plan does not meet the M/WBE good faith effort requirements, and that the bidder will provide final W/MBE Forms A, B and C and all other documentation requested by and acceptable to the City within the time period required by the contract documents.*

CONTRACTORS MUST SUBMIT THIS FORM P, PAGES 1 and 2, WITH THE BID.

NAME OF COMPANY SUBMITTING THE BID: _____

Authorized Person: (Print) _____

Authorized Signature: _____ Date: _____

Title: _____

Form Date 8/16/12

# City of Rochester
## M/WBE Form P
## M/WBE PARTICIPATION PLAN

Bid Number: _____ Title of Bid: _____

| NAME OF SUBCONTRACTOR | INSTRUCTIONS - INDICATE BY AN "X" APPROXIMATELY IN WHAT STAGE OF THE WORK YOU INTEND TO UTILIZE EACH M/WBE SUBCONTRACTOR LISTED ON PAGE 1. See Example Below | | | |
|---|---|---|---|---|
| | 0-25% Stage | 25% - 50% Stage | 50% - 75% Stage | 75% - 100% Stage |
| EXAMPLE - Contractor Name | | X | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
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*The undersigned intends to utilize the M/WBE Contractors listed in this Form P (pages 1 and 2), if awarded the contract for the bid referenced above. The undersigned understands and accepts that the company submitting this bid will enter into contracts with the M/WBE subcontractors listed above to perform the type of work shown on Page 1 at the stage of the work shown on page 2, unless the contractor utilizes alternative M/WBE subcontractors approved by the City on M/WBE Forms A, B and C referenced in the bid documents. The undersigned understands and accepts that only M/WBE contractors listed in the directory of City approved State Certified M/WBE contractors may be used to meet the M/WBE requirements of this contract. The undersigned also understands and accepts that the City will require submission of a final W/MBE Form A - Schedule of M/WBE Participation and related Forms B and C, all of which will be incorporated into the executed contract with the City, and that the bidder may be required to utilize additional M/WBE firms approved by the City if the Form P Plan does not meet the M/WBE good faith effort requirements, and that the bidder will provide final W/MBE Forms A, B and C and all other documentation requested by and acceptable to the City within the time period required by the contract documents.*

CONTRACTORS MUST SUBMIT THIS FORM P, PAGES 1 and 2, WITH THE BID.

NAME OF COMPANY SUBMITTING THE BID: _____

Authorized Person: (Print) _____

Authorized Signature: _____ Date: _____

Title: _____

Form Date 8/16/12

# AGREEMENT
# BONDS
# AND
# INSURANCE FORMS

Do Not include in Bid Contract Book ONLY in conformed copies.

Correct — single sided document

# AGREEMENT

THIS AGREEMENT is made this _____ day of _____, 20_____, by and between the City of Rochester, New York, a municipal corporation, hereinafter referred to as the "City", and _____ _____ a corporation organized under the laws of the State of _____; a partnership; or an individual d/b/a/ _____ whose address is _____ hereafter referred to as the "Contractor".

WITNESSETH, that the City and the Contractor, for the consideration hereafter names, agree as follows:

(*) date it will be advertised (*) same date to be placed on cover sheet of plans

## ARTICLE 1. SCOPE OF WORK

The Contractor hereby agrees to perform all work in accordance with the *City of Rochester Standard Construction Contract Documents, November 1,1991,* and Contract Documents issued , and addenda thereto, all which are a part of this Agreement whether or not attached.

The work is generally described as follows:

PROJECT NUMBER **14105**
PROJECT TITLE: **PORTLAND AVENUE REVITALIZATION**
CONTRACT NUMBER _____ ← (to be filled in by city Purchasing)

## ARTICLE 2. CITY ENGINEER, DESIGN PROFESSIONAL, PROJECT MANAGER

The City Engineer is the agent of the City and has ultimate responsibility for the Project as provided in the Standard Construction Contract Documents.

The Project was designed by KCI Engineering of New York, PC, One HSBC Plaza,100 Chestnut Street, Suite 1110, Rochester, NY 14604.

The Project Manager is the representative of the City Engineer, and will assume all duties and responsibilities and will have the rights and authority assigned to the Project Manager in the Standard Construction Contract Documents in connection with completion of the work in accordance with the Contract Documents. The City Engineer will appoint the Project Manager prior to the start of construction.

## ARTICLE 3. CONTRACT TIME

The Contractor agrees that the work will be started within ten (10) days of the receipt of the written Notice to Proceed issued by the City Engineer.

The Contractor agrees that the work will be completed within the number of calendar days or by the date specified in the Supplementary Instructions to Bidders.

## ARTICLE 4. LIQUIDATED DAMAGES

The City and the Contractor recognize that time is of the essence and that prompt completion of the work is a matter of public importance. Therefore, if the work is not completed in the number of days or by the date specified in the Supplementary Instructions to Bidders, plus any extension granted in accordance with Section 10.3 of the General Terms and Conditions, the Contractor agrees to pay liquidated damages to the City as specified in the table in Paragraph 10.4.1 of the General Terms and Conditions.

## ARTICLE 5. CONTRACT PRICE

The City will pay the Contractor for the total number of each of the units of work in the attached schedule completed, at the UNIT PRICES stated in the Proposal, adjusted by any changes as provided in Section 10.2 of the General Terms and Conditions. Bid alternates included in this Agreement are Bid Alternate 1 thru [ENUMERATE].

## ARTICLE 6. PAYMENT PROCEDURES

The Contractor shall have the right to submit an application for progress payment each month as provided in Section 13.1 of the General Terms and Conditions. Applications for progress payments will be processed by the Project Manager as provided in Section 13.3 of the General Terms and Conditions.

The City will retain five percent (5%) of the approved progress payment due the Contractor each month until the City Engineer certifies that the work is substantially complete. At such time, the City Engineer will authorize payment of the contract balance, including release of the five percent (5%) retainage, less any assessed liquidated damages and a withheld sum as provided in Section 14.2 of the General Terms and Conditions.

All progress payments will be based on the actual units completed and the unit prices submitted in the Proposal.

The Contractor may, from time to time, withdraw the whole or any portion of the amount retained from payments to the Contractor, upon depositing with the City Finance Director: (a) bonds or notes of the United States of America, or obligations, the payment of which is guaranteed by the United States of America; or (b) bonds or notes of the State of New York; or (c) bonds of any political subdivision in the State of New York, of a market value equal to the amount so withdrawn. The City Finance Director, from time to time, shall collect all interest and income on the obligations so deposited, and shall pay the same, when and as collected to the Contractor. However, the Contractor shall not be entitled to interest or income on any such obligations deposited if the proceeds of the obligations have been used or applied by the City pursuant to the terms of these Contract Documents. The City Finance Director may impose upon the Contractor such service charges for receiving, handling, and disbursing funds as may be allowed by law.

## ARTICLE 7. FINAL PAYMENT

Upon written notification by the Contractor and verification by the City Engineer that the remaining deficiencies of the work have been remedied, and all claims, liens, and judgments have been satisfied, the City Engineer will authorize payment of the final payment as provided in Section 14.4 of the General Terms and Conditions.

## ARTICLE 8. AVAILABILITY OF FUNDS

The City shall be obligated to pay for goods and services received only to the extent that money has been appropriated and encumbered for such purpose. The Contractor in turn shall be obligated to perform only so long as money is available to pay for the goods and services it supplies.

## ARTICLE 9. CONTRACTOR'S REPRESENTATIONS

In order to induce the City to enter into the Agreement, the Contractor makes the following representations:

The Contractor is familiar with the nature and extent of the Contract Documents, work, locality, and with all local conditions and federal, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress, or performance of the work.

The Contractor has studied carefully all reports of investigations and tests of the subsurface and latent physical conditions at the Site or otherwise affecting cost, progress or performance of the work, which were relied upon by the Project Designer in the preparation of the contract Documents; and, which have been identified in the Supplementary Terms and Conditions.

The Contractor has made or caused to be made examinations, investigations and test and studies of such report and related data in addition to those referred to in the above paragraph as is deemed necessary by the Contractor for the performance of the work at the contract price, within the contract time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required by the Contractor for such purposes.

The Contractor has correlated the results of all such observations, examinations, investigations, tests, reports, and data with the terms and conditions of the Contract Documents.

The Contractor has given the City Engineer written notice of all conflicts, errors, or discrepancies that the Contractor has discovered in the Contract Documents and the written resolution thereof by the City Engineer is acceptable to the Contractor.

## ARTICLE 10. ACCOUNTING RECORDS

The Contractor shall check all products, equipment and labor entering into the work and shall keep such full and detailed accounts as may be necessary for proper financial management under this Agreement, and the accounting methods shall be satisfactory to the City. The City shall be afforded access to all of the Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda and similar data relating to the cost of the work. The Contractor shall preserve all such documents for a period of three (3) years after the final payment by the City.

## ARTICLE 11. CONTRACT DOCUMENTS

The Contract Documents which comprise the Agreement between the City and the Contractor are made a part hereof and consist of the following:

A. *The City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition*:

1. Instructions on the Use of the Standard Construction Contract Documents (pages IN-1 thru IN-3)
2. Instructions to Bidders (pages IB-1 thru IB-6)
3. Bonds and Insurance Forms (pages BI-1 thru BI-10)
4. Laws and Regulations (pages LR-1 thru LR-7)
5. General Terms and Conditions (pages GC-1 thru GC-55)
6. Specifications (pages S-1 thru S-266)
7. Details (No.R206-1 thru R917-3)

B. *New York State Department of Transportation Standard Specifications: Construction and Materials, January 2, 1990 Edition, and Addenda*; and *State of New York Department of Transportation Standard Specifications (US Customary Units), May 1, 2008 Edition, and Addenda*; specifications as referenced.

C. Notice to Bidders (Advertisement)

D. The Contract Proposal Book:

no page numbering

1. Project Summary (pages thru)
2. Supplementary Instructions to Bidders (pages SIB-1 thru SIB-00)
3. Proposal (pages P-1 thru P-14)
4. Supplementary Laws and Regulations (pages SLR-1 thru SLR-24)
5. Supplementary Terms and Conditions (pages STC-1 thru STC-00)
6. Supplementary Specifications (pages SS-1 thru SS-00)

E. Additional Contract Documents:

1. Drawings (number 1 thru 47)
2. Addenda (as issued)
3. Agreement, Bonds and Insurance Forms (pages A-1 thru A-11)
4. Any Change Orders Issued after execution of this Agreement

There are no Contract Documents other than those above listed.

## ARTICLE 12: MISCELLANEOUS

Terms used in this Agreement, which are defined in Section 1.1 of the General Terms and Conditions, shall have the meanings indicated in the General Terms and Conditions.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the day and year first written above.

SEAL _____CONTRACTOR

BY_____

THE CITY OF ROCHESTER

By _____
Purchasing Agent

APPROVED FOR FUNDS

By _____
Director of Finance

STATE OF NEW YORK )
COUNTY OF MONROE ) ss:
CITY OF ROCHESTER )

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

_____
Notary Public
Commission expires: _____ / _____ / _____

## PERFORMANCE BOND

Bond Number _____

KNOWN TO ALL MEN BY THESE PRESENTS:

That _____ as Principal, hereinafter called Principal, and _____ a corporation organized and existing under the laws of _____ and authorized to do business in the State of New York as Surety, hereinafter called Surety, are held and firmly bound unto _____ as Obligee, hereinafter called Obligee, in the amount of _____ Dollars ($_____), for payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____, 20_____, entered into a contract with Obligee for _____ in accordance with drawings and specifications prepared by _____ which contract is by reference made a part hereof, and is hereinafter referred to as the contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly and faithfully perform said contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Principal shall be, and be declared by Obligee to be in default under the contract, the Obligee having performed Obligee's obligation thereunder:

(1) Surety may promptly remedy the default subject to the provisions of paragraph 3 herein; or

(2) Obligee after reasonable notice to Surety, or Surety upon demand of Obligee, may arrange for the performance of Principal's obligation under the contract subject to the provisions of paragraph 3 herein;

(3) The balance of the contract price, as defined below, shall be credited against the reasonable cost of completing performance of the contract. If completed by the Obligee, and the reasonable cost exceeds the balance of the contract price, the Surety shall pay to the Obligee such excess, but in no event shall the aggregate liability of the Surety exceed the amount of this bond. If the Surety arranges completion or remedies the default, that portion of the balance of the contract price as may be required to complete the contract or remedy the default and to reimburse the Surety for its outlays shall be paid to the Surety at the times and in the manner as said sums would have been payable to Principal had there been no default under the contract. The term "balance of the contract price" as used in this paragraph, shall mean the total amount payable by Obligee to Principal under the contract and any amendments thereto, less the amounts heretofore properly paid by Obligee under the contract.

Any suit under this bond must be instituted before the expiration of two (2) years from date on which final payment under the contract falls due.

The Surety hereby waives any notice of a change in the contract price or contract time.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Obligee named herein or the heirs, executors, administrators or successors of the Obligee.

Signed and sealed this _____ day of _____, 20_____

_____

BY _____ Principal

BY _____ Surety

STATE OF NEW YORK )
COUNTY OF MONROE ) ss:
CITY OF ROCHESTER )

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

_____
Notary Public
Commission expires: _____ / _____ / _____

## LABOR AND MATERIAL PAYMENT BOND

Bond Number _____

KNOWN TO ALL MEN BY THESE PRESENTS:

That _____ as Principal, hereinafter called Principal, and _____ a corporation organized and existing under the laws of _____ and authorized to do business in the State of New York as Surety, hereinafter called Surety, are held and firmly bound unto _____ as Obligee, hereinafter called Owner, for the use and benefit of Claimants as hereinbelow defined, in the amount of _____ Dollars ($_____), for payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____, 20_____, entered into a contract with Owner for _____ in accordance with drawings and specifications prepared by _____ which contract is by reference made a part hereof, and is hereinafter referred to as the contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall promptly make payment to all Claimants as hereinafter defined, for labor and material used or reasonably required for use in the performance of the contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

(1) A Claimant is defined as one having direct contract with the Principal or with the Subcontractor of the Principal for labor, material or both, used or reasonably required for use in the performance of the contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the contract.

(2) The above named Principal and Surety hereby jointly and severally agree with the Owner that every Claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's work or labor was done or performed, or materials were furnished by such Claimant, may sue on this bond for the use of such Claimant, prosecute the suit to final judgment for such sum or sums as may be justly due Claimant and have execution thereon. The Owner shall not be liable for payment of any costs or expenses of any such suit.

(3) No suit or action shall be commenced hereunder by any Claimant,

(a) Unless Claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: the Principal, the Owner, or the Surety above named, within ninety (90) days after such Claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner or Surety, at any place where an office is regularly maintained for the transaction of business or served in any manner in which legal process may be served in the state in which the aforesaid Project is located, save that such service need not be made by a public officer.

(b) After the expiration of one (1) year following the date on which Principal ceased work on said contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

(c) Other than in a State court of competent jurisdiction in and for the County or other political subdivision of the State in which the Project, or any part hereof, is situated, or in the United States District Court for the district in which the Project, or any part thereof, is situated, and not elsewhere.

(4) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

The Surety hereby waives any notice of a change in the contract price or contract time.

Signed and sealed this _____ day of _____, 20_____

_____

_____
Principal

(Seal)

_____
Surety

(Seal)

STATE OF NEW YORK )
COUNTY OF MONROE ) ss:
CITY OF ROCHESTER )

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

_____
Notary Public
Commission expires: _____ / _____ / _____

**CITY OF ROCHESTER**
**CERTIFICATE OF INSURANCE**

To the City of Rochester:

The subscribing insurance company certifies that insurance of the kinds and types and for limits of liability not less than those herein stated, covering the work herein designated, has been procured by and furnished on behalf of the insured Contractor named in Item 1.

1. Name of Insured _____

   Address of Insured _____

   _____

2. Location and Description of Work: PORTLAND AVENUE REVITALIZATION (Lux Street to Norton Street)

3. Kinds and Types of Insurance:

| Types of Insurance | Policy Number | Effective Date | Expiration Date | Limits of Liability |
|---|---|---|---|---|
| CONTRACTOR'S GENERAL LIABILITY<br>-Comprehensive Form<br>-Independent Contractors<br>-Premises Operation<br>-Completed Operations Hazard<br>-Broad Form Property Damage<br>-Underground Hazard<br>-Explosion and Collapse Hazard<br>-Contractual Insurance | | | | |
| MOTOR VEHICLE INSURANCE | | | | |
| BUILDER'S ALL RISK INSURANCE | | | | |
| WORKER'S COMPENSATION INSURANCE | | | | |
| DISABILITY INSURANCE | | | | |

Such insurance as is herein certified applies to all operations of said insured in connection with the work herein described at the locations stated, and is written in accordance with the company's regular policies and endorsements, subject to the company's applicable manuals of rules and rates in effect, except

_____

The insurance provided by the subscriber shall include the City of Rochester as an additional insured.

The _____, additional Funding Agencies, shall be named as an additional insured for liability arising under this agreement except for the Workers' Compensation and Disability Insurance.

No exclusion from coverage shall be made for any municipal operations performed as a term of the contract for which this insurance is issued.

The subscribing company agrees that no policy referred to herein shall be changed or cancelled until ten (10) days written notice has been given to the City of Rochester.

This certificate is furnished in accordance with and for the purpose of the specifications of the City of Rochester covering the operations herein described.

_____
(Name of Company)

_____

_____
(Address of Company)

By _____
(Authorized Representative)

Dated _____

# SUPPLEMENTARY
# LAWS AND REGULATIONS


SLR 2. Compliance with Policies Prohibiting Discrimination

A. Anti-Apartheid ..... SLR-1

SLR 3. Compliance with Labor Laws ..... SLR-1

SLR 9. Safety and Health Requirements

B. Drilling and Blasting ..... SLR-1
C. Explosives in Demolition ..... SLR-2
F. OSHA Ten (10) Hour Construction Safety and Health Course Certification ..... SLR-2

SLR 17. Apprenticeship Training Program for Construction Contracts ..... SLR-3

SLR 18. Incentive Program for Public Works Contracts ..... SLR-11

SLR 19. Minority and Women Business Enterprise (M/WBE) Requirements ..... SLR-15

SLR 20. Prevailing Wage Schedule and List of Employers Ineligible to Bid on or be Awarded any Public Work ..... SLR-23


verify #s are correct!

# SUPPLEMENTARY LAWS AND REGULATIONS

## SLR 2. Compliance with Policies Prohibiting Discrimination

*The City of Rochester Standard Construction Contract Documents, November 1, 1991, Edition*, is modified by City Council Ordinance 93-399 that repealed prior Ordinance 85-133 as follows:

**Delete** the following Subsection A Anti-Apartheid on page LR-1 in its entirety:

### A. Anti-Apartheid

The Council of the City of Rochester, New York has reaffirmed its commitment to racial equality and has established in Ordinance Number 85-133, a policy prohibiting any City agency or department from Contracting goods or services with any company or person who supports a policy of apartheid as defined herein except where competitive bidding is required by the General Municipal Law. The Contractor agrees to not support a policy of apartheid as defined herein.

SUPPORTS A POLICY OF APARTHEID shall mean providing loans directly to, underwriting securities of, advertising or otherwise promoting the sale of gold on behalf of, or otherwise providing financial services to the government of the Republic of South Africa or its agencies.

## SLR 3. Compliance with Labor Laws

**Add** the following after the second paragraph of Subsection 3 Compliance with Labor Laws on page LR-2:

Effective April 27, 2008, in addition to the schedule of wage rates, the Contractor is required to post in a conspicuous location at the Project site the name and contact information of the individual who is responsible to collect certified payrolls and review for facial validity.

## SLR 9. Safety and Health Requirements

**Delete** Subsection B Drilling and Blasting on page LR-3 in its entirety, and **Replace** with the following:

### B. Drilling and Blasting

The Contractor shall employ only experienced supervisors and workers in the handling, loading and firing of explosives. The Contractor shall fulfill the requirements of the City of Rochester Fire Prevention Code Chapter 54 regarding explosives and blasting agents which, together with other conditions indicated herein shall provide for the possession, handling, storage, transportation, and use of all explosives used at the site. Overnight storage of explosives within the City limits is prohibited unless a specific authorization of such storage is granted in writing to the Contractor, by the City of Rochester Fire Marshal.

**Delete** Subsection C Explosives in Demolition on page LR-4 in its entirety, and **Replace** with the following:

### C. Explosives in Demolition

Demolition work, subject to requirements of OSHA standards and New York Industrial Code Rule 39 and 53, shall not be performed by the use of explosives unless a specific variation of such use is granted in writing to the Contractor, by the City of Rochester Fire Marshal.

**Add** the following at the end of Subsection 9 Safety and Health Requirements on page LR-4:

### F. OSHA Ten (10) Hour Construction Safety and Health Course Certification

The Contractor shall be responsible for ensuring observance of all OSHA provisions and the State of New York Labor Law, including but not limited to Section 240, pertaining to safe performance of the work. Further, the Contractor shall ensure that the methods of performing the work do not involve undue danger to the personnel employed thereon, the public, and public and private property. Should charges of violation of any of the above be issued to the Contractor in the course of the work a copy of each charge shall be immediately forwarded to the Project Manager.

Where the total cost of all work to be performed under the contract is at least $250,000, all personnel employed in performance of the work on the Project site, either by the Contractor, Subcontractor, or other person or entity doing or Contracting to do the whole or any part of the work under the contract, shall be certified prior to performing any work on the Project site as having successfully completed a course in construction safety and health that is approved by the United States Department of Labor's Occupational Safety and Health Administration (OSHA) that is at least ten (10) hours in duration.

If the Contractor or any Subcontractor performing work under the contract fails to submit its proof of certification, the City may retain five percent (5%) of payment due the prime Contractor on any progress payment until receipt of proper documentation of certification.

**Add** the following new subsections after Subsection 16 Content of Sub-Agreements on page LR-7:

## SLR 17. Apprenticeship Training Program for Construction Contracts

### 1. Policy and Regulations.

By Ordinance 2003-347 of the City Council, as amended by Ordinance 2009-76, the City of Rochester established a policy to promote apprenticeship training programs, as authorized by Section 816-b of the New York State Labor Law. This policy applies to any City construction contract for an amount in excess of $250,000, or if any add/deduct alternates alone or in combination could result in a contract amount award that exceeds $250,000, regardless of the base bid amount, for construction, reconstruction, or improvement of any building, facility, or physical structure of any kind, and any subcontract thereto in excess of $100,000. Regulations for the implementation and enforcement of the apprenticeship policy follow.

### 2. Requirement for Contractors and Subcontractors.

For any bids subject to the apprenticeship requirements as defined in Section 1, the City of Rochester requires the Contractor, prior to entering into the construction contract, and any Subcontractor proposed to perform a subcontract thereto in excess of $100,000, to have apprenticeship agreements, appropriate for the type and scope of work to be performed and which have been registered with and approved by the New York State Commissioner of Labor in accordance with Article 23 of the New York Labor Law.

### 3. Submittals with Bid Proposal.

The Bidder shall submit for itself and for any Subcontractor(s) whom the Bidder proposes at the time of the bid to perform a subcontract in excess of $100,000 in value, copies of the following documents with the bid Proposal for each apprenticeship training program, approved by the New York State Department of Labor, which the Bidder or Subcontractor(s) will need to satisfy the requirements of the Apprenticeship Training Program requirement:

1. If the Bidder is sponsor of an apprenticeship training program, a copy of the Form AT-10, "New York State Department of Labor Apprenticeship Training Program Registration Agreement", issued to the Bidder in approval of that apprenticeship training program.

2. If the Bidder does not self-sponsor an apprenticeship program but is party to an agreement with the sponsor of apprentices who are enrolled in an apprenticeship training program that is sponsored by a trade union, a joint apprenticeship committee, or other organization other than the Bidder,

   a. An "Agreement to Utilize Apprentices for a City Construction Contract" form (City Form AP3) signed by the Bidder and the apprenticeship training program sponsor; and
   b. A copy of the current "New York State Department of Labor Apprenticeship Training Program Registration Agreement", Form AT-10, issued to the sponsor in approval of that program.

3. The Bidder shall also submit with the bid package, the following:

   a. City Form AP1, "Schedule of Subcontracts and Apprenticeship Agreements," a listing of any contractor proposed to hold a subcontract that exceeds $100,000 in value, including the name of the subcontractor, the scope and value of work proposed to be performed, and the name of any apprenticeship trade for which an approved apprenticeship agreement will be submitted; and

b. Copies of approved apprenticeship agreements as detailed in 2.a and 2.b above that are held by the proposed subcontractors and intended to meet the requirements of the Apprenticeship Training Program.
c. An Excel spreadsheet version of City Form AP1 is available for download from City of Rochester's web site at ***http://www.cityofrochester.gov/constructiondocuments/***.

4. Any apprenticeship agreement submitted shall be:

   a. Submitted completely with Bid;
   b. Current and valid;
   c. Represent an apprenticeship training program that is active and in good standing with the New York State Department of Labor; and
   d. Appropriate to the scope and nature of the work to be performed under the contract.

5. Submit complete apprenticeship documentation with Bid proposal. An incomplete package will be declared informal and will not be considered for award. No required apprenticeship material will be accepted after Bids have been opened.

## 4. Enforcement.

If the Bidder fails to comply with the requirements of the "Apprenticeship Training Program for Construction Contracts", the City will deem the Bidder non-responsive and disqualify the Bidder from consideration for the pending contract.

# Apprenticeship Training in Construction Contracts

## Schedule of Subcontracts and Apprenticeship Agreements

AP1 (5/2013)

This applies to City Construction Contracts subject to the Apprenticeship Training in Construction Contracts requirement of Ordinance 2003-347, as amended

® If the bid or award value for this contract exceeds $250,000, Apprenticeship Training in Construction Contracts requirements may apply. Consult the Rules and Regulations.

*INSTRUCTIONS:* *Complete and submit this form for approval on the following occasions. Do not execute a subcontract prior to City approval of this form.*

| | |
|---|---|
| Bid | List all proposed apprenticeship agreements and list the firms and work for subcontracts that exceed $100,000; state "NONE" if none are proposed. Attach subcontractor apprenticeship agreements to this form. ***Submit prime contractor apprenticeship agreements with bid proposal.*** |
| Pre-Award | Submit to the City Project Manager following approval of the M/WBE plan--list M/WBE subcontractors and update data and apprenticeship agreements for firms proposed for subcontracts that exceed $100,000. |
| Pre-Construction | Submit to the City Project Manager at or before the Pre-Construction Meeting--list all proposed subcontracts of any value and update apprenticeship agreements when necessary. |
| Update | Submit to the City Project Manager prior to executing any subcontract proposed subsequent to the Pre-Construction meeting--list all current and proposed subcontracts of any value; update apprenticeship agreements when necessary. |

*SUBMIT THIS FORM WITH BID. AN INCOMPLETE PACKAGE WILL BE DECLARED INFORMAL AND WILL NOT BE CONSIDERED FOR AWARD.*

Excel Spreadsheet available at 585-428-6828 or www.cityofrochester.gov/ApprenticeshipTraining

| | |
|---|---|
| Project Number | |
| Project Name | |
| Contract Number | |
| Contractor | |
| Bid/Award Value | |

| Purpose and Date of Submission | | |
|---|---|---|
| Bid | Date | |
| Pre-Award | Date | |
| Pre-Construction | Date | |
| Update | Date | |

### Apprenticeship Data for Prime Contractor and Subcontractors

| Name of Subcontractors | Subcontract Scope of Work or Work Items *List description of work or specific pay items to be performed under the subcontract* | Subcontract Value (Est'd/Actual) | Apprenticeship Agreement(s) Submitted for Prime Contract and Subcontracts > $100,000 *(Note dates of previous submissions and approvals; do not resubmit)* | | | |
|---|---|---|---|---|---|---|
| | | | NYSDOL AT10 | For Trade | City AP3* | Approved by PM |
| PRIME CONTRACTOR | | | | | | |
| SUBCONTRACTORS *If none, state "NONE"* | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| (Insert additional lines as needed) | | | | | | |

*AP3 required if subcontractor does not directly sponsor the apprenticeship training program named in the NYSDOL AT10

**Certification by Contractor Representative**

I certify that the data reported above are complete and accurate, and that apprenticeship agreements are valid, at the time of submittal.

Name

Date

Signature

**Approval by Project Manager.**

The subcontractors listed are acceptable to the City. Apprenticeship Agreements listed are current, valid and appropriate to the type and scope of work to be performed.

Name

Date

Signature

remove highlight

**Schedule of Subcontracts and Apprenticeship Agreements.**
A copy of this form may be downloaded from the City of Rochester's website at ***http://www.cityofrochester.gov/constructiondocuments/***, or by calling (585) 428-6860.

Form AP3 (11/12)

remove highlight

**Agreement to Utilize Apprentices**
**on a**
**City of Rochester Construction Contract**

To be used when a Bidder on a City of Rochester construction contract utilizes one or more apprentices supplied by an apprenticeship training program that the Bidder does not sponsor to satisfy the requirements of the City of Rochester Apprenticeship Training Program.

Bidder: _____, "Bidder"

Apprenticeship Training Program Sponsor: _____, "Sponsor"

**ATTACH VALID NYSDOL AT-10 FORM**

City of Rochester Construction Contract: _____, "Contract"

The Bidder and sponsor agree as follows:

1. The sponsor will provide the Bidder with one or more apprentices for employment on the contract in the following occupation. Each apprentice is enrolled in an active apprentice training program that is registered with, approved by, and is in good standing with the New York State Department of Labor and has an apprenticeship agreement that has been registered with, and approved by, the New York State Commissioner of Labor in accordance with Article 23 of the New York State Labor Law:

Occupation

_____

2. The Bidder will employ the apprentice(s) to perform work on the contract under terms and conditions applicable to construction contract work in New York State.

**Attach a copy of the sponsor's currently valid and signed New York State Department of Labor form AT-10, "Apprentice Training Program Registration Agreement", for the occupation listed above.**

ss/ _____
Bidder Representative

ss/ _____
Sponsor Representative

ss/ _____
Date

_____
Date

# Apprenticeship Training Program for Construction Contracts
# RULES AND REGULATIONS

## Authorization

These RULES AND REGULATIONS are promulgated under authority of City Ordinance 2003-347, which was adopted by the City Council on October 21, 2003, and amended by Ordinance 2009-76, which was adopted by City Council on March 18, 2009. These Ordinances were enacted under authority granted by Chapter 571 of the Laws of 2001, as codified in Section 816-b of the New York State Labor Law.

## Summary of City Ordinance 2003-347, as amended

City Ordinance 2003-347, as amended, makes it the policy of the City of Rochester "to promote apprenticeship training programs." The scope of the Ordinance includes any construction contracts, as defined in the Ordinance, that are in excess of $250,000. The Ordinance further requires that the contractors for such a contract and for any subcontract thereto in excess of $100,000, prior to entering into such public works contracts, "have apprenticeship agreements, appropriate to the type and scope of work to be performed, which have been registered with and approved by the New York State Commissioner of Labor." The Ordinance authorizes the Commissioner of Environmental Services "to promulgate such rules and regulations necessary and appropriate for the implementation and enforcement of this ordinance." The Ordinance also requires that the "City shall provide assistance to contractors to its greatest extent possible in obtaining State approval of apprenticeship programs;" Such approval shall be obtained before a contractor submits a bid for a construction contract or is awarded a subcontract.

## Definitions

Appendix A contains definitions of terms used. Appendix A is an integral part of these RULES AND REGULATIONS.

## Effective Date and Administration

The RULES and REGULATIONS shall be effective for contracts advertised for public bid after January 1, 2004, and, as revised, shall be effective for contracts advertised for public bid after March 19, 2009. They shall be administered by the Commissioner of Environmental Services. Direct inquiries to:

Commissioner of Environmental Services
City of Rochester
30 Church Street, Room 300B
Rochester, NY 14614-1278
(585) 428-6855 office
(585) 428-6010 fax

## Application

1. These RULES AND REGULATIONS shall apply to any construction contract in excess of $250,000, and that is subject to the Rules and Regulations, and to any subcontract thereto in excess of $100,000. The contract value for determination of application shall be the original contract price, including any items that are bid as alternates and accepted in the original contract or subcontract. Any field changes, made after contract award, made for any reason, shall not be counted in determining if a contract or subcontract exceeds the threshold value.
2. These RULES AND REGULATIONS shall only apply to public works contracts as defined in Appendix A. Accordingly, they shall not apply to any of the following types of contracts:
   - ☐ Contracts for the incidental or routine repair, operation or maintenance of any city building, street or street appurtenance, facility or structure and for major repair or maintenance where the City determines that the contract does not afford an opportunity for an apprentice to accumulate a significant amount of required on-the-job training;
   - ☐ Contracts for the delivery of public services;
   - ☐ Contracts for any professional service, whether associated with a public works construction contract or not;
   - ☐ Contracts for the purchase of materials, supplies or equipment;
   - ☐ Contracts for the purchase, delivery and/or installation of furnishings, furniture and/or equipment; and
   - ☐ Any other contract that does not meet the definition of a construction contract as defined in Appendix A.
3. These RULES AND REGULATIONS shall not apply in the following situations:
   - ☐ Any services procured through New York State Contracts as administered by the New York State Office of General Services; and,
   - ☐ Any contracts utilizing federal, state, county or other funding assistance to the extent that the funding agency has indicated in writing that use of such funding precludes application of the Apprenticeship Training Program or the City determines that funding provisions make such application impractical. If the agency has an approved program available that provides for or encourages apprenticeship training, the City shall investigate applying that program to the contract and, if feasible, do so to the fullest practical extent.

## Procedures

1. A contractor who submits a bid for a City contract for which the contract amount exceeds $250,000 shall submit with the bid package a copy of the following for each apprentice agreement intended to meet the requirements of this regulation:
   a. The current New York State Department of Labor Form AT-10, "Apprentice Training Program Registration Agreement," issued to the contractor or other sponsor of the apprentice training program; and
   b. If the apprentice training program is not sponsored by the contractor, an executed copy of City Apprenticeship Training Program Form AP3, "Agreement to Utilize Apprentices on a City of Rochester Construction Contract."
   c. The Contractor shall also submit with the bid package the following:
      (1) A listing of any contractor proposed to hold a subcontract that exceeds $100,000 in value, including the name of the subcontractor, the scope and value of work proposed to be performed, and the name of any apprenticeship trade for which an approved apprenticeship agreement will be submitted, and
      (2) Copies of approved apprenticeship agreements intended to meet the requirements of this regulation as detailed in 1.a and 1.b above.

2. A contractor who, subsequent to contract award, proposes to enter subcontract that exceeds $100,000 in value, shall submit apprenticeship agreements as described in 1a or 1b above with the proposed subcontract documents to the City Project Manager for approval prior to entering the subcontract.
3. The City may verify that any apprenticeship agreement submitted by a contractor is current and valid.
4. If a contractor fails to timely submit valid apprenticeship agreements, the contractor may be deemed to be non-responsive, and may be disqualified from further consideration for the pending contract or subcontract.

## Assistance

The City shall provide assistance to contractors to its greatest extent possible in obtaining State approval of apprenticeship programs by:

1. Referral to the New York State Department of Labor Rochester regional office and apprenticeship training representatives for apprenticeship training program sponsorship, referral to State-approved programs, recruitment of apprentices, assistance with program maintenance, and other technical assistance;
2. Supporting programs and activities that encourage or assist contractors to develop or participate in apprenticeship training programs;
3. Other means which may be determined on a case by case basis.

## Waivers

1. No waivers shall be provided to the general requirement that contractors have current, valid apprenticeship agreements, appropriate to the scope and nature of the work to be performed under the contract, registered with the New York State Commissioner of Labor. Failure to document such agreements will result in a contractor being deemed non-responsive, and such contractor will be disqualified from consideration for the pending contract.
2. The Commissioner may grant a waiver for an apprenticeship agreement specific to a particular trade that is appropriate to the scope and nature of the work to be performed under the contract if:
   a. The New York State Department of Labor certifies that no apprenticeship training is available or may be approved for that trade within the Rochester Labor Market by the time of contract award or of any subcontract proposed for approval subsequent to contract award;
   b. The application of the requirements of the apprenticeship program for City construction contracts would prevent the City or the bidder from obtaining a contractor or subcontractor that is qualified to perform specific contract work, regardless of the price for that work.

## Enforcement

If the contractor fails to comply with the requirements of the Apprenticeship Training Program for Construction Contracts, the City will deem the contractor non-responsive and disqualify the contractor from consideration for the pending contract.

# Appendix A
# Definitions

The following definitions apply to the RULES AND REGULATIONS promulgated herein to provide guidance on the implementation and enforcement of City of Rochester Ordinance 2003-347, as amended. The definitions provided here are an integral part of these RULES AND REGULATIONS.

**Alteration** - the process of improving real property that adds value to its permanent value and prolongs its intended life appreciably; does not include repair, operation, or routine maintenance of existing real property.

**Apprenticeship Agreement** - shall be:

a. The current New York State Department of Labor Form AT-10, "Apprentice Training Program Registration Agreement," issued to the contractor or other sponsor of the apprentice training program; and,

b. If the apprentice training program is not sponsored by the contractor, an executed copy of City Apprenticeship Utilization Program Form AP3, "Agreement to Utilize Apprentices on a City of Rochester Construction Contract."

**Construction contract** - shall mean any City public works contract for an amount in excess of $250,000, or subcontract thereto in excess of $100,000, for construction, reconstruction or improvement of any building, facility or physical structure of any kind.

**Construction** - the process of building, altering, or improving any public structure or building, demolition of existing real property, or other public improvement of any kind to any public real property; does not include the operation or routine maintenance and repair of existing real property.

**Contractor** - shall mean a contractor which directly employs labor under a construction contract or subcontract.

**Demolition** - the process of taking down or removing a facility or physical structure from real property.

**Improvement** - the process of alteration or renovation of real property that adds value to its permanent value and prolongs its intended life appreciably, and major maintenance and repair of real property that affords an opportunity for an apprentice to accumulate a significant amount of on-the-job training; does not include the incidental or routine repair, operation, or routine maintenance of existing real property.

**Installation** - the process of installing material and equipment in relation to a construction contract as defined above; does not include the operation or routine maintenance and repair of existing real property.

**Maintenance and Repair** - shall mean the upkeep of real property that neither adds to its permanent value nor prolongs its intended life appreciably, but instead keeps it in an efficient operating condition.

**Real Property** - is the land and its permanently affixed buildings and structures.

**Reconstruction** - the process of rebuilding, altering, or improving any public structure or building, or other public improvement of any kind to any public real property; does not include the operation or routine maintenance and repair of existing real property.

**Rehabilitation** - the process of reconstruction, improvement, alteration, installation, or renovation of real property that adds value to its permanent value and prolongs its intended life appreciably; does not include the operation, or routine maintenance and repair of existing real property.

**Renovation** - the process of reconstruction, improvement, installation and alteration of real property that adds value to its permanent value and prolongs its intended life appreciably; does not include the operation or routine maintenance and repair of existing real property.

**Rochester Labor Market** - shall mean those counties served by the Rochester Regional Office of the New York State Department of Labor.
[Note: In January 2004 that area includes the following nine counties: Genesee; Livingston; Monroe; Ontario; Orleans; Seneca; Wayne; Wyoming; and Yates]

**Subcontractor** - shall mean an individual, partnership, corporation or joint venture to whom the construction contractor sublets any part of the project.

## SLR 18. Incentive Program for Public Works Contracts

### Section 1 Incentive Program

The City of Rochester will provide an incentive program for hiring City residents residing in certain City zip codes for public works contracts for which the final contract price is for an amount in excess of $250,000.

The City of Rochester, for public work contracts in excess of $250,000, will provide a monetary incentive equal to seven percent (7%) of payroll paid to disadvantaged City residents residing in the City in zip codes: 14604, 14605, 14608, 14611, 14614, and 14621. A listing of City property addresses in the above listed zip codes is available for review at the office of the Purchasing Agent, 30 Church Street, Room 105-A, Rochester, NY, 14614. The zip codes extend beyond City boundaries, and the employees residing in these zip codes must live in the City for the wages paid to qualify for the incentive payment.

In order to qualify for the incentive, the Contractor must prove that more than seventeen percent (17%) of the total gross payroll for the project was paid to disadvantaged City residents. The maximum incentive under any contract shall not exceed $50,000.

### Section 2 Definitions

Residence - the term residence shall be deemed to mean that place where a person maintains a fixed, permanent and principal home and to which they, wherever temporarily located, always intends to return.

Resident - the individual residing at the residence as heretofore defined.

Disadvantaged City resident - an individual residing at the residence as heretofore defined in City zip codes 14604, 14605, 14608, 14611, 14614, and 14621.

Contractor - the individual, partnership, corporation or joint venture undertaking the execution of the work with the City under the terms of the Contract Documents, and acting directly or through their or its agents or employees. The term Contractor shall mean a Contractor which directly employs labor under a public works contract and includes Subcontractors.

Total Gross Payroll - the total payroll dollars paid to Contractor employees working on the project for which the incentive payment is requested.

City Residents Total Gross Payroll - the total payroll dollars paid to City residents residing in prescribed zip codes for work performed on City projects for which a residency incentive is requested. This amount would be reported in box 5 on the W-2.

### Section 3 Documentation Required

To request an incentive payment the Contractor must provide to the City Director of Finance, 30 Church Street, Room 109-A, Rochester, NY, 14614 upon obtaining certificate of substantial completion and/or final completion/final payment, proof of wages paid to all employees and wages paid to City residents in the format as per Exhibit A. The employee must also sign an attestation as per Exhibit B attesting to that the address represented is the permanent and principal place of residency. Any false information provided may lead to the Contractor's being found a non-responsible Bidder on subsequent City bids.

The Contractor shall retain payroll data and make available such records, for random audit by the City, for a period of three years.

The Contractor must apply for the residency incentive within ninety (90) days of obtaining a certificate of substantial completion and/or final completion/project completion. The residency incentive will be paid upon submission, review, and approval of information required as per Section 3, Documentation Required.

Excel spreadsheet available from Director of Finance, City of Rochester, (585) 428-7151

# EXHIBIT A
# SUMMARY OF TOTAL GROSS PAYROLL FOR PROJECT

Exhibit A
Rev 4/1/09

**SUMMARY OF TOTAL GROSS PAYROLL FOR PROJECT**

Project Name:
Contract No.
Contract Start Date: Completion Date:
*Excel spreadsheet available from Director of Finance, City of Rochester, 585-428-7151*

| Employee Name | Date of Birth | Employed by (Name of Prime or Subcontractor) | Address | Village Town City | Zip Code | Social Security Number | Dates Worked | Payroll Check Dates | Gross Payroll Amount |
|---|---|---|---|---|---|---|---|---|---|
| CITY RESIDENTS (Insert extra lines as necessary) | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | Total City Residents | | N/A | N/A | N/A | | From_____ to _____ | N/A | $0.00 |
| | Percent of Total Gross Payroll | | | | | | | | 0.00% |
| NON-CITY RESIDENTS (Insert extra lines as necessary) | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | Total Non-City Residents | | N/A | N/A | N/A | | From_____ to _____ | N/A | $0.00 |
| | Percent of Total Gross Payroll | | | | | | | | 0.00% |
| | Total Gross Payroll | | | | | | | | $0.00 |

The undersigned hereby attests that the Summary of Gross Payroll Schedule, accurately represents a listing of all individuals who worked and gross wages paid to each on the above referenced project.

_____
Signature

STATE OF NEW YORK)
COUNTY OF MONROE) ss.:

On the _____ day of _____, 20___ before me, the undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed above and acknowledged to me that he/she executed same

_____
Notary Public

EXHIBIT B

# EMPLOYEE ATTESTATION OF ADDRESS

I, _____, hereby attest that my residence and

principal home from _____ to _____, while employed on
date date

_____ by _____
contract number - contract job description name of Contractor

was/is as listed below.

Address _____

City, town, village _____

State _____, Zip Code _____

_____
Signature of Employee

STATE OF NEW YORK )
COUNTY OF MONROE ) ss:
CITY OF ROCHESTER )

On this _____ day of _____ in the year _____ before me, the undersigned, a Notary Public in and said State, personally appeared _____ personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed above and acknowledged to me that they executed the same.

_____
Notary Public
Commission expires: _____ / _____ / _____

## SLR 19. Minority and Women Business Enterprise (M/WBE) Requirements

The City has a Minority and Women Business Enterprise (M/WBE) requirement that ensures participation of African-Americans, Hispanic Americans and Women-owned businesses on City public works projects. Goals are set for each particular group, whether the project is for street/water construction or general/building construction. Contracts that are solely for materials and supplies do not count toward the M/WBE utilization goal.

Included within these bid documents and immediately following this page, are the policy statement, utilization goal, participation plan, participation documents and utilization plan, and good faith effort sections for this contract, and the check list for type of work the City believes may be performed by certified M/WBE's available in the RMSA. However, the City's checklist is provided for informational purposes only and does not relieve the bidder of making a good faith effort to meet the M/WBE Utilization goals for this contract.

A paper copy of the "Minority and Women Business Enterprise (M/WBE) Construction Utilization Goal" documents will no longer be included with City of Rochester bid documents. However, a paper copy of the complete set of the M/WBE documents will be provided to the successful bidder(s) upon award of the contract.

A complete set of the "Minority and Women Business Enterprise (M/WBE) Construction Utilization Goal" documents is available on the City of Rochester's website, and are hereby incorporated by reference. They can be accessed by visiting the City of Rochester's website at ***http://www.cityofrochester.gov/constructiondocuments/.***

Information about M/WBE requirements may be obtained on an advisory basis by contacting the City of Rochester M/WBE Officer at (585) 428-6190.

## MINORITY AND WOMEN BUSINESS ENTERPRISE (M/WBE) CONSTRUCTION UTILIZATION GOAL

**(Streets/Water Public Works Projects)**

### 1. Policy Statement

The City of Rochester has determined, through a study of procurement disparity by ethnic and gender group, that there has been discrimination on the basis of race toward African-American and Hispanic-owned construction businesses and on the basis of sex toward Woman-owned construction businesses. Therefore, in order to remediate this discrimination, City Council Ordinance 92-326 (as amended by Ordinance 94-213) authorizes a policy of affirmative action toward contractors in the above groups whose businesses are located within the Rochester Metropolitan Statistical Area (RMSA). In order to achieve this policy, the City has set an M/WBE utilization goal for each group that shall be applied to each contract. The utilization goals depend upon the particular group and whether the project is for street construction or general construction.

### 2. M/WBE Utilization Goal

2.1. The M/WBE utilization goals for this contract are __6.7__ % for African-American, __2.2__ % for Hispanic, and __1.0__ % for Women business enterprises of the total dollar amount of this contract.

2.2. Only M/WBE firms that are certified by the State of New York, and located within the Rochester MSA, or otherwise approved by the City's M/WBE Officer can be used to fulfill these utilization goals. The list of City approved State Certified M/WBE firms is found in the directory that can be found on the City's website ***http://www.cityofrochester.gov/article.aspx?id=8589948205***.

2.3. If this contract award is less than $50,000, the Minority and Women Business Enterprise Goals may be a simple composite goal of __9.9__ %, fulfill able by any single M/WBE or group of M/WBE's.

2.4. Contracts solely for materials and supplies do not count toward the M/WBE utilization goals.

### 3. M/WBE Participation Plan

3.1. Bidders must submit with their bid a completed M/WBE Form P – the M/WBE Participation Plan, pages 1 and 2. This Plan indicates the M/WBE subcontractors the bidder intends to utilize if awarded this contract in order to fulfill the M/WBE goals listed in Section 2 above. Form P, Page 1, lists the names of each subcontractor the bidder intends to use, the M/WBE classification, the type of work that the subcontractor will do, the proposed dollar amount of the subcontract and the percentage of the base bid amount. On Form P, Page 2, the bidder must indicate at what stage, or stages, each M/WBE subcontractor is expected to be utilized.

3.2. Only M/WBE firms included in the most current version of the City Approved list of Certified M/WBE Firms in the Rochester Metropolitan Statistical Area provided on the City's web site provided in Section 2.2 will be approved for use in meeting the City's M/WBE utilization goals, unless otherwise approved by the City's M/WBE Officer.

3.3. The M/WBE Participation Plan (Form P) will be used by the City to determine whether or not the bidder has demonstrated the ability to meet the M/WBE goal requirements of this contract. The M/WBE Participation Plan will be reviewed for compliance with the Utilization Goal requirements, including, but not limited to, the certification procedures described below. If Form P does not meet the utilization goal requirements for this contract, the bidder must submit a statement, along with Form P, describing the reasons for not meeting these requirements. Such statement must include demonstration of good faith efforts as defined in Section 5 below.

## 4. M/WBE Participation Documents and Utilization Plan

4.1. Upon notification by the City, a bidder must submit, within ten (10) calendar days, a completed M/WBE Form A - Schedule of Participation, along with an M/WBE Form B – Intent to perform as a Subcontractor and M/WBE Form C – M/WBE Affidavit for each M/WBE subcontractor. Unless otherwise approved by the City, the subcontractors shown on the M/WBE Participation Plan – Form P must be used in the Schedule of Participation, Form A. Blank copies of these forms are available from the Bureau of Purchasing.

4.2. If the City elects to choose Add or Delete Alternates in addition to the Base Bid, the Form A – Schedule of Participation shall be adjusted to insure that the M/WBE goals are met based upon the total value of the contract award.

4.3. Once approved by the City, the M/WBE Schedule of Participation and related Forms B and C shall constitute the Approved M/WBE Utilization Plan, which shall be the contractual obligation of the Contractor for meeting the M/WBE goal requirements.

4.4. If the total cumulative amount of the contract with the City changes the initial contract award amount by 5% or more based upon the net of all change orders approved by the City during the performance of the contract, the Contractor must submit a revised Form A, and related Forms B and C, and have these approved by the City, in order to insure that the cumulative total of M/WBE subcontracts meets the M/WBE goal requirements of this contract.

4.5. For any subcontract that requires materials and/or supplies as part of the contract, the M/WBE subcontractor must provide a service of installation, connection, set-up, mounting, assembly, construction, erection, raising and/or building using product or material supplied. The M/WBE subcontract cannot be reduced to just providing or passing along materials and/or supplies. If an M/WBE subcontract becomes primarily a materials and/or supplies contract, then the subcontract agreement between prime contractor and the M/WBE shall no longer be considered a bona fide M/WBE subcontract that can count towards fulfillment of the M/WBE utilization goals of this contract.

4.6. If the M/WBE subcontractor participation proposed in Form A does not meet the M/WBE goals of this contract, the bidder must request a waiver based on one or more of the circumstances set forth in Section 5. If the bidder requests a waiver due to M/WBE non-availability, Forms D and E must be submitted. M/WBE Form D provides a list of all M/WBE's who were invited to submit quotes. M/WBE Form E is a certification proving that an M/WBE firm invited to submit a quote declined to do so. Other M/WBE certification forms and/or documentation may be required by the City to verify that a good faith effort was made to meet the utilization goals.

## 5. Good Faith Effort

5.1. In order to be considered for a waiver of any of the M/WBE goals in this contract, a bidder must demonstrate a good faith effort to obtain M/WBE subcontractors. In judging whether a bidder has made a good faith effort to meet the M/WBE Utilization Goal requirements of this contract, the City will consider the different kinds of effort used as well as the intensity of those efforts.

5.2. Demonstration of a good faith effort should include, but not be limited to, the following actions:

5.2.1. Should attend the pre-bid conference at which bidders are informed of the M/WBE goals.

5.2.2. Should solicit M/WBE's listed in the City approved State Certified M/WBE directory available on the City's web site (referenced above in Section 2.2). Such solicitation must be for appropriate portions of the work which could be performed by MBE and WBE subcontractors, and shall clearly describe the plans and specifications of such work, including providing the opportunity to review plans and specifications. Solicitations should be made a reasonable period (at least one week) before bids or proposals are due.

5.2.3. Should advertise for quotes from MBE's and WBE's in general circulation media and minority and women focused media. Advertisements should appear for a reasonable period (at least one week) before bids or proposals are due.

5.2.4. Should notify appropriate minority and women subcontractor associations in writing within a reasonable period (at least one week) before bids or proposals are due.

5.2.5. Should utilize the services of and cooperate with those organizations providing technical assistance to MBE's and WBE's for running companies and obtaining business, such as the Minority Business Development Center and the SUNY Brockport SBA program.

5.2.6. In the event that the specialized machinery and/or materials/products required to fulfill the contract represents a substantial portion of the cost of the contract, and where the specialized machinery/materials/products can only be supplied by a limited number of non-M/WBE suppliers, the bidder must provide the City with the substantiation for such costs and how this reduces the opportunity to utilize M/WBE subcontractors for this contract.

5.2.7. Should submit all required documentation to the City within the time frames required in these contract documents, including all forms for proposed subcontractors and any other documentation requested by the City.

5.3. The following documentation at a minimum is required to support any request for a waiver to allow for only partially meeting the M/WBE utilization goals:

5.3.1. Attendance at the pre-bid conference for this bid.

5.3.2. Written documentation demonstrating the efforts made to comply with the requirements of Sections 5.2.2 through 5.2.6. above.

5.3.3. Written documentation demonstrating efforts to subcontract with M/WBE's, including names, dates and contact information of all M/WBE firms contacted and solicited, along with their responses, and if not selected, the reasons for such decision.

5.3.4. Written documentation to verify that the bidder gave M/WBE's direct access to, and adequate time to review, all necessary project plans, drawings, specifications and other documents, as well as adequate time to prepare subcontract bids.

5.3.5. Written documentation that the bidder has met the Utilization Goals after adjusting for specialized machinery and/or materials/products as covered in Section 5.2.6.

5.4. Any bidder requesting a waiver from fully meeting the M/WBE Utilization Goals for this contract must meet with the City's M/WBE Officer and/or the City Purchasing Agent if requested to review the good faith effort made by the bidder to meet the Utilization Goals.

5.5. The City's decision as to sufficiency of documentation and/or adequacy of a good faith effort shall be final.

**M/WBE CONSTRUCTION UTILIZATION REQUIREMENT**
**FOR CERTIFIED M/WBE's IN THE RMSA**
**(as of March 23, 2009)**

This list is published to help bidders to identify portions of this project which may be suitable for M/WBE subcontracting. No guarantee of completeness or accuracy can be made.

A check in the first column signifies that the project designer has identified a portion of work which falls into that category and might form the basis for a subcontract.

A check appears in the column if at least one certified African-American, Hispanic-American, or Woman-owned business in the Rochester Metropolitan Statistical Area (RMSA) has stated capability for the type of work listed.

**.TYPE OF CERTIFIED M/WBE's**

| | Type of Work | African-American | Hispanic-American | Woman-Owned |
|---|---|---|---|---|
| | Acoustical Ceiling/Walls | X | X | X |
| | Asbestos Removal | X | | X |
| | Building Alterations | X | X | X |
| | Building Construction | X | X | X |
| | Bridge & Iron Work | X | | X |
| | Cabinetry | X | | |
| | Carpentry, Plastering | X | X | X |
| | Carpet Installation | X | X | X |
| | Caulking & Repointing | X | | X |
| X | Concrete Work | X | X | X |
| X | Construction Photos | X | X | |
| X | Construction Stakeout | X | X | |
| | Demolition | X | X | |
| X | Drainage Construction | X | | |
| | Drywall Work & Install | X | X | X |
| | Duct Work | X | X | X |
| X | Electrical Work | X | X | X |
| | Elevator Work | | | X |
| X | Excavation/Site Dev | X | X | X |
| | Fiber-Optic Cabling | X | X | X |
| | Fire/Security Systems | | | X |
| | Gutters | X | X | X |
| | HVAC, Testing, Balance | X | | X |
| | Hazardous Waste Rm | X | | |
| X | Horizontal Boring/Tun | | | X |

(possibly w/ work around trees)

| | Type of Work | African-American | Hispanic-American | Woman-Owned |
|---|---|---|---|---|
| | Insulation | X | | X |
| X | Landscape/Hydroseed | X | X | X |
| | Lead Abatement | X | | X |
| | Masonry | X | | X |
| | Metal Fabrication | X | | X |
| | Metal Frame Structures | X | | X |
| X | Nursery | | | X |
| X | Painting | X | X | X |
| X | Paving | X | X | X |
| X | Pavement Marking | X | | X |
| X | Pipe Install, Trenchless | X | | X |
| | Plumbing | X | | X |
| | Roofing | X | | X |
| X | Saw Cutting | | | X |
| | Sealcoating, Asphalt | | | X |
| X | Sewer/Water Mains | X | X | X |
| | Skylights | | | X |
| | Steam Cleaning | | | X |
| | Steel Erectors | X | | X |
| X | Street Construction | X | X | X |
| X | Surveying | X | X | |
| | Tiling: Floor & Walls | X | | X |
| X | Tree Services | | | X |
| X | Trucking & Services | X | X | X |
| | Waterproof & Sealing | X | | X |
| | Welding, General | X | | X |
| | Window & Door Install | X | X | X |
| | Window Treatment & Trim | | | X |
| | Window Blinds-Drapes | | | X |

## SLR 20. Prevailing Wage Schedule and List of Employers Ineligible to Bid on or be Awarded any Public Work

Paper copies of the "Prevailing Wage Schedule" and "List of Employers Ineligible to Bid on or be Awarded any Public Work" will no longer be included with City of Rochester bid documents. A paper copy of the current documents will be provided to the successful Bidder(s) upon award of the contract.

The "Prevailing Wage Schedule" and "List of Employers Ineligible to Bid on or be Awarded any Public Work" for this contract are available on the New York State Department of Labor's website. They can be accessed by visiting the New York State Department of Labor's website at ***http://wpp.labor.state.ny.us/wpp/doFindProject.do?method=showIt***, and entering the assigned PRC# at the proper location on the website. The PRC# can be found on the PW 200 form which immediately follows this page.

Contractors and subcontractors must pay laborers, workers and mechanics employed in the performance of a public work contract not less than the most current prevailing rate of wage and supplements (fringe benefits).

The City of Rochester will not be responsible for any of the Contractor's increased labor costs which result from defects in the Prevailing Wage Schedule provided, or from amendments to the Prevailing Wage Schedule, whether that increase occurs before advertisement, before bid opening, before award of the contract, after the contract has been let, or during construction. No change in the contract price shall be allowed to the Contractor for any such increases.

Information about current wage rates may be obtained on an advisory basis by contacting the City of Rochester Contract Administration office at (585) 428-7398.

USA RULES TO ORDER FROM DAVE CROCKER, CITY PURCHASING/FINANCE

**INSERT**

**FORM PW 200**

**PREVAILING WAGE SCHEDULE**

**HERE**

get from LUSA (City)

# SUPPLEMENTARY TERMS AND CONDITIONS


STC 1.1 Definitions ..... STC-1

STC 5.2 Physical Conditions - Investigations and Reports ..... STC-2

STC 6.2 Labor, Products and Storage ..... STC-2

STC 9.7 Resolution of Disputes ..... STC-2

STC 10.2 Changes in the Contract Price

10.2.2 A. Unit Price ..... STC-2
10.2.6 Asphalt Price Adjustment ..... STC-3

STC 11.1 Warranty and Guarantee ..... STC-6

STC 13.3 Review of Applications for Progress Payments ..... STC-6

## SUPPLEMENTARY TERMS AND CONDITIONS

These Supplementary Terms and Conditions amend or supplement the General Terms and Conditions of the *City of Rochester Standard Construction Contract Documents, November 1, 1991 Edition* and other provisions of the City's Contract Documents as are indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Terms and Conditions which are defined in the General Terms and Conditions of the *City of Rochester Standard Construction Contract Documents, November 1, 1991 Edition* have the meanings assigned to them in the General Terms and Conditions.

### STC 1.1 Definitions

**Add** the following definitions on page GC-7:

**MAJOR ITEM** - Any contract pay item in the original bid documents for which the bid unit price multiplied by the estimated item quantity exceeds 2% of the total original contract bid price, or the following Minimum Major Item Value as based on the Original Total Base Bid, whichever is greater:

| Original Total Base Bid | Minimum Major Item Value |
|---|---|
| $0 - $249,999 | $2,500 |
| $250,000 - $499,999 | $7,500 |
| $500,000 - $999,999 | $15,000 |
| $1,000,000 - $2,499,999 | $35,000 |
| $2,500,000 - $4,999,999 | $75,000 |
| $5,000,000 - $9,999,999 | $150,000 |
| $10,000,000 - $14,999,999 | $250,000 |
| $15,000,000 - $19,999,999 | $350,000 |
| $20,000,000 and over | $500,000 |

**MINOR ITEM** - Any contract pay item that does not meet the definition of a Major Item.

**Add** the following to the end of the definition for Substantial Completion on page GC-9:

Restoration work includes replacement of topsoil and full establishment and City acceptance of all turf grasses planted under the contract according to the requirements of the relevant contract specifications.

Any reports available should be included in STC 5.2

## STC 5.2 Physical Conditions - Investigations and Reports

**Add** the following to the end of Subsection 5.2 Physical Conditions - Investigations and Reports on page GC-22:

5.2.2 In the preparation of the drawings and the specifications, the design professional has relied upon the following reports and tests of subsurface and latent physical conditions at the site, or otherwise affect cost, progress or performance of the work. Approximate locations of the boring(s)/coring(s) are shown on the drawings.

These boring(s)/coring(s) are bound with, but are not part of the Contract Documents. The information is furnished solely for the convenience of the Contractor, without any warranty expressed or implied as to its accuracy or completeness. The Contractor shall make no claims against the City of Rochester with respect to the accuracy or completeness of such information, if it is erroneous or if the conditions found at the time of construction are different from those shown or indicated.

* IF INSERTING REPORTS ETC, PAGE BREAK HERE; PAGE NUMBERING WILL NEED TO BE CHANGED ACCORDINGLY FOR THE REST OF THE STC PAGES

## STC 6.2 Labor, Products and Storage

**Add** the following to the end of 6.2.2 on page GC-24:

The Water Bureau maintains a list of *Materials Approved for Use by the City of Rochester, NY - Water Bureau.* The list contains various water system products that are pre-approved for use in conjunction with water work and that do not need to be approved for use by the Project Manager. With prior approval of the Project Manager, the Contractor may substitute other equivalent products in the work.

## STC 9.7 Resolution of Disputes

**Delete** 9.7.3 on page GC-36 in its entirety, and **Replace** with the following:

9.7.3 If the Contractor claims compensation for any damages sustained by reason of any act or omission of the City, its agents, or employees, or for any other reason whatsoever, it shall, within ten (10) days after such claim shall have arisen, file with the City Engineer written notice of its intention to make claim for such damages. If the Contractor believes its employees or those of its subcontractors have not been treated fairly and with respect by any employees or agents of the City during this contract, the contractor shall, within ten (10) days after such incident, file with the City Engineer written notice of the incident. Such notice shall state the nature and amount of the damages sustained or the nature of unfair or disrespectful treatment and the basis for the claim against the City or the nature of the events surrounding the incident. If the City Engineer shall deem it necessary for proper decision upon any notice filed hereunder, to require additional data, depositions or verified statements, the Contractor must furnish the same within ten (10) days after written demand therefore.

## STC 10.2 Changes in the Contract Price

**Delete** Subsection 10.2.2 A. Unit Prices on page GC-39 in its entirety, and **Replace** with the following:

10.2.2 A. Unit Price. The unit price may be:

- those submitted by the Contractor in the original bid documents; or
- as stipulated by the City in the contingent item list included with the Contract Documents; or

- as fixed by agreement between the City and the Contractor for extra work items not originally provided for in the Contract Documents; or
- as adjusted by agreement between the City and the Contractor when the final quantity of a major item is more than one-hundred and twenty-five percent (125%) or less than seventy-five percent (75%) of the original estimated item quantity provided for in the Contract Documents as delineated below.

When the final quantity of a major item is more than one-hundred and twenty-five percent (125%) or less than seventy-five percent (75%) of the original estimated item quantity, the Contractor or the City may request an adjustment of the bid unit price of the item, or time of performance, if they so desire such adjustment. The request by the Contractor or the City must be in the form of a written notice to the other party, and such written notice must be delivered to the other party within ten (10) work days of the time the party making the request had knowledge of conditions which result in such change in the estimated item quantity.

Any allowance for a change in the bid unit price of an item will apply only to that portion of the work that is in excess of one-hundred and twenty-five percent (125%) of the original estimated item quantity, or to the actual amount of work performed if the quantity decreases to be below seventy-five percent (75%) of the original estimated item quantity.

The total adjusted payment for all work on a major item that decreases to below seventy-five percent (75%) of the original estimated item quantity, is not to exceed the total payments which would have been made if the original estimated item quantity had been completed at the original bid unit price.

No agreed upon change in the bid unit price of an item will constitute a basis for a claim for damages of anticipated profits on the item that was adjusted.

**Delete** Subsection 10.2.6 Asphalt Price Adjustment on page GC-42 in its entirety, and **Replace** with the following:

10.2.6 Asphalt Price Adjustment

A. The adjustment will provide for either an additional compensation to the Contractor for an increase, or a repayment to the City for a decrease, in the price of asphalt as based on the fixed index price. No adjustment will be made if the monthly average posted price is within fifteen dollars ($15.00) of the fixed index price for asphalt. No consideration will be given to the situation where an individual supplier's price exceeds the monthly average posted price. Only those items that include asphalt, that are originally in the contract, and that are included in the general specification sections specified below, will be eligible for an asphalt price adjustment:

- R205 – Pavement Base Repair
- S205 – Pavement Base Repair
- 402 – Hot Mix Asphalt (HMA) Pavements (Superpave mixes)
- 403 – Hot Mix Asphalt Concrete Pavement
- 403 – Hot Mix Asphalt (HMA) Pavements for Municipalities
- R404 – Recycled Asphalt Concrete Pavement
- 18410 – Micro-Surfacing
- S410 – Micro-Surfacing
- S413 – Speed Hump
- S608 – Sidewalk and Driveway

- S609 – Curb
- S609CR – Curb (Curb Replacement)

B. The adjustment will be based solely on: the quantity of asphalt incorporated in the work, multiplied by the per cent (as expressed in decimals) of performance-graded binder or asphalt cement included in the mix, multiplied by the difference between the herein stipulated fixed index price plus fifteen dollars (+$15.00) when the average posted price increases, minus fifteen dollars (-$15.00) when the average posted price decreases, all as defined below.

C. The percentage factor of performance-graded binder or asphalt cement incorporated in the asphalt course mix as expressed in decimals to the nearest thousandth for each asphalt course mix type shall be as follows:

| **Asphalt Course Mix (*Q*)** | **Section(s)** | **Factor (*F*)** |
|---|---|---|
| Type 1 | R205, S205, S608, S609, S609CR | 0.060 |
| Type 3 | R205, S205, S608, S609CR | 0.065 |
| Type 7F | S413, S609CR | 0.080 |
| Truing and Leveling | 403 | 0.080 |
| Recycled Base | R404 | 0.041 |
| Recycled Binder | R404 | 0.046 |
| Recycled Top | R404 | 0.055 |
| Recycled Truing and Leveling | R404 | 0.055 |
| 9.5 F2 Top HMA, 80 Series | 402 | 0.062 |
| 19 F9 Binder HMA, 80 Series | 402 | 0.049 |
| 37.5 F9 Base HMA, 80 Series | 402 | 0.040 |
| HMA Type 1 Base | 403 | 0.050 |
| HMA Type 3 Binder | 403 | 0.055 |
| HMA Type 7F2 Top | 403 | 0.0685 |
| True & Leveling | 402, 403 | based on mix formula at time of construction |
| Micro-Surfacing Type II | 18410, S410 | 0.090 |
| Micro-Surfacing Type III | 18410, S410 | 0.075 |
| Micro-Surfacing Type III Rut Filling | 18410, S410 | 0.075 |

D. Fixed Index Price: A fixed index price per ton of performance-graded binder used solely as a basis from which to compute price adjustments.

The fixed index price for original contract bid items and additional work at the original contract bid price, will be will be the monthly average posted price for the month of the bid letting.

The index price for additional work not in the original contract and added by an agreed price, will be the monthly average posted price for the month the agreed price was approved by the City.

E. Monthly Average Posted Price: The monthly average terminal price for unmodified PG 64-22 binder, without anti-stripping agent, will be determined by the State of New York Department of Transportation, as based on prices from approved primary sources of performance-graded binder, during the life of this Contract.

F. A listing of the average posted prices for asphalt (performance-graded binder), is posted on or about the twenty-fifth (25th) of each month by the State of New York Department of Transportation in an Engineering Bulletin entitled *Fuel, Asphalt and Steel price Adjustments.*

G. Also all discounts or allowances that reduce the asphalt price at the terminal will be deducted prior to calculating the price adjustment.

H. Price adjustment will be based on the following formulas:

1). When average posted price increases:

$$\textit{Price Adjustment} \quad = \quad [\,(APP) - (FIP + \$15.00)\,] \; x \; [\,(Q)\,x\,(F)\,]$$

2). When average posted price decreases:

$$\textit{Price Adjustment} \quad = \quad [\,(APP) - (FIP - \$15.00)\,] \; x \; [\,(Q)\,x\,(F)\,]$$

Where:

*APP* = Average posted price for the month within which the work is performed

*FIP* = Fixed index price for the month of the bid letting

*Q* = Asphalt course mix quantity incorporated in the work as expressed in tons

*F* = Percentage factor of performance-graded binder or asphalt cement incorporated in the asphalt course mix as expressed in decimals to the nearest thousandth

I. A price adjustment will be paid in addition to, or deducted from, the monthly estimate for material placed during the previous month. The average posted price is updated on or about the twenty-fifth (25th) of each month, with the price adjustment becoming effective on the first (1st) of the following month. All price changes received after the third (3rd) Wednesday of the month will be held in abeyance until the next scheduled price revision.

J. This asphalt price adjustment is based solely on changes in the price of unmodified PG 64-22 binder, without anti-stripping agent. The fact that an individual asphalt supplier's price exceeds the average posted price or that of a particular asphalt item such as emulsion base is more costly than unmodified PG 64-22 binder will have no bearing on the price adjustment.

K. If asphalt items are placed after the completion date specified in this contract or after any extensions of that date with engineering charges and/or liquidated damages, the average posted price used to compute price adjustments shall not exceed the average posted price on the original scheduled contract completion date. If the contract completion date is extended without the assessment of engineering charges, price adjustments for material placed during such extensions shall be based on the latest updated average posted price.

L. No price adjustment will be made unless the average posted price is either fifteen dollars ($15.00) greater than or fifteen dollars ($15.00) less than the fixed index price stated above. All price adjustments will be rounded to the nearest dollar.

## STC 11.1 Warranty and Guarantee

**Delete** the second sentence of Subsection 11.1.1 on page GC-46 in its entirety, and **Replace** with the following:

The Contractor warranty shall continue for a period of two (2) years from the date of certification of Substantial Completion of Work or, with the written approval of the City Engineer, from the time that all Project work other than acceptance of turf grasses planted under the contract are complete, accepted by the City, and can be utilized for its intended purpose.

**Add** the following to the end of Subsection 11.1 Warranty and Guarantee on page GC-46:

11.1.7 The Guarantee Bond, which the Contractor shall furnish as set forth in Article 4.1.3 Guarantee Bond of these General Conditions, does not apply to items of maintenance or for items over which the Contractor, its suppliers or Subcontractors have no control.

## STC 13.3 Review of Applications for Progress Payments

**Add** the following to the end of Subsection 13.3 Review of Applications for Progress Payments on page GC-53:

13.3.4 In accordance with General Municipal Law Section 106-B Payment on Public Work Projects, the Contractor shall pay any Subcontractor(s) for undisputed work performed by the Subcontractor(s) within seven (7) days of receipt of payment by the City which includes such work.

# SUPPLEMENTARY SPECIFICATIONS

(*) SPECS MUST BE NUMBERED CONSECUTIVELY. INCLUDING WATER SPECS: SS – XXX

(will update when Estimate is 100% and add page numbers


S203 EXCAVATION AND EMBANKMENT ..... SS-1
S205 PAVEMENT BASE REPAIR, PAVEMENT REPLACEMENT ..... SS-5
402 HOT MIX ASPHALT (HMA) PAVEMENTS ..... SS-6
S412 TEMPORARY PAVEMENT ..... SS-7
S601 SEWER LATERAL AND CONNECTION ..... SS-9
S604 CATCH BASIN AND SEWER MANHOLE ..... SS-11
S605 UNDERDRAIN ..... SS-23
S608 SIDEWALK AND DRIVEWAY ..... SS-27
S609 CURB ..... SS-53
S610 LANDSCAPE ..... SS-71
S611 PLANTING ..... SS-79
S613 TOPSOIL ..... SS-88
S614 CARE OF PLANTS ..... SS-91
S617 TREE PROTECTION ..... SS-94
S626 SURVEY MONUMENT ..... SS-97
S637 FIELD OFFICE ..... SS-107
~~S645 BUSINESS SIGN ..... SS-113~~
S671 STREET LIGHTING ..... SS-115
S900 GENERAL WATER PROVISIONS ..... SS-127
S901 WATER MAIN PIPE AND FITTINGS ..... SS-134
~~S903 RESILIENT SEAT GATE VALVE WITH VALVE BOX ..... SS-144~~
~~S904 TAPPING SLEEVE WITH VALVE AND VALVE BOX ..... SS-147~~
~~S906 INSERTION SLEEVE ..... SS-150~~
~~S907 CONNECT NEW WATER MAIN TO EXISTING WATER MAIN ..... SS-153~~
~~S909 WATER VALVE BOX ..... SS-155~~
~~S910 TEMPORARY CUT AND PLUG EXISTING WATER MAIN ..... SS-159~~
S912 CORPORATION STOP AND CONNECTION; ABANDON EXISTING WATER SERVICE AT TAP (2 INCH AND SMALLER) ..... SS-161
S913 WATER SERVICE (2 INCH AND SMALLER) ..... SS-165
S914 CURB STOP AND BOX ..... SS-170
~~S915 RELOCATE WATER SERVICE METER (1 INCH AND SMALLER) ..... SS-175~~
S917 HYDRANT ..... SS-177
S966 MAGNESIUM ANODE ..... SS-182
S999 PROJECT SIGN ..... SS-186


(*) CITY SUPPLEMENTAL SPECS SHOULD BE LISTED HERE ALONG WITH ANY NEW SPECS PREPARED BY Design Team. "S" series specs are CITY specs. Any new specs added that are not City should not be numbered with an "S" before it. Additions to any CITY spec (i.e. S615.99 decorative metal bollard) should be added to the spec associated with that item.

S615.99 Decorative Metal Bollard

S407 Tack Coat

S646 Delineator

S923 Bell Joint Leak Clamp

# SECTION S203 - EXCAVATION AND EMBANKMENT

## S203 GENERAL

Work is to be in accordance with requirements of NYSDOT Sections 203 Excavation and Embankment and 204 Controlled Low Strength Material (CLSM), with following modifications:

## S203-1 DESCRIPTION

Under NYSDOT Section 203-1 Description on page 2-7, **DELETE** Subsection 203-1.01 Unclassified Excavation in its entirety and **REPLACE** with following:

### S203-1.01 Unclassified Excavation

Estimated limits and descriptions of subsurface deposits, formations and facilities which may be shown on plans, are supplied in accordance with Paragraph 5.2.1, Article 5 Availability of Lands; Physical Conditions; Reference Points of General Terms and Conditions of City of Rochester Standard Construction Contract Documents.

At end of NYSDOT Section 203-1 Description on page 2-7, **ADD** following:

### S203-1.18 Rock Excavation

Rock excavation consists of boulders exceeding 1/2 cubic yard in volume; and ledge rock which cannot in opinion of Project Manager, be removed without blasting or use of pneumatic hammers. Concrete pavements and pavement foundations, and sewers and their appurtenances will not be considered rock. Rock excavation for trenches or test pits will be included in Section R206 Trench and Culvert Excavation.

## S203-2 MATERIALS

At end of NYSDOT Section 203-2 Materials on page 2-9, **ADD** following:

### S203-2.05 Select Granular Backfill (Sewer/Water) - General

Select granular backfill (sewer/water) materials are to consist of sand and gravel, approved blast furnace slag, or stone, and are to be well graded from coarse to fine, and free from organic or other deleterious material.

Materials will be accepted on basis of Magnesium Sulfate Soundness Loss after 4 cycles of 20 percent or less. Plasticity index of material passing number 40 Screen is not to exceed 5.0.

Not more than 30 percent by weight of particles retained on 1/2 inch screen are to consist of flat or elongated particles. Flat or elongated particles are defined as one which has as its greatest dimension more than three times its least dimension. Acceptance for this requirement will normally be based on visual inspection by Project Manager. When City elects to test for this requirement, material which has percentage greater than allowable 30 percent will be rejected.

Materials are to meet specified gradation prior to placement, with processing completed at plant.

### S203-2.06 Stone Bedding

Stone bedding material is to be crushed stone primary size Type 1, or mixture of primary sizes Type 1 and Type 2, in accordance with requirements of NYSDOT Material Section 703-02 Coarse Aggregate.

**S203-2.07 Sand**

Sand material is to consist of clean, hard, durable, uncoated particles, free from lumps of clay and other deleterious substances. When dry, sand material is to be in accordance with following gradation requirements:

| Screen Size | Percent Passing by Weight |
|---|---|
| 1/4 inch | 100% |
| #50 | 5 to 35% |
| #100 | 0 to 10% |

Sand material is to have minimum resistivity of 15,000 Ohm-cm, and maximum chloride ion concentration of 50 parts per million (ppm). Sand material may be determined to be unacceptable if it contains loam or silt in excess of 10 percent of total volume.

**S203-2.08 Select Granular Backfill (Sewer)**

Select granular backfill (sewer) material is to be used for backfilling of trenches and excavations for catch basin, lateral pipe and other sewer related work. Select granular backfill (sewer) material is to be in accordance with following gradation requirements:

| Screen Size | Percent Passing by Weight |
|---|---|
| 2 inch | 100% |
| 1/4 inch | 30 to 65% |
| #40 | 5 to 40% |
| #200 | 0 to 10% |

**S203-2.09 Select Granular Backfill (Water)**

Select granular backfill (water) material is to be used for backfilling of trenches and excavations for water related work. Select granular backfill (water) material is to be in accordance with following gradation requirements:

| Screen Size | Percent Passing by Weight |
|---|---|
| 3 inch | 100% |
| 2 inch | 90 to 100% |
| 1/4 inch | 30 to 65% |
| #40 | 5 to 40% |
| #200 | 0 to 10% |

**S203-2.10 Controlled Low Strength Material (CLSM)**

Material and testing requirements for CLSM is to be in accordance with NYSDOT Section 204 Controlled Low Strength Material (CLSM), *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)*.

CLSM provided for use in backfilling around Water facilities, is to have a compressive strength of 50 to 100 pounds per square inch, and must not contain fly ash or other pozzolan containing materials.

**S203-3 CONSTRUCTION DETAILS**

At end of NYSDOT Subsection 203-3.01 General on page 2-10, **ADD** following:

Stockpiling of excavated material on Project site is not allowed. Excavated material is to be disposed of off site within 24 hours.

Under NYSDOT Subsection 203-3.03 Scheduling of Work to Minimize Soil Erosion and Water Pollution on page 2-11, **DELETE** sentence numbered 1) in paragraph 1 in its entirety and **REPLACE** with following:

1) Work is to be progressed in such manner that exposed, unprotected surface area of any earth material that is subject to erosion by wind or water, will not exceed total of 10,000 square feet at any given time. Work progression includes any special soil erosion, water and air pollution measures required in Supplementary Conditions; and:

At end of NYSDOT Section 203-3 Construction Details on page 2-10, **ADD** following:

**S203-3.21 Select Granular Backfill, Stone Bedding, and Sand**

Select granular backfill, stone bedding, and sand materials are to be placed as required in Contract Documents. Compaction is to be in accordance with requirements of NYSDOT Subsection 203-3 Construction Details.

**S203-3.22 Controlled Low Strength Material (CLSM)**

Construction details for CLSM is to be in accordance with NYSDOT Section 204 Controlled Low Strength Material (CLSM), *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)*.

**S203-4 METHOD OF MEASUREMENT**

At end of NYSDOT Section 203-4 Method of Measurement on page 2-20, **ADD** following:

**S203-4.15 Rock Excavation**

Quantity to be measured for payment will be number of cubic yards of rock excavated, as computed in original position and to payment lines as specified in Contract Documents.

**S203-4.16 Stone Bedding, Sand and Select Granular Backfill (Sewer/Water)**

Quantity to be measured for payment will be number of cubic yards of material satisfactorily placed and compacted, as measured in completed work within payment lines specified in Contract Documents, less measured volume for pipes that exceed 12 inches in diameter as based on nominal diameter, and for all catch basin and manhole structures.

No additional quantity will be measured for payment to make up losses due to foundation settlement, compaction, erosion or any other cause.

**S203-4.17 Controlled Low Strength Material (CLSM)**

Quantity to be measured for payment will be number of cubic yards of material satisfactorily placed, as measured in completed work within payment lines specified in Contract Documents or from payment lines established in writing by Project Manager, less measured volume for pipes that exceed 12 inches in diameter as based on nominal diameter, and for all other payment items when combined cross-sectional area exceeds 144 square inches, unless otherwise shown in Contract Documents. No deduction will be made for cross-sectional area of an existing facility.

No additional quantity will be measured for payment to make up losses due to foundation settlement, compaction, erosion or any other cause.

Cross sectioning, for purpose of determining quantities for payment, will be employed only where payment lines are not shown in Contract Documents, and cannot be reasonably established by Project Manager.

**S203-5 BASIS OF PAYMENT**

At end of NYSDOT Section 203-5 Basis of Payment on page 2-21, **ADD** following:

**S203-5.07 Rock Excavation**

Unit price bid includes cost of: excavation; disposal of excavated material; blasting; and furnishing all labor, material and equipment necessary to complete work.

**S203-5.08 Stone Bedding, Sand and Select Granular Backfill (Sewer/Water)**

Unit price bid includes cost of: furnishing, placing and compacting material; and furnishing all labor, material and equipment necessary to complete work.

**S203-5.09 Controlled Low Strength Material (CLSM)**

Unit price bid includes cost of: furnishing and placing material; and furnishing all labor, material and equipment necessary to complete work.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S203.22 | Rock Excavation and Disposal | Cubic Yard |
| S203.25 | Stone Bedding | Cubic Yard |
| S203.26 | Sand | Cubic Yard |
| S203.28 | Select Granular Backfill (Sewer) | Cubic Yard |
| S203.29 | Select Granular Backfill (Water) | Cubic Yard |
| S203.35 | Controlled Low Strength Fill Material | Cubic Yard |
| S203.36 | Controlled Low Strength Fill Material (no Fly Ash) | Cubic Yard |

REVISED May 1, 2013

# SECTION S205 – PAVEMENT BASE REPAIR, PAVEMENT REPLACEMENT

## S205-1 DESCRIPTION

Work consists of repair of small sections of existing pavement base, or replacement of existing pavement section over utility trenches, as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addenda.

## S205-2 MATERIALS

### S205-2.01 Select Granular Fill

Select granular fill is to be in accordance with NYSDOT Section 203 Excavation and Embankment.

### S205-2.02 Subbase Course

Subbase course is to be subbase course type 1 and type 2 in accordance with NYSDOT Section 304 Subbase Course.

### S205-2.03 Asphalt

Asphalt is to be 80 series compaction, 9.5 F2 top course HMA, 19 F9 binder course HMA, and 37.5 F9 base course HMA, in accordance with NYSDOT Section 402 Hot Mix Asphalt (HMA) Pavements.

### S205-2.04 Tack Coat

Tack coat is to be diluted or straight tack coat mix in accordance with Section S407 Tack Coat.

### S205-2.05 Concrete

Concrete is to be PCC foundation for pavement, class C or class F, in accordance with NYSDOT Section 503 Portland Cement Concrete Foundation for Pavement.

### S205-2.06 Pavement Saw Cut

Pavement saw cut is to be full depth pavement saw cut in accordance with Section R622 Saw Cutting.

## S205-3 CONSTRUCTION DETAILS

### S205-3.01 General

Pavement base repair items are generally used in conjunction with street rehabilitation projects, to repair small sections of existing pavement where base has failed.

Pavement replacement items are generally used in conjunction with street curb only projects, to restore pavement sections that have been removed for installation of underground utilities, or to replace areas of existing pavement that fall outside of normal limits of curb only replacement section.

Outer limits of repair/replacement areas will be as required in Contract Documents, and as approved by Project Manager.

Outer limits of existing pavement area are to be saw cut full depth with concrete saw. Saw cut edge is to be clean, dry and shaped so that square shoulder is provided in direction of traffic. Existing pavement is to be excavated to neat lines, removed and properly disposed of.

All materials are to be properly compacted. For small areas, either hand operated vibrating tamper or power jumping jack may be used for compaction purposes.

Tack coat is to be applied on top of concrete base, and between all courses of HMA lifts.

**S205-3.02 Pavement Base Repair**

Area to be repaired is to be excavated to depth that is sufficient to remove existing failed base materials, and any underlying unsuitable materials.

Excavation is to be backfilled to bottom of pavement base material with select granular fill in 6 inch lifts compacted to no less than 95 per cent of Standard Proctor Maximum Density.

For concrete base repair pavement section, use minimum 8 inches concrete and 2 inches HMA binder course.

For asphalt base repair pavement section, use 8 or 6 inches HMA base course for commercial streets, and 3 inches HMA base course for residential streets and alleyways. HMA base course is to be topped with 2 inches HMA binder course.

**S205-3.03 Pavement Replacement**

Concrete pavement replacement section will be as noted in Contract Documents.

For asphalt base repair pavement section, use 5 inches subbase course type 1; 6 inches subbase course type 2; 8 or 6 inches HMA base course for commercial streets, 3 inches HMA base course for residential streets and alleyways. HMA base course is to be topped with 2 inches HMA binder course and 1-1/2 inches HMA top course.

**S205-4 METHOD OF MEASUREMENT**

Quantity to be measured for payment will be number of square yards of pavement base repaired, or pavement replaced.

For pavement base repair, maximum depth of repair area to be included in pay item will be 24 inches.

**S205-5 BASIS OF PAYMENT**

**S205-5.01 Pavement Base Repair**

Unit price bid includes cost of: full depth pavement saw cut; excavation and disposal of excavated materials; furnishing, placing and compacting select granular fill; class C or F PCC foundation, or HMA base course; HMA binder course; furnishing and placing tack coat; and furnishing all labor, material and equipment necessary to complete work.

For areas of pavement base repair that are more than 24 inches deep, additional excavation and select granular fill will be paid under separate bid items.

HMA top course will be paid under separate bid item.

**S205-5.02 Pavement Replacement**

Unit price bid includes cost of: full depth pavement saw cut; excavation and disposal of excavated materials; furnishing, placing and compacting subbase course type 1 and type 2; class C or F PCC foundation, or HMA base course; HMA binder course; HMA top course; furnishing and placing tack coat; and furnishing all labor, material and equipment necessary to complete work.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S205.0101 | Pavement Base Repair – Concrete Base | Square Yard |
| S205.0201 | Pavement Base Repair – Asphalt Base (8 inch) | Square Yard |
| S205.0202 | Pavement Base Repair – Asphalt Base (6 inch) | Square Yard |
| S205.0301 | Pavement Base Repair – Asphalt Base (3 inch) | Square Yard |
| S205.04 | Pavement Replacement - Concrete Base | Square Yard |
| S205.05 | Pavement Replacement - Asphalt Base (3 inch) | Square Yard |
| S205.06 | Pavement Replacement - Asphalt Base (6 inch) | Square Yard |
| S205.07 | Pavement Replacement - Asphalt Base (8 inch) | Square Yard |

REVISED May 1, 2013

# SECTION 402 - HOT MIX ASPHALT (HMA) PAVEMENTS

## 402 GENERAL

Purpose of this directive is to designate certain NYSDOT bid items for use on all City projects.

For this directive, requirements of NYSDOT Section 402 Hot Mix Asphalt (HMA) Pavements of *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)*, including any addenda, remains in effect.

## 402-5 BASIS OF PAYMENT

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| 402.018902 | True & Leveling F9, Superpave HMA, 80 Series Compaction | Ton |
| 402.098202 | 9.5 F2 Top Course HMA, 80 Series Compaction | Ton |
| 402.198902 | 19 F9 Binder Course HMA, 80 Series Compaction | Ton |
| 402.378902 | 37.5 F9 Base Course HMA, 80 Series Compaction | Ton |

REVISED May 1, 2013

# SECTION S407 – TACK COAT

## S407-1 DESCRIPTION

Work consists of preparing and treating portland cement concrete and hot mix asphalt (HMA) surfaces with tack coat as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addenda.

## S407-2 MATERIALS

Tack coat is to meet requirements of NYSDOT Section 702 Bituminous Materials for following emulsion grades:

| | |
|---|---|
| Asphalt Emulsion – Diluted Tack Coat | 702-3401 |
| Asphalt Emulsion – Straight Tack Coat | 702-3002 |

## S407-3 CONSTRUCTION DETAILS

### S407-3.01 General

Diluted tack coat is to be used for conventional hot mix asphalt (HMA) pavements, and is to be applied between all lifts of HMA courses. Diluted tack coat is to be applied on top of milled pavement surface, and on top of concrete base.

Straight tack coat may be used for conventional hot mix asphalt (HMA) pavement overlay, only if existing pavement is not milled. Straight tack coat may also be used on steeper graded pavements, for nighttime paving operations, or for late season paving.

### S407-3.02 Equipment

Distributor is to be designed, equipped, maintained and operated so that tack coat can be heated and applied uniformly at readily determined and controlled rates and with uniform pressure, on pavement surfaces of variable widths, up to 15 feet wide.

Distributor equipment is to include quantity measuring system and thermometer for measuring temperature of tank contents. Prior to being used, equipment is to be calibrated in accordance with ASTM D 2995 Standard Practice for Estimating Application Rate of Bituminous Distributors, or any other equivalent calibration procedure acceptable to Project Manager. Project Manager will witness equipment calibration, or require Contractor to provide documentation certifying calibration.

Distributor is to be equipped with power unit for pump, and circulation spray bars which are adjustable both laterally and vertically. Bristle broom that drags on pavement behind spray bars may be attached to distributor, and is adjustable both laterally and vertically so that full width of tack coat being applied is bristled uniformly onto pavement surface.

Distributor is to be equipped with bituminous material sampling valve attached to distributor. When samples are taken through sampling valve, samples will be considered representative of all material in tank.

Distributor tank is to be equipped with an agitator that is capable of ensuring tack coat remains homogeneous, and that tack coat stored in distributor tank is heated and maintained at temperature of between 85°F and 160°F.

Hand operated spray units will be permitted only in areas where use of distributor is impractical.

### S407-3.03 Application

Tack coat is to be uniformly applied across width of designated area by pressure distributor onto prepared clean pavement surface.

Tack coat is to be applied to offer least inconvenience to traffic and to permit one-way traffic where practical, to prevent pickup or tracking of tack coat material.

Tack coat is not to be applied on wet pavement surface, or when pavement surface temperature is below 40°F.

Recommended application rate in gallons per square yard is:

| Surface Type | Application Rate (gallons per square yards) | |
|---|---|---|
| | Diluted Tack Coat | Straight Tack Coat |
| New Hot Mix Asphalt (HMA) | 0.05 – 0.06 | 0.03 – 0.04 |
| Milled Surface and Existing Hot Mix Asphalt (HMA) | 0.08 – 0.10 | 0.05 – 0.06 |
| Portland Cement Concrete | 0.08 – 0.10 | 0.05 – 0.06 |
| Vertical Surfaces (curbs, drainage structures, miscellaneous appurtenances) | 0.09 – 0.11 | 0.06 – 0.07 |

These are recommended application rates for tack coat on various surface types and may be modified as approved of by Project Manager.

## S407-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of square yards of pavement surface treated, or number of gallons of tack coat applied. Number of gallons of tack coat will be as measured at 60°F to nearest gallon.

## S407-5 BASIS OF PAYMENT

Unit price bid includes cost of: preparation of pavement surface; furnishing and applying tack coat; and furnishing all labor, material and equipment necessary to complete work.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S407.0201 | Diluted Tack Coat | Square Yard |
| S407.0202 | Straight Tack Coat | Square Yard |
| S407.0301 | Diluted Tack Coat | Gallon |
| S407.0302 | Straight Tack Coat | Gallon |

REVISED May 1, 2013

# SECTION S412 - TEMPORARY PAVEMENT

## S412 GENERAL

Work consists of construction of temporary pavement for maintenance of vehicular and pedestrian traffic as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addenda.

## S412-2 MATERIALS

### S412-2.01 Temporary Pavement

Following materials are acceptable for use:

- Asphalt pavement 19 F9 binder course HMA 80 series compaction in accordance with NYSDOT Section 402 Hot Mix Asphalt (HMA) Pavements
- Recycled asphalt top or binder course in accordance with Section R404 Recycled Asphalt Concrete Pavement
- Asphalt millings

Asphalt millings are to be product of milling of existing asphalt concrete pavement. Asphalt millings are to be free of organic materials, gravel, crushed stone or any other material not direct product of milling process.

### S412-2.02 Temporary Pavement - Winter Season

Temporary pavement section for winter season is to be unreinforced Class F concrete in accordance with NYSDOT Section 503 Portland Cement Concrete Foundation for Pavement.

### S412-2.03 Subbase Course

Subbase course is to be Type 1 or 2 in accordance with NYSDOT Section 304 Subbase Course.

### S412-2.04 Tack Coat

Tack coat is to be diluted or straight tack coat mix in accordance with Section S407 Tack Coat.

## S412-3 CONSTRUCTION DETAILS

### S412-3.01 General

Temporary pavement section is to be constructed over trenches and other excavated areas where directed by Project Manager to maintain vehicular or pedestrian traffic. Temporary pavement section is to be constructed within 24 hours after having received written notice from Project Manager.

Temporary pavement section may be constructed of asphalt millings only when hot mix asphalt material is not available due to weather restrictions and only as approved by Project Manager.

Finished surface of temporary pavement section is to be reasonably smooth, well drained, free of potholes, bumps, irregularities, and depressions. Proper equipment and personnel is to be available at all times in order to maintain temporary pavement section surface in safe and satisfactory condition. Special attention is to be given to maintenance of temporary pavement section during weekends, holidays, and winter season.

**S412-3.02 Winter Season**

Winter season time period runs from November 1st thru April 14th.

During winter season, if hot mix asphalt material is not available for constructing temporary pavement section, Class F concrete is to be used. If Project calls for using asphalt temporary pavement section, and project extends into or thru winter season time period, temporary pavement section consisting of concrete is to be used regardless of which bid item has been included in Contract Documents.

Concrete is to be 4 inches thick for streets designated as arterial and collector streets, and 3 inches thick for streets designated as local residential streets and for alleys. Concrete surface is to be broom finished.

**S412-3.03 Installation and Removal**

Materials to be used for constructing temporary pavement section are to be placed in accordance with Contract Documents.

When construction of new pavement or sidewalk is to begin, temporary pavement section is to be removed and materials properly disposed of.

## S412-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of square feet of temporary pavement constructed.

## S412-5 BASIS OF PAYMENT

Unit price bid includes cost of: furnishing and placing asphalt, millings, concrete material, tack coat; maintenance; removal and disposal of temporary pavement section ; and furnishing all labor, material and equipment necessary to complete work.

Unit price bid also includes cost of furnishing and placing of subbase course material as indicated in item description.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S412.07 | Temporary Pavement | Square Foot |
| S412.08 | Temporary Pavement with Subbase Course | Square Foot |
| S412.09 | Temporary Pavement - Winter Season - 4" Concrete | Square Foot |
| S412.10 | Temporary Pavement - Winter Season - 4" Concrete with Subbase Course | Square Foot |
| S412.11 | Temporary Pavement - Winter Season - 3" Concrete | Square Foot |
| S412.12 | Temporary Pavement - Winter Season - 3" Concrete with Subbase Course | Square Foot |

REVISED May 1, 2013

# SECTION S601 - SEWER LATERAL AND CONNECTION

## S601 GENERAL

Work is to be in accordance with requirements of Section R601 Sewer Lateral and Connection, with following modifications:

## S601-2 MATERIALS

At end of Section 601-2 Materials on page S-56, **ADD** following:

### S601-2.10 Polyvinyl Chloride Branch

Polyvinyl chloride (PVC) wye and tee branches are to be SDR35 PVC gasketed fittings in accordance with requirements of ASTM D3034.

### S601-2.11 Inserta Tee

Inserta tee is to be three piece compression fitted cored connection consisting of SDR35 PVC gasketed hub, rubber sleeve and stainless steel band, in accordance with requirements of ASTM D3034 and ASTM F477.

## S601-3 CONSTRUCTION DETAILS

At end of Section 601-3.06 Branch Connections on page S-61, **ADD** following:

D. Polyvinyl Chloride Branch at New Sewer

Polyvinyl chloride (PVC) wye and tee branches are to be installed along with installation of new sewer pipe. New or existing lateral pipe is to be connected to wye or tee branch.

E. Inserta Tee Connection to Existing Sewer

Opening for inserta tee connection must be made by coring hole in existing sewer pipe, pneumatic devices or hammering knock-out methods are not acceptable for creating opening. Size of cored opening is limited to one-half nominal diameter of existing mainline sewer pipe.

Face of existing sewer pipe to be cored is to be exposed from crown to invert for minimum length of 12 inches along sewer pipe. Take necessary precautions to prevent damage to existing sewer pipe, and to prevent debris from entering sewer pipe. Cores are to be minimum of 6 inches away from existing sewer pipe hubs. Before making connection, thoroughly clean opening and surface of sewer pipe of all foreign matter and loose particles.

## S601-4 METHOD OF MEASUREMENT

At end of Section 601-4 Method of Measurement on page S-62, **ADD** following:

### S601-4.05 Polyvinyl Chloride Branch and Inserta Tee

Quantity to be measured for payment will be number of wye or tee branches, or inserta tee connections installed.

## S601-5 BASIS OF PAYMENT

At end of Section 601-5.05 Branch Connections on page S-63, **ADD** following:

D. Polyvinyl Chloride Branch at New Sewer

Unit price bid includes cost of: furnishing and installing polyvinyl chloride wye or tee branch; connecting lateral pipe to wye or tee branch; and furnishing all labor, material and equipment necessary to complete work.

E. Inserta Tee Connection to Existing Sewer

Unit price bid includes cost of: furnishing and installing inserta tee connection; preparing and coring existing sewer pipe; connecting lateral pipe to inserta tee; and furnishing all labor, material and equipment necessary to complete work.

**S601-5.06 Lateral Pipe – Installed (Including Lateral Connection)**

Unit price bid includes cost of: excavation; backfill; stone bedding; select granular backfill (sewer); pavement or pavement base restoration; sheeting; shoring; maintenance of sewage flow; pumping; bailing; furnishing and installing lateral pipe; bends; fittings; connecting new lateral pipe to catch basin, existing lateral pipe, or existing/new branch stub; preparing and cutting existing lateral pipe for connection; elastomeric coupling; making joint; and furnishing all labor, material and equipment necessary to complete work.

**S601-5.07 Excavation, Backfill, Pavement Base Restoration and Pavement Restoration**

Excavation including hand and tunnel excavation, furnishing and placing of stone bedding and select granular backfill (sewer), and either pavement base or pavement restoration, will be paid for under separate bid items or included in unit price bid for item as indicated in item description.

No separate payment will be made for placement of select backfill material excavated from trench.

Excavation that is included in bid item does not include rock excavation. Rock excavation will be paid for under separate bid item.

Where bid item includes cost of pavement base restoration, pavement base may consist of either concrete base or asphalt base course, as required in Contract Documents. Unit price bid will be same regardless of which type of pavement base is used, and bid items will include cost of: subbase courses type 1 and type 2; either Class C concrete foundation or asphalt base course.

Where bid item includes cost of pavement restoration, pavement base may consist of either concrete base or asphalt base course, as required in Contract Documents. Unit price bid will be same regardless of which type of pavement base is used, and bid items will include cost of: subbase courses type 1 and type 2; either Class C concrete foundation or asphalt base course; asphalt binder course; asphalt top course; and asphalt tack coat.

Payment will be made under:

*Note: XX in bid item number and X" in item description represent size of branch, connection or lateral pipe. i.e.: 8 inch inserta tee connection would be bid as S601.2308 8" Inserta Tee Connection to Existing Sewer.*

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S601.22XXXX | X" x X" Polyvinyl Chloride Branch at New Sewer Pipe | Each |
| S601.23XX | X" Inserta Tee Connection to Existing Sewer | Each |
| S601.26XX | X" Polyvinyl Chloride Lateral Pipe, SDR21 - Installed (Including Lateral Connection) (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S601.27XX | X" Polyvinyl Chloride Lateral Pipe, SDR21 - Installed (Including Lateral Connection) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |

REVISED May 1, 2013

# SECTION S604 - CATCH BASIN AND SEWER MANHOLE

## S604-1 DESCRIPTION

Work consists of construction, modification or repair of catch basin/field inlet structures; and adjustment or replacement of sewer manhole frame and cover as required in Contract Documents and as directed by Project Manager.

## S604-2 MATERIALS

### S604-2.01 General

Bar reinforcement is to be in accordance with NYSDOT Section 709-01 Bar Reinforcement, Grade 60.

Brick is to be first quality, sound, hard-burned common sewer brick, culled of all irregular, unsound or damaged brick, in accordance with ASTM Designation C32 grade SS.

Damp-proofing material for exterior portion of catch basin, field inlet and sewer manhole structures is to be two coats of Hi-Build Bituminous Coating 35-J-10 as manufactured by Mobil Corporation, or Koppers Bitumastic Super Service Black as manufactured by Koppers Company, Inc, or approved equivalent.

Damp-proofing material for interior portion of catch basin/field inlet structures is to be two coats of Tamms Duralkote 240 as manufactured by Dural International Corporation, or approved equivalent.

Damp-proofing material for interior portion of sewer manhole adjustment courses is to be one coat of Tamms Duralkote 500 as manufactured by Dural International Corporation, or approved equivalent.

Grout is to be non-shrink type grout with minimum compressive strength of 4000 psi at 24 hours in accordance with NYSDOT Section 701-05 Concrete Grouting Material.

Joint compound is to be Mainstay Joint Compound, Sikaflex-1A, Sonolastic NPII as manufactured by Sonneborn, or approved equivalent.

Portland cement mortar is to be in accordance with ASTM Designation C270, Type M, mortar for unit masonry.

Portland cement mortar for plugging abandoned lateral pipe is to be regular cement mortar, type II cement.

Material for backfilling around catch basin, field inlet and sewer manhole structures is to be select granular backfill (sewer) in accordance with Section S203 Excavation and Embankment.

Material for leveling course under catch basin/field inlet structures is to be stone bedding in accordance with Section S203 Excavation and Embankment.

### S604-2.02 Catch Basin/Field Inlet - General

Concrete to be used for construction, modification or repair of catch basin/field inlet structures is to be class A concrete in accordance with NYSDOT Section 555 Structural Concrete.

Precast concrete section of catch basin/field inlet structures is to be constructed in accordance with NYSDOT Section 706-04 Precast Concrete Drainage Units.

Catch basin/field inlet unit is to be supplied complete with frame and grate.

### S604-2.03 Type A and Type B Catch Basin

Type A and Type B catch basin frame and grate are to be fabricated steel in accordance with Section R655 Frame and Grate.

**S604-2.04 Type A and Type B Catch Basin (Furnished)**

Monroe County Pure Waters (MCPW) will furnish precast section of catch basin structure, and frame and grate. Furnished materials are to be picked-up from MCPW Stockroom, 444 East Henrietta Road, Rochester, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, (585) 753-7574. MCPW Stockroom requires minimum of 2 working days advance notice to make arrangements for pick-up of furnished materials.

**S604-2.05 Type C Catch Basin**

Type C catch basin is to be cast-in-place concrete structure, with frame and grate, trap and underdrain check valve.

Catch basin frame and grate is to be per Syracuse pattern NYSDOT No.9 as manufactured by Syracuse Castings, or approved equivalent.

Catch basin trap is to be cast iron hooded type per Neenah R-3701-8 as manufactured by Neenah Foundry Company, or tee wye with threaded clean-out plug on top side.

Underdrain check valve is to be capable of preventing water from backing up into underdrain pipe.

**S604-2.06 Type D Catch Basin**

Type D catch basin is to be Type B catch basin structure, frame and grate; with additional access frame and cover.

Access frame is to be welded steel, and access cover 1/4 inch diamond plate, rib reinforced hot rolled steel, hot dipped galvanized, in accordance with ASTM A36, ASTM A48-83 Class 30B, and ASTM 123.

**S604-2.07 Field Inlet**

Field inlet is to be cast-in-place Type A catch basin structure, with concave shaped frame and grate.

Frame and grate is to be heavy duty cast iron type per Neenah R-3205 as manufactured by Neenah Foundry Company, or approved equivalent.

**S604-2.08 Sewer Manhole Frame and Cover**

A. General

Concrete for adjustment or replacement of sewer manhole frame and cover is to be class K concrete in accordance with Section S504 Portland Cement Concrete.

B. Sewer Manhole Frame and Cover

Castings are to be gray iron in accordance with ASTM A48-83 (Class 30B) and AASHTO M105-82, with minimum tensile strength of 30,000 psi. Castings are to be rated heavy-duty designed for AASHTO HS-20 wheel loading plus 30 percent impact. As-cast dimensional tolerances are not to exceed ± 1/16 inch per foot.

Standard manhole covers are to be heavy-duty 1-3/8 inch thick, 24 inch diameter, with 22-1/2 inch clear opening, per Syracuse pattern 1032.

Watertight outer manhole covers are to be heavy-duty 1-1/2 inch thick, 30 inch diameter, with 24 inch clear opening on inner cover, 1/4 inch thick gasket, and inner cover bolt and lock bar, per Syracuse pattern 6544.

C. Sewer Manhole Frame and Cover (Furnished)

Monroe County Pure Waters (MCPW) will furnish replacement sewer manhole and cover. Furnished materials are to be picked-up from MCPW Fleet Center, 145 Paul Road, Chili, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, (585) 753-7626. MCPW Fleet Center requires minimum of 2 working days advance notice to make arrangements for pick-up of furnished materials.

## S604-3 CONSTRUCTION DETAILS

### S604-3.01 General

Manufacturer's shop drawings are to be submitted to City for approval as required in General Conditions Article 6, Section 6.13 Shop Drawings and Samples.

Construct all new sewer main and lateral pipes, catch basins/field inlets, sewer manholes, and any other related appurtenances in accordance with requirements of Rochester Pure Waters District (RPWD).

If requested, RPWD personnel will locate and mark existing sewer laterals. RPWD personnel can only mark location of existing wye branches at sewer main, and cannot verify where existing lateral pipe extends from there. Request lateral stakeout by contacting MCPW Maps and Records, (585) 753-7367 or (585) 753-7651.

Existing sewer manhole frames and covers, and catch basin/field inlet frames, grates, access covers and capstones are property of RPWD. All such appurtenances that are removed are to be cleaned of all extraneous material and returned to MCPW Fleet Center, 145 Paul Road, Rochester, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, inquire at main gate.

Appropriate measures are to be taken to prevent any damage to, or dirt, debris, construction materials, and any other extraneous materials from entering existing sewer system including but not limited to sewer main, lateral and underdrain pipes, catch basins/field inlets, sewer manholes, junction chambers, and any other related appurtenances during construction of Project. Any such invasive materials are to be removed immediately and contaminated appurtenance thoroughly cleaned.

RPWD must be notified immediately in event of any damage to existing sewer pipes and appurtenances, by calling (585) 753-7351, or (585) 753-7676. All repairs are to be performed in presence of representative of RPWD and are to be made in accordance with requirements of RPWD.

Excavation is to be performed in accordance with requirements of Section R206 Trench and Culvert Excavation.

Stone bedding leveling course and select granular backfill (sewer) materials are to be placed in accordance with requirements of Section S203 Excavation and Embankment. No structure is to be backfilled until mortar has completely set.

Sewer manhole frame and cover, catch basin/field inlet frame and grate, and catch basin access frame and cover are to be placed true to line and grade. Suitable measures are to be taken to ensure that cover/grate has continuous, full and uniform bearing contact with corresponding frame. Cover/grate is to be non-rocking when in place and under influence of traffic or other loads. Suitable methods to achieve non-rocking fit between cover/grate and corresponding frame will include, but not be limited to, following:

- ground mating surfaces
- machined and milled mating surfaces (horizontal and vertical)
- match marked elements
- locking elements

If match marked elements are utilized, care is to be taken to retain identity of elements in order to correctly match them and assure proper fit.

Field repairs may include grinding or proper welding techniques for material involved. Repairs that involve welding will be allowed only on steel castings and only with prior approval of Project Manager. Repairs are to result in complete unit whose individual parts have continuous, full and uniform bearing contact with each other, and that cover/grate does not rock or move under influence of traffic or other loads.

Catch basin/field inlet grate and catch basin access cover are to be bolted down to respective frame making sure that all bolts are completely tightened and unable to be loosened by hand.

Upon completion of work, sewer manhole and catch basin/field inlet structures are to be thoroughly damp-proofed, cleaned of all extraneous material and kept clean until final acceptance of work.

**S604-3.02 Catch Basin/Field Inlet**

Prior to ordering precast portion of new catch basin/field inlet structure, verify proposed invert elevation, and size and direction of all lateral and underdrain pipes.

Where existing lateral pipe is to be reconnected to new catch basin/field inlet, existing lateral pipe is to be thoroughly cleaned of all extraneous material before making connection.

Lateral and underdrain pipe connections to catch basin/field inlet structure are to be made flush with inside face of structure and are to project outside of structure sufficient distance to allow for proper connection with adjoining lateral and underdrain pipe sections. Lateral and underdrain pipes are to fit neatly and tightly within structure wall, and connections are to be thoroughly sealed with epoxy grout and mortar.

Apply two coats of appropriate damp-proof material to all exterior and interior surfaces of catch basin/field inlet structure, making sure that all surfaces are thoroughly covered.

**S604-3.03 Adjust Existing Catch Basin/Field Inlet Frame and Grate, Access Frame and Cover**

Existing catch basin/field inlet frame and grate, and if required access frame and cover, is to be removed and cleaned of all extraneous material. Any portion of existing structure walls that are damaged are to be repaired consistent with original construction.

Scarify or otherwise remove as necessary top portion of existing catch basin/field inlet structure walls to sufficient depth to accommodate new minimum 12 inch concrete cap. Prior to forming and pouring new concrete cap, top surface of existing structure walls are to be coated with epoxy polysulfide grout meeting requirements of NYSDOT Material designation 721-03 Epoxy Polysulfide Grout. Number 5 rebar is to be installed to tie-in new concrete cap with existing structure walls, extending minimum of 6 inches into both new concrete cap and existing structure walls. Drill holes into existing structure walls to install rebar, grout in rebar to form tight fit. Install existing or new frame and grate.

Apply two coats of appropriate damp-proof material to all new exterior and interior concrete surfaces of catch basin/field inlet structure, making sure that all surfaces are thoroughly covered.

**S604-3.04 Modify Existing Capstone Catch Basin**

Existing capstone catch basin structure walls are generally constructed of brick and mortar, with portion of structure being located under and behind curb line. Portion of existing structure located behind curb is generally topped off with medina capstone.

Existing capstone catch basin frame and grate are to be removed and cleaned of all extraneous material. Existing structure walls that are damaged are to be repaired consistent with original construction.

All existing solid and structurally sound capstones are to be carefully removed, cleaned of all extraneous material and returned to MCPW. Existing capstone is to be cleaned in such manner as to be non-deleterious to existing capstone. Any existing capstone that is broken during excavation or salvage operations, or found to be otherwise unacceptable by Project Manager, is to be disposed of.

To permanently eliminate existing capstone, existing capstone catch basin structure walls are to be dismantled by hand to depth sufficient to accommodate new reinforced Class A concrete lintel, and installation of full length piece of curb. New concrete lintel is to be constructed across portion of existing structure that is located behind and under curb line, is to be formed, and reinforced with number 4 rebar.

If necessary, use brick and mortar or concrete to adjust top of existing capstone catch basin structure walls to grade before installing existing or new frame and grate.

Apply two coats of appropriate damp-proof material to all new exterior and interior concrete surfaces of capstone catch basin structure, making sure that all surfaces are thoroughly covered.

**S604-3.05 Relocate Existing Catch Basin/Field Inlet**

Existing catch basin/field inlet frame and grate, and if required access frame and cover, is to be removed and cleaned of all extraneous material. Any portion of existing structure walls that are damaged are to be repaired consistent with original construction.

Carefully excavate around existing catch basin/field inlet structure in such manner as not to damage existing structure and until existing structure is completely exposed. Disconnect existing lateral and underdrain pipes. Carefully pick up, move and reinstall existing structure in its new location in such manner as not to damage existing structure.

If necessary, use brick and mortar or concrete to adjust top of existing catch basin/field inlet structure walls to grade before installing existing or new frame and grate.

If existing lateral pipe is to be abandoned, open end of existing lateral pipe is to be plugged per Subsection S604-3.09 Abandon and Remove Existing Catch Basin/Field Inlet.

Connect existing or new lateral and underdrain pipes to catch basin/field inlet structure. If existing lateral pipe is to be reconnected, existing lateral pipe is to be thoroughly cleaned of all extraneous material before being reconnected. Connections are to be made flush with inside face of structure wall, and are to project outside of structure sufficient distance to allow for proper connection with adjoining lateral and underdrain pipe sections. Lateral and underdrain pipes are to fit neatly and tightly within structure wall, and connections thoroughly sealed with epoxy grout and mortar. Any excess openings in structure walls are to be blocked up with brick and mortar. Finish off with concrete, completely filling in all voids and thoroughly sealing up both exterior and interior sides of opening. Surfaces of blocked up opening are to be smooth, blend in with surrounding surface, without any excess projections, and damp-proofed.

Apply two coats of appropriate damp-proof material to all new exterior and interior concrete surfaces of catch basin/field inlet structure, making sure that all surfaces are thoroughly covered.

**S604-3.06 Clean Existing Catch Basin/Field Inlet and Lateral Pipe**

Existing catch basin/field inlet structure and lateral pipe is to be cleaned of all extraneous material and kept clean until final acceptance of work.

**S604-3.07 Damp-Proof Existing Catch Basin/Field Inlet**

Damp-proofing is to be applied to all existing concrete catch basin/field inlet structure surfaces that are exposed, and where existing damp-proofing is either damaged or nonexistent.

Entire surface area of existing concrete catch basin/field inlet structure are to be thoroughly cleaned by sand blasting or water pressure, removing all existing damp-proofing and other extraneous materials, and otherwise prepared so as to be in condition suitable for proper application of new damp-proof material.

For interior surface of existing concrete catch basin/field inlet structure that is being adjusted, relocated or cleaned, and new damp-proofing material is required to be applied due to damaged or missing damp-proofing, entire interior surface of structure is to be treated.

For exterior surface of existing concrete catch basin/field inlet structure that is being relocated, and new damp-proofing material is required to be applied due to damaged or missing damp-proofing, entire exterior surface of structure is to be treated.

**S604-3.08 Temporary Adjustment of Catch Basin/Field Inlet Frame and Grate**

Where required for an extended layover, or for winter shut down, temporary riser section is to be built on top of existing catch basin/field inlet structure walls to temporarily set frame and grate to grade.

Fill existing keyway with sand, construct temporary riser using brick and mortar on top of existing structure walls to proper height necessary to set frame and grate to grade. One coat of damp-proof material is to be applied to exterior and interior surfaces of temporary riser section. Prior to final paving, remove temporary riser section and sand fill, and properly dispose of all materials.

After removal of temporary riser section, construct permanent riser section and install catch basin/field inlet, and/or access frame and cover, in accordance with appropriate subsections for catch basin/field inlet construction in Section S604 Catch Basin and Sewer Manhole.

**S604-3.09 Abandon and Remove Existing Catch Basin/Field Inlet**

Existing catch basin/field inlet frame and grate, and if required access frame and cover, is to be removed, cleaned of all extraneous material and returned to MCPW. Existing catch basin/field inlet structure is to be completely removed and disposed of.

Existing lateral pipe is to be abandoned in place and plugged. For existing lateral pipe 6 inch diameter and smaller, insert rubber gasketed mechanical type permanent plug into lateral pipe. For existing lateral pipe over 6 inch diameter, insert brick into lateral pipe until opening is plugged as much as possible. Completely fill and seal remaining void at open end of existing lateral pipe with regular cement mortar type II cement.

If existing underdrain pipe system is to remain, connect open ends with new underdrain pipe.

**S604-3.10 Catch Basin Wall Repair**

Existing catch basin wall that is to be repaired is to be dismantled to point where wall is structurally sound. Work to repair damaged wall is to be consistent with original construction. Catch basin and lateral pipe are to be cleaned to main sewer of all construction and any other extraneous debris, and maintained clean for duration of project. All debris removed is to be promptly disposed of.

**S604-3.11 Adjustment or Replacement of Sewer Manhole Frame and Cover**

Existing sewer manhole frame and cover are to be removed and cleaned of all extraneous material. If replacement frame and cover are to be installed, existing frame and cover are to be disposed of.

Remove portion of existing sewer manhole riser section as necessary to retrofit frame and cover to new finished grade and on sound bearing. For adjustment use either new concrete adjustment ring set on 1/2 inch thick bed of mortar, or bricks/concrete blocks and mortar. After placing frame, frame and rebuilt riser section are to be completely encased within 12 inches of concrete. Top of concrete encasement is to be minimum of 3-1/2 inches below grade in pavement area, and 5 inches below grade outside of pavement area. One coat of damp-proof material is to be applied to interior surface of all adjustment courses.

**S604-3.12 Temporary Adjustment of Sewer Manhole Frame and Cover**

Where required for an extended layover, or for winter shut down, temporary riser section is to be built on top of existing sewer manhole structure walls to temporarily set frame and cover to grade.

Remove portion of existing sewer manhole riser section as necessary to retrofit frame and cover to new grade and on sound bearing. Construct temporary riser using brick and mortar on top of existing structure walls to proper height necessary to set frame and cover to grade. After placing frame, frame and temporary riser section are to be completely encased within 12 inches of concrete. Apply one coat of damp-proof material to interior surface of temporary riser section.

Prior to final paving, remove temporary riser section and concrete encasement, and properly dispose of all materials.

After removal of temporary riser section, construct permanent riser section and install sewer manhole frame and cover in accordance with Subsection S604-3.11 Adjustment or Replacement of Sewer Manhole Frame and Cover.

## S604-4 METHOD OF MEASUREMENT

### S604-4.01 Catch Basin/Field Inlet

Quantity to be measured for payment will be number of new catch basin/field inlet structures constructed; or existing catch basin/field inlet structures modified, relocated, cleaned, or abandoned.

For type D catch basin, measurement will be made with frame and grate, including access frame and cover, counted as one complete unit.

Under this pay unit, maximum invert depth for new catch basin/field inlet structure construction will be up to 4 feet 6 inches (4.50'), as measured between elevation of top of grate and elevation of interior floor of new structure.

### S604-4.02 Additional Depth of New Catch Basin/Field Inlet

Quantity to be measured for payment will be number of linear feet of additional depth for new catch basin/field inlet structure construction, where maximum invert depth exceeds 4 feet 6 inches (4.50') as specified in Subsection S604-4.01 Catch basin/field inlet, as measured to nearest tenth (0.10) of foot.

### S604-4.03 Adjust Existing Catch Basin/Field Inlet Frame and Grate, Access Frame and Cover

Quantity to be measured for payment will be number of existing catch basin/field inlet frame and grate, and access frame and cover, units adjusted. For type D catch basin, measurement will be made with frame and grate, including access frame and cover, counted as one complete unit.

### S604-4.04 Damp-Proof Existing Catch Basin/Field Inlet

Quantity to be measured for payment will be number of existing catch basin/field inlet structures where entire exterior and/or interior portion is required to be damp-proofed. Measurement will be made separately for both interior and exterior damp-proofing, they will not be counted as one complete unit.

Separate payment for damp-proofing will be limited only to those existing catch basin/field inlet structures that are not already damp-proofed, or where existing damp-proofing needs to be completely replaced.

No separate payment will be made for damp-proofing of new catch basin/field inlet structure construction.

### S604-4.05 Temporary Adjustment of Catch Basin/Field Inlet Frame and Grate

Quantity to be measured for payment will be number of catch basin/field inlet structures topped with temporary brick riser section.

### S604-4.06 Catch Basin Wall Repair

Quantity to be measured for payment will be number of linear feet of catch basin wall repaired as measured to nearest tenth (0.10) of foot. Linear feet of catch basin wall repaired will be measured vertically along area repaired, and will include all sides of catch basin.

> i.e.: Four walls of catch basin that are repaired for 1 foot in height will be measured as 1 linear foot of repair.

**S604-4.07 Sewer Manhole Frame and Cover**

Quantity to be measured for payment will be number of sewer manhole frames and covers adjusted, replaced, or temporarily adjusted.

## S604-5 BASIS OF PAYMENT

**S604-5.01 Catch Basin/Field Inlet - General**

Unit price bid includes cost of: sheeting; shoring; verifying existing and proposed top of grate and invert elevations; furnishing and installing precast structure; constructing cast-in-place structure; concrete; forms; key way; rebar; mortar; epoxy grout; damp-proofing; frames and grates; stone bedding leveling course; field repair of improperly fitting frame and grate; providing openings for connection of lateral and underdrain pipe; connecting and sealing lateral and underdrain pipes to structure; cleaning out structure and lateral pipe; disposing all extraneous material; and furnishing all labor, material and equipment necessary to complete work.

Where an existing catch basin is being replaced with new catch basin, and existing catch basin falls within general trench excavation limits for new catch basin and/or lateral pipe, removal of existing catch basin structure is considered to be part of general trench excavation for new catch basin and/or lateral pipe.

Where an existing catch basin is being replaced with new catch basin, and existing catch basin falls outside of general trench excavation limits for new catch basin and/or lateral pipe, removal of existing catch basin structure will not be considered to be part of general trench excavation for new catch basin and/or lateral pipe, and will be paid for separately under Section R206 Trench and Culvert Excavation.

Excavation including hand and tunnel excavation, furnishing and placing of stone bedding and select granular backfill (sewer) will be paid for under separate bid items or included in unit price bid for item as indicated in item description.

Pavement base or pavement restoration, will be paid for under separate bid items or included in unit price bid for item as indicated in item description.

In addition, unit price bid for following individual work items will also include cost of:

A. Type C Catch Basin

Unit price bid also includes cost of: furnishing and installing hooded trap and underdrain check valve.

B. Type D Catch Basin

Unit price bid also includes cost of: furnishing and installing access frame and cover; field repair of improperly fitting access frame and cover.

C. Type A and Type B Catch Basin (Furnished),

Unit price bid also includes cost of: making arrangements for and picking-up precast structure, including frame and grate.

D. Type B Catch Basin – Installed

Unit price bid also includes cost of: excavation, backfill, select granular backfill (sewer).

E. Type B Catch Basin – Installed (Furnished)

Unit price bid also includes cost of: making arrangements for and picking-up precast structure, including frame and grate; excavation, backfill, select granular backfill (sewer).

F. Additional Depth of New Catch Basin/Field Inlet

Unit price bid also includes cost of: furnishing and constructing additional cast-in-place portion that exceeds maximum invert depth of 4 feet 6 inches (4.50').

G. Adjust Existing Catch Basin/Field Inlet Frame and Grate, Access Frame and Cover

Unit price bid also includes cost of: excavation; backfill; select granular backfill (sewer); removing, cleaning and resetting existing frame and grate; access frame and cover; repairing existing structure walls; scarifying or removal of existing concrete riser section; removal temporary brick riser; furnishing and installing concrete cap; epoxy polysulfide grout; drilling holes.

**S604-5.02 Modify Existing Capstone Catch Basin**

Unit price bid includes cost of: excavation; backfill; removing, cleaning, returning or disposing existing capstone; removing, cleaning, resetting or disposing existing frame and grate; repairing existing capstone catch basin walls; hand dismantling or otherwise preparing top portion existing capstone catch basin walls; furnishing and installing concrete lintel; brick and mortar or concrete cap; masonry; forms; epoxy polysulfide grout; rebar; grout; damp-proofing; cleaning capstone catch basin structure and lateral pipe; disposing all extraneous material; and furnishing all labor, material and equipment necessary to complete work.

Furnishing and installing new frame and grate will be paid for separately under Section R655 Frame and Grate.

**S604-5.03 Relocate Existing Catch Basin/Field Inlet**

Unit price bid includes cost of: removing, moving, resetting and cleaning existing catch basin/field inlet structure; frame and grate; access frame and cover; repairing existing catch basin/field inlet walls; disconnecting existing lateral and underdrain pipes; connecting and sealing existing or new lateral and underdrain pipes; plugging existing lateral pipe to be abandoned; furnishing and installing permanent mechanical plug; brick; cement mortar; furnishing and installing brick and mortar or concrete cap; concrete; forms; epoxy polysulfide grout; rebar; grout; drilling holes; blocking up and sealing excess openings; damp-proofing; cleaning catch basin/field inlet structure; lateral pipe; disposing all extraneous material; and furnishing all labor, material and equipment necessary to complete work.

Furnishing and installing new frame and grate, and if required access frame and cover, will be paid for separately under Sections R655 Frame and Grate and S655 Frame and Grate.

**S604-5.04 Clean Existing Catch Basin/Field Inlet and Lateral Pipe**

Unit price bid includes cost of: cleaning existing catch basin/field inlet and lateral pipe; disposing all extraneous material; and furnishing all labor, material and equipment necessary to complete work.

**S604-5.05 Damp-Proof Existing Catch Basin/Field Inlet**

Unit price bid includes cost of: furnishing and applying damp-proof material; cleaning existing surfaces by sand blasting, water pressure, or any other acceptable method; disposing all extraneous material; and furnishing all labor, material and equipment necessary to complete work.

**S604-5.06 Temporary Adjustment of Catch Basin/Field Inlet Frame and Grate**

Unit price bid includes cost of: excavation; backfill; select granular backfill (sewer); furnishing, installing, removing and disposing temporary brick and mortar riser section; sand fill; setting, removing, maintaining and installing catch basin/field inlet frame and grate; access frame and cover; damp-proofing; and furnishing all labor, material and equipment necessary to complete work.

Final adjustment or replacement of catch basin/field inlet frame and grate, and/or access frame and cover, will be paid for under separate bid items.

**S604-5.07 Abandon and Remove Existing Catch Basin/Field Inlet**

Unit price bid includes cost of: removing, cleaning and returning existing catch basin/field inlet frame and grate; access frame and cover; removing and disposing existing catch basin/field inlet structure; disconnecting, abandoning and plugging existing lateral; furnish and install new underdrain pipe to reconnect open ends of existing underdrain pipe; furnishing and installing permanent mechanical plug; brick; cement mortar; disposing all extraneous material; and furnishing all labor, material and equipment necessary to complete work.

**S604-5.08 Catch Basin Wall Repair**

Unit price bid includes cost of: excavation; furnishing and installing select granular backfill (sewer); dismantling and repairing damaged catch basin walls; cleaning existing catch basin and lateral; disposing of all debris; furnishing and applying dampproofing on interior and exterior areas of new concrete; and furnishing all labor, material and equipment necessary to complete work.

**S604-5.09 Adjustment or Replacement of Sewer Manhole Frame and Cover**

Unit price bid includes cost of: excavation; backfill; removing, cleaning, resetting or returning existing sewer manhole frame and cover; picking up and installing new frame and cover; field repair of improperly fitting frames and covers; preparing existing sewer manhole riser to install sewer manhole frame and cover to finished grade; removal of existing brick courses as necessary; furnishing and installing concrete adjustment ring; bricks/concrete blocks; mortar mix; concrete encasement; damp-proofing; cleaning existing sewer manhole structure; disposing all extraneous material; and furnishing all labor, material and equipment necessary to complete work.

**S604-5.10 Temporary Adjustment of Sewer Manhole Frame and Cover**

Unit price bid includes cost of: excavation; backfill; removing, cleaning and resetting existing sewer manhole frame and cover; preparing existing sewer manhole riser including removal of portion of existing sewer manhole structure as necessary; furnishing, installing and removing temporary brick and mortar riser section and concrete encasement; damp-proofing; cleaning existing sewer manhole structure; disposing of all removed materials; and furnishing all labor, material and equipment necessary to complete work.

Final adjustment or replacement of sewer manhole frame and cover will be paid for under separate bid item.

**S604-5.11 Excavation, Backfill, Pavement Base Restoration and Pavement Restoration**

Excavation including hand and tunnel excavation, furnishing and placing of stone bedding and select granular backfill (sewer), and either pavement base or pavement restoration, will be paid for under separate bid items or included in unit price bid for item as indicated in item description.

No separate payment will be made for placement of select backfill material excavated from trench.

Excavation that is included in bid item does not include rock excavation. Rock excavation will be paid for under separate bid item.

Where bid item includes cost of pavement base restoration, pavement base may consist of either concrete base or asphalt base course, as required in Contract Documents. Unit price bid will be same regardless of which type of pavement base is used, and bid items will include cost of: subbase courses type **1** and type 2; either Class C concrete foundation or asphalt base course.

Where bid item includes cost of pavement restoration, pavement base may consist of either concrete base or asphalt base course, as required in Contract Documents. Unit price bid will be same regardless of which type of pavement base is used, and bid items will include cost of: subbase courses type 1 and type 2; either Class C concrete foundation or asphalt base course; asphalt binder course; asphalt top course; and asphalt tack coat.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S604.30 | Type A Catch Basin | Each |
| S604.31 | Type B Catch Basin | Each |
| S604.32 | Type C Catch Basin | Each |
| S604.33 | Type D Catch Basin | Each |
| S604.34 | Field Inlet | Each |
| S604.35 | Type A Catch Basin (Furnished) | Each |
| S604.36 | Type B Catch Basin (Furnished) | Each |
| S604.3701 | Type B Catch Basin - Installed (Including Excavation, Backfill and Pavement Base Restoration) | Each |
| S604.3702 | Type B Catch Basin - Installed (Including Excavation, Backfill and Pavement Restoration) | Each |
| S604.3801 | Type B Catch Basin - Installed (Furnished) (Including Excavation, Backfill and Pavement Base Restoration) | Each |
| S604.3802 | Type B Catch Basin - Installed (Furnished) (Including Excavation, Backfill and Pavement Restoration) | Each |
| S604.40 | Additional Depth Type A Catch Basin | Linear Foot |
| S604.41 | Additional Depth Type B Catch Basin | Linear Foot |
| S604.4101 | Additional Depth Type B Catch Basin (Including Excavation and Backfill) | Linear Foot |
| S604.42 | Additional Depth Type C Catch Basin | Linear Foot |
| S604.43 | Additional Depth Type D Catch Basin | Linear Foot |
| S604.44 | Additional Depth Field Inlet | Linear Foot |
| S604.50 | Adjust Existing Catch Basin Frame and Grate (Including Excavation and Backfill) | Each |
| S604.5001 | Adjust Existing Field Inlet Frame and Grate (Including Excavation and Backfill) | Each |
| S604.5002 | Adjust Existing Catch Basin Access Frame and Cover (Including Excavation and Backfill) | Each |
| S604.5004 | Adjust Existing Catch Basin Frame and Grate (Including Excavation, Backfill and Pavement Base Restoration) | Each |
| S604.5005 | Adjust Existing Catch Basin Frame and Grate (Including Excavation, Backfill and Pavement Restoration) | Each |
| S604.51 | Modify Existing Capstone Catch Basin (Including Excavation and Backfill) | Each |
| S604.52 | Relocate Existing Catch Basin | Each |
| S604.5201 | Relocate Existing Field Inlet | Each |
| S604.53 | Clean Existing Catch Basin and Lateral Pipe | Each |
| S604.5301 | Clean Existing Field Inlet and Lateral Pipe | Each |
| S604.54 | Damp-Proof Existing Catch Basin | Each |
| S604.5401 | Damp-Proof Existing Field Inlet | Each |
| S604.55 | Temporary Adjustment of Catch Basin Frame and Grate (Including Excavation and Backfill) | Each |
| S604.5501 | Temporary Adjustment of Field Inlet Frame and Grate (Including Excavation and Backfill) | Each |
| S604.560101 | Abandon and Remove Existing Catch Basin | Each |
| S604.560201 | Abandon and Remove Existing Catch Basin (Including Excavation and Backfill) | Each |
| S604.560302 | Abandon and Remove Existing Catch Basin (Including Excavation, Backfill and Pavement Base Restoration) | Each |
| S604.560303 | Abandon and Remove Existing Catch Basin (Including Excavation, Backfill and Pavement Restoration) | Each |
| S604.570101 | Abandon and Remove Existing Field Inlet | Each |
| S604.570201 | Abandon and Remove Existing Field Inlet (Including Excavation and Backfill) | Each |

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| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S604.570302 | Abandon and Remove Existing Field Inlet (Including Excavation, Backfill and Pavement Base Restoration) | Each |
| S604.570303 | Abandon and Remove Existing Field Inlet (Including Excavation, Backfill and Pavement Restoration) | Each |
| S604.58 | Catch Basin Wall Repair | Linear Foot |
| S604.60 | Adjust Existing Sewer Manhole Frame and Cover (Including Excavation and Backfill) | Each |
| S604.61 | Replace Existing Sewer Manhole Frame and Cover (Furnished) (Including Excavation and Backfill) | Each |
| S604.62 | Temporary Adjustment of Sewer Manhole Frame and Cover (Including Excavation and Backfill) | Each |
| S604.63 | Replace Existing Sewer Manhole Frame and Cover (Including Excavation and Backfill) | Each |
| S604.64 | Replace Existing Sewer Manhole Frame and Cover with New Watertight Manhole Frame and Cover (Including Excavation and Backfill) | Each |

# SECTION S605 - UNDERDRAIN

## S605-1 DESCRIPTION

Work consists of installing underdrain pipe and filter material as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addenda.

## S605-2 MATERIALS

### S605-2.01 Filter Material

Material and gradation tests and quality control methods pertaining to requirements and work of this section will be performed as ordered by Project Manager. Underdrain filter material is to be stockpiled and approved by Project Manager prior to installation.

Underdrain filter material is to consist of crushed stone, sand, gravel or screened gravel, in accordance with following gradation requirements:

| Screen Size | Percent Passing by Weight |
|---|---|
| 1 inch | 100% |
| 1/2 inch | 30 to 100% |
| 1/4 inch | 0 to 30% |
| #10 | 0 to 10% |
| #20 | 0 to 5% |

Soundness of materials meeting requirements of NYSDOT Sections 703-02 Coarse Aggregate or 703-10 Lightweight Aggregates, is acceptable for use as underdrain filter material. When electing to use material from sources not approved under NYSDOT Sections 703-02 Coarse Aggregate or 703-10 Lightweight Aggregates, soundness of material is to be tested and is not to have loss exceeding 20 percent by weight after four cycles of Magnesium Sulphate Soundness Test.

### S605-2.02 Perforated Corrugated Polyethylene Underdrain Tubing

Perforated corrugated polyethylene underdrain tubing and fittings are to be black in accordance with AASHTO M252 Corrugated Polyethylene Drainage Tubing.

Perforated corrugated polyethylene underdrain tubing is to be furnished in straight lengths with minimum nominal length of 20 feet. Coiled pipe may be substituted for straight tubing only in those areas where it would be more appropriate and as approved by Project Manager.

### S605-2.03 Perforated Corrugated Steel Underdrain Pipe

Perforated corrugated steel underdrain pipe and fittings are to be 16 gauge Type III in accordance with AASHTO M 36 Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains.

Where bituminous coating is required, pipe and fittings are to be coated in accordance with AASHTO M 190 Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches - Type A Fully Bituminous Coated.

### S605-2.04 High-Density Perforated Corrugated Polyethylene Pipe

High-density perforated corrugated polyethylene pipe and fittings is have smooth interior, and is to be in accordance with AASHTO M 252 Corrugated Polyethylene Drainage Pipe Type SP for 4 through 10 inch diameter pipe, and AASHTO M 294 Corrugated Polyethylene Pipe Type SP for 12 inch diameter and larger pipe.

## S605-3 CONSTRUCTION DETAILS

### S605-3.01 Underdrain Filter Material - General

Where required, underdrain trench is to be encased with geotextile material in accordance with Section S207 Geotextiles.

Underdrain filter material is to be loosely placed around and over underdrain pipe to such depth that, after compaction, underdrain filter material will extend to level 4 inches above underdrain pipe.

For perforated corrugated polyethylene underdrain tubing and high-density perforated corrugated polyethylene pipe, underdrain filter material is to be compacted by three passes of vibrating pad or drum type compactor. For perforated corrugated steel underdrain pipe, underdrain filter material is to be compacted by two passes of vibrating pad or drum type compactor.

In event underdrain pipe is not to be installed, underdrain filter material is to be placed in lifts not exceeding 6 inches in thickness prior to compaction. Each lift is to be compacted by two passes of vibrating pad or drum type compactor.

Placement and compaction operations are to be conducted in manner so as to insure that top surface of each lift does not become contaminated by adjacent backfill materials. Contaminated underdrain filter material is to be replaced.

### S605-3.02 Underdrain Filter Material at Structures

Underdrain filter material is to be placed in lifts not exceeding 6 inches in thickness, and is to precede placement of any adjacent backfill material. Temporary barrier may be used between underdrain filter material and adjacent backfill material. Temporary barrier is to be removed prior to compaction.

Each lift of underdrain filter material and adjacent backfill material located within minimum distance of 3 feet from backwall plus footing heel projection of any structure, is to be compacted simultaneously. Each lift is to be compacted by two passes of vibratory compactor.

Placement and compaction operations are to be conducted in manner so as to insure that top surface of each lift does not become contaminated by adjacent backfill materials. Contaminated underdrain filter material is to be replaced.

### S605-3.03 Underdrain Tubing/Pipe

Storage and handling of underdrain tubing/pipe is to be in accordance with AASHTO M252 Corrugated Polyethylene Drainage Tubing, and AASHTO M 36 Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains, as appropriate.

Underdrain tubing/pipe is to be installed in accordance with Section R601-3 Construction Details.

Perforated underdrain tubing/pipe is to be placed on level and compacted bed of underdrain filter material. Where proper vertical alignment cannot be maintained, lengths of underdrain tubing/pipe are to be cut and secured with approved couplings. Sections of underdrain tubing/pipe are to be joined only with approved fittings, and are not to be split to make connection. Upgrade end of underdrain tubing/pipe is to be closed with appropriate plug or cap.

Where existing underdrain pipe is being replaced with new underdrain tubing/pipe, remove sufficient length of existing underdrain pipe to accommodate proper installation of new underdrain tubing/pipe. Remaining portion of existing underdrain pipe is to be abandoned by plugging open ends with concrete to minimum depth of 12 inches.

**S605-3.04 High-Density Perforated Corrugated Polyethylene Pipe**

High-density perforated corrugated polyethylene pipe is to be used in applications where combination underdrain and lateral pipe is required.

Storage and handling of pipe is to be in accordance with AASHTO M 252 Corrugated Polyethylene Drainage Pipe Type SP for 4 through 10 inch diameter pipe, and AASHTO M 294 Corrugated Polyethylene Pipe Type SP for 12 inch diameter and larger pipe.

**S605-3.05 Underdrain Tubing/Pipe Connection**

Underdrain tubing/pipe connections at catch basin or manhole structures are to be thoroughly sealed with concrete and 100 per cent epoxy grout material.

Openings in concrete structures are to be made by coring.

Openings in brick structures are to be made either by removing existing brick, or by coring.

## S605-4 METHOD OF MEASUREMENT

**S605-4.01 Underdrain Filter Material**

Quantity to be measured for payment will be number of cubic yards of filter material installed.

Measurement for this item will be made only in those areas where filter material is installed without underdrain tubing/pipe.

**S605-4.02 Underdrain Tubing/Pipe**

Quantity to be measured for payment will be number of linear feet of underdrain tubing/pipe installed.

## S605-5 BASIS OF PAYMENT

**S605-5.01 General all Items**

Unit price bid for all items includes cost of: excavation; pavement saw cutting; and furnishing all labor, material and equipment necessary to complete work.

No payment will be made for any losses of material which may result from compaction, foundation settlement, erosion, or any other causes. Cost of such losses is to be included in unit price bid for these items.

Furnishing and installing geotextile material will be paid for under Section S207 Geotextiles.

Excavation that is included in pay item does not include rock excavation. Rock excavation will be paid for under separate bid item.

**S605-5.02 Underdrain Filter Material**

Unit price bid also includes cost of: furnishing and placing underdrain filter material, without underdrain pipe.

**S605-5.03 Underdrain Tubing/Pipe**

Unit price bid also includes cost of: cutting, abandoning, plugging, removing existing underdrain pipe; furnishing and installing underdrain tubing/pipe; furnishing, placing and compacting underdrain filter material; making connection to catch basins, manholes and existing underdrain pipe; enlarging existing openings or making new openings in catch basin or manhole structures for connection of underdrain pipe; sealing connection with concrete and epoxy grout; plugging, capping unconnected ends of underdrain tubing/pipe.

Payment will be made under:

*Note: XX in bid item number and X" in item description represent size of underdrain tubing/pipe. i.e.: 6 inch underdrain tubing would be bid as S605.140106 X" Perforated Corrugated Polyethylene Underdrain Tubing.*

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S605.13 | Underdrain Filter Material | Cubic Yard |
| S605.1401XX | X" Perforated Corrugated Polyethylene Underdrain Tubing | Linear Foot |
| S605.15XX | X" Perforated Corrugated Steel Underdrain Pipe - Uncoated | Linear Foot |
| S605.16XX | X" Perforated Corrugated Steel Underdrain Pipe - Coated | Linear Foot |
| S605.1701XX | X" High Density Perforated Corrugated Polyethylene Pipe | Linear Foot |

REVISED May 1, 2013

# SECTION S608 - SIDEWALK AND DRIVEWAY

## S608-1 DESCRIPTION

Work consists of construction of sidewalks, sidewalk access ramps, detectable warning systems, and driveways as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addendums.

## S608-2 MATERIALS

### S608-2.01 General

Materials are to be in accordance with NYSDOT Section 700 Materials Details:

| | |
|---|---|
| Portland Cement | 701-01 |
| Bituminous Materials | 702 |
| Fine Aggregate | 703-01 |
| Coarse Aggregate | 703-02 |
| Mortar Sand | 703-03 |
| Cushion Sand | 703-06 |
| Concrete Sand | 703-07 |
| Mineral Filler | 703-08 |
| Premoulded Resilient Joint Filler | 705-07 |
| Masonry Mortar | 705-21 |
| Membrane Curing Compound | 711-05 |
| Form Insulating Materials for Winter Concreting | 711-07 |
| Water | 712-01 |

### S608-2.02 Concrete Sidewalk and Driveway, Concrete Entrance Walk and Concrete Steps

Concrete is to be Class K in accordance with Section S504 Portland Cement Concrete.

Subbase course material is to be Type 1 in accordance with NYSDOT Section 304 Subbase Course.

### S608-2.03 Colored Decorative Concrete

Color admixture for colored decorative concrete is to be water neutral liquid coloring admixture system for use with other concrete construction chemical performance admixtures. Liquid coloring admixture is not to initiate or promote corrosion of reinforcing steel. Color of admixture will be as specified in Contract Documents.

### S608-2.04 Exposed Aggregate Concrete

Aggregate is to consist of sound washed gravel which passes number 1 sieve, contains varying colors and is available from local run-of-bank gravels.

Chemical horizontal surface retarder is to be water soluble spray applied organic chemical surface retarder that delays set of concrete to create exposed aggregate surface. Surface retarder is to be such that it will retard but not kill hydration of concrete, will allow aggregate to retain its natural appearance without effecting color or luster of aggregate, and is in compliance with Federal V.O.C. standards for concrete surface retarders.

Sealer is to be single co7mponent transparent liquid designed to cure and seal exterior concrete surfaces, including exposed aggregate concrete. Sealer is to be such that it will bring out radiance and luster of natural aggregate, providing long lasting and durable finish, and is in compliance with Federal V.O.C. standards for concrete sealers.

**S608-2.05 Detectable Warning System**

Preferred method for constructing detectable warning system is by using embedded or precast brick detectable warning units.

Surface applied method for constructing detectable warning system is generally not acceptable except in select locations, as deemed appropriate by and approved of by Project Manager.

Detectable warning system is to be for applications in high pedestrian use locations including but not limited to sidewalk access ramps, and is wheelchair accessible.

Units are to be uniform in color and texture, free of cracks or other defects, and have clean-cut well defined edges.

Units are to be weather resistant, durable to high pedestrian traffic usage, and are to be fabricated with non-slip texture.

Color of detectable warning system is to be dark gray per Munsell Book Notation 10BG 3/1, Federal Standard 595B Number 36081 or darker, or approved equivalent. Color must be homogeneous throughout thickness of material, and must be such that end result of finished product visually provides surface which is uniform in color over entire surface area and which is an approximate match to specified color designation.

Truncated domes are to be aligned or in-line, in parallel square pattern.

*Basis of Acceptance*: Shop drawings and sample detectable warning system unit must be submitted to Project Manager for approval at least 30 days prior to beginning work.

A. Embedded or Precast Brick Detectable Warning System

Pre-approved products and manufacturer of embedded or precast brick detectable warning system units are those as listed on NYSDOT Technical Services-Materials-Approved List. Other equivalent products will need to be approved by Project Manager prior to installation.

Embedded units are to be square with nominal size of 12 inches x 12 inches.

Units are to be composed of cementitious materials, steel, iron, clay, shale, plastics, polymeric materials, resins, pigments, or as approved by Project Manager. Units are to be colorfast, UV stable, not showing any signs of appreciable fading, lifting, shrinkage, or other signs of poor adhesion. Units are to be capable of fitting into contours, breaks and faults of concrete surfaces.

Where applicable, units are to be capable of adhering to concrete surface at minimum air temperature of 60°F and minimum surface substrate temperature of 70°F.

Manufacturer is to demonstrate in writing, and by providing references, that embedded detectable warning system material and proposed system for bonding material to substrate has been satisfactorily used for minimum period of 2 years in areas where weather conditions are similar to those experienced in Rochester, New York area

At least 30 days prior to installation, manufacturer must submit certified test results from an independent testing laboratory to Project Manager indicating that type of material to be used is in compliance with following requirements:

| Property | Results |
|---|---|
| Compressive Strength (minimum after 28 days) | 8000 psi minimum |
| Freeze-Thaw Loss (25 cycles, 1 cycle/day, 10% NaCi solution in accordance with NYS Test Method 502-3P) | 1.0% maximum |

B. Surface-Applied Detectable Warning System

Pre-approved products and manufacturer of surface-applied detectable warning system units are those as listed on NYSDOT Technical Services-Materials-Approved List. Other equivalent products will need to be approved by Project Manager prior to installation.

Surface applied units are to be one piece, 5 feet x 2 feet.

Units are to be composed of cementitious materials, steel, iron, plastics, polymeric materials, resins, pigments, or as approved by Project Manager. Units are not to show any signs of appreciable fading, lifting, shrinkage, tearing, rollback, or other signs of poor adhesion. Units are to be capable of molding or fitting into contours, breaks and faults of concrete surfaces.

Units are to be capable of adhering to concrete surface at minimum air temperature of 60°F and minimum surface substrate temperature of 70°F.

Manufacturer is to demonstrate in writing, and by providing references, that surface-applied detectable warning system material and proposed system for bonding material to substrate has been satisfactorily used for minimum period of 3 years in areas where weather conditions are similar to those experienced in Rochester, New York area.

At least 30 days prior to installation, manufacturer must submit certified test results from an independent testing laboratory to Project Manager indicating that type of material to be used will bond to prepared surface, and that it is in compliance with following requirements:

| Standard | Property | Results |
|---|---|---|
| ASTM C501 | Wear Resistance | Wear Index: >15 |
| ASTM C1028 | Slip Resistance | Dry Coefficient of Friction 0.8 minimum |
| ASTM E96 | Water Vapor Transmission | 10 grams/square foot/24 hours |

**S608-2.06 Heavy-Duty Commercial Concrete Driveway**

Concrete for heavy-duty commercial concrete driveway is to be Concrete for Structures Class A (Appurtenant Placements) in accordance with NYSDOT Section 555 Structural Concrete.

Subbase course material is to be Type 4 in accordance with NYSDOT Section 304 Subbase Course.

Tie bar for construction joint is to be number 3 bar, 18 inches long, deformed billet steel bar in accordance with ASTM A615, Grade 60; or deformed rail steel bar in accordance with ASTM A616, Grade 60 including Supplementary Requirement S1.

Welded wire fabric for reinforcement is to be 6x6 10 gauge uncoated steel reinforcement in accordance with ASTM A185 or ASTM A497.

**S608-2.07 Asphalt Driveway**

Asphalt top is to be an asphalt mix that is dense graded and having gritty texture for single course resurfacing over stone base or asphalt binder.

Asphalt mix is to be in accordance with NYSDOT Section 401 Plant Production, with following modifications:

| Composition | | |
|---|---|---|
| **Screen Size** | **General Limits Percent Passing** | **Job Mix Tolerance Percent** |
| 1/2 inch | 100% | - |
| 1/4 inch | 90 to 100% | - |
| 1/8 inch | 45 to 70% | +/- 7% |
| #20 | 15 to 40% | +/- 7% |
| #40 | 8 to 27% | +/- 7% |
| #80 | 4 to 16% | +/- 4% |
| #200 | 2 to 6% | +/- 2% |

| Other Properties | | |
|---|---|---|
| Asphalt Content Percentage | 6 to 8% | +/- 0.4% |
| Asphalt Cement Grade and Number | AC-20 - 702.0500 | - |
| Mixing and Placing Temperature Range | 250°F to 325°F | - |

Aggregate is to be in accordance with NYSDOT Sections 703-01 Fine Aggregate and 703-02 Coarse Aggregate, meeting following blend percentages:

| Aggregate | Blend Percentage |
|---|---|
| Coarse Aggregate #1A | 44% |
| Fine Aggregate Manufactured | 28% |
| Fine Aggregate Natural | 28% |

Asphalt binder is to be 19 F9 Binder Course HMA, 80 Series Compaction in accordance with NYSDOT Sections 401 Plant Production and 402 Hot Mix Asphalt (HMA) Pavements.

Asphalt base is to be 37.5 F9 Base Course HMA, 80 Series Compaction in accordance with NYSDOT Sections 401 Plant Production and 402 Hot Mix Asphalt (HMA) Pavements.

Subbase course material is to be Type 2 in accordance with NYSDOT Section 304 Subbase Course.

**S608-2.08 Temporary Driveway**

Materials are to be in accordance with Section S412 Temporary Pavement.

**S608-2.09 Brick; Brick – Cultural District**

A. Brick

Brick is to be as required in Contract Documents.

B. Brick – Cultural District

Color of brick for use within Cultural District is standardized on Endicott Dark Ironspot as manufactured by Endicott Clay Products Co., and any brick that is supplied must be an exact match in color.

Brick is to be wire cut brick, 3-5/8 x 7-5/8 x 2-1/4, Endicott Dark Ironspot as manufactured by Endicott Clay Products Co., or approved equivalent.

**S608-2.10 Slate**

Slate is to be sound and durable, reasonably uniform in quality and texture throughout, free from shale, excess mica, seams, scaling or evidence of disintegration. Slate is to have one reasonable smooth split face with no projections or depressions over 1/4 inch. Slate is to be so dressed that it may be laid with maximum of 3/4 inch joints. Size and color of slate will be as required in Contract Documents.

*Basis of Acceptance*: Minimum 25 square foot sample of slate must be submitted to Project Manager for approval at least 30 days prior to beginning work. Slate will be inspected for accordance to dimensional and color requirements. Slate that is not in compliance with this specification will be rejected.

**S608-2.11 Stone Paver**

Stone paver can be either rock-face or small ashlar natural stone. Stone paver is to be sound and durable, reasonably uniform in quality and texture throughout, free from shale, excess mica, seams, scaling or evidence of disintegration. Stone paver is to have one reasonable smooth split face with no projections or depressions over 1/4 inch. Rock-face stone paver is to be so dressed that it may be laid with maximum of 3/4 inch joints.

Size and color of stone paver will be as required in Contract Documents.

*Basis of Acceptance*: Minimum 25 square foot sample of stone paver must be submitted to Project Manager for approval at least 30 days prior to beginning work. Stone paver will be inspected for accordance to dimensional and color requirements. Stone paver that is not in compliance with this specification will be rejected.

**S608-2.12 Paver Edge Restraint**

Paver Edge Restraint is to be composed of high density polyethylene (HDPE), PVC or other durable non-metallic material for rigid straight line installation, as manufactured by SnapEdge, E-Z Edge, PaveTech, or approved equivalent.

**S608-2.13 Coarse Sand**

Coarse sand is to be clean washed well graded angular sand with maximum particle size of 3/16 inch, without any fine limestone screenings, free of salts and other deleterious materials, and in accordance with ASTM C33 Concrete Aggregates.

**S608-2.14 Caulking Sealant**

Caulking sealant is to be one component polyurethane self leveling sealant. Color of sealant is to be such as to be capable of blending in with surrounding elements.

**S608-2.15 Curing Compound**

Curing compound is to be single component transparent liquid designed to cure, seal and dustproof exterior concrete surfaces.

**S608-2.16 Fine Sand**

Fine sand is to be clean washed masons sand, free of salts and other deleterious materials, in accordance with ASTM C144 Aggregate for Masonry Mortar.

**S608-2.17 Polymeric Jointing Sand**

Polymeric jointing sand for filling joints is to be mix of graded sand and binder, especially formulated for filling of narrow or wide joints for brick, slate and stone paver construction.

After setting-up, polymeric jointing sand material is to be flexible, allowing for movement without cracking. Polymeric jointing sand is to resistant to insect infestation, weed growth and erosion caused by rain, frost, wind and suction. Polymeric jointing sand is to be suitable for stabilizing horizontal or sloping installations such as for streets. driveways, sidewalks, parking lots and curb park areas.

## S608-3 CONSTRUCTION DETAILS

### S608-3.01 General

At least 24 hours prior to commencing any work, provide written notification to all residents of adjacent properties that are being directly affected by work. Notification is to be in plastic bag with handles that has capability of being hung on door knob.

Coordinate with individual businesses that are directly affected by work to schedule construction of work such as to minimize as much as possible any disruption of business's daily operations.

Prior to commencing any work which will directly impact access to driveway area, take all steps necessary to notify owner of any vehicle that may potentially be blocked-in by work. Allow owner reasonable amount of time to remove their vehicle from driveway.

Maximum allowable transverse slope on sidewalk is 1:50, with sidewalk to be sloped such that water drains away from private property and towards street.

### S608-3.02 Survey Monument

Contractor's attention is hereby directed to extensive survey monumentation system within City of Rochester. Survey monuments are designated as RCS (Rochester City Survey), RTS (Rochester Topographic Survey), and USC&GS (United States Coastal and Geodetic Survey). Survey monuments are used to establish property and right-of-way lines, as well as elevations.

RCS survey monuments are generally located at 4 foot offset from street intersection right-of-way corner, mid-block angle point in right-of-way line, and right-of-way radii pc/pt point(s). RCS survey monuments generally fall within concrete sidewalk area, but may also be found in street pavement or lawn area. RTS and USC&GS survey monuments are not located at any specific location, but may be found anywhere within public right-of-way. Location of each existing survey monument will be established by City with swing ties before any work begins at or near existing survey monument.

Exercise extreme caution when working in vicinity of any existing survey monument so as not to disturb or otherwise damage existing survey monument. In event that existing survey monument has been disturbed or otherwise damaged by Contractor's operations, existing survey monument must be restored or replaced in accordance with Section S626 Survey Monument, at Contractor's expense.

### S608-3.03 Tree Protection

Existing trees and tree roots within project limits are to be protected from damage by construction activities. Construction or excavated materials are not to be placed or stockpiled within limits of canopy of any existing tree, to prevent smothering of existing tree root system. Vehicles and other construction equipment are not to be parked on any tree root system, nor left running (idling) under limits of canopy of any existing tree.

Where cutting of existing tree roots is necessary, it is to be done with sharp cutting tools. Exposed tree roots are to be re-buried as soon as possible. Until exposed tree roots can be re-buried, exposed tree roots are to be covered with wet burlap. Burlap is to be kept wet until exposed tree roots can be re-buried.

Existing trees that are damaged by construction activities are to be repaired within 72 hours using current arboricultural standards. Those existing trees that are determined by City Forester to be damaged beyond repair, are to be removed and replaced by Contractor.

### S608-3.04 Appurtenances

Existing or new appurtenances such as areaway/vault frames and covers, areaway/vault frames and hatchway doors, window well frames and grates, monument frames and covers, utility valve box frames and covers, utility manhole/handhole/pullbox frames and covers, et cetera, that are located within paved area are to be set true to line and grade, and are to be flush with surrounding surface.

Under no circumstances is an appurtenance to extend above or below surrounding surface. Hatchway doors, covers and grates are to make continuous full and uniform contact with corresponding frame, and are to be non-rocking when in place.

Appurtenances that are covered or buried with construction of new paved surface material, are to be uncovered, cleaned and set to grade, and surrounding area restored.

**S608-3.05 Restoration**

Adjacent areas disturbed or damaged during construction must be restored within 15 working days.

When restoring lawn areas adjacent to new construction, on-site borrow material may be used to backfill area to within 3 inches of finished surface. On-site borrow material is to be thoroughly compacted and free of grass clumps, tree roots, stones larger than 1 inch in size, pieces of asphalt and any other extraneous material.

When adjacent paved areas are disturbed as part of work, Contractor will be required to repair disturbed area. Perimeter of disturbed area is to be saw cut full depth, and such that all edges are straight and true. Bricks are to be replaced in whole units only, with replacement brick matching existing brick in size, shape and color. Restoration work is to be done such that pattern, grades and cross slope are consistent with existing surrounding area.

**S608-3.06 Concrete Sidewalk and Driveway**

A. General

General construction details for manufacturing, transporting, and placing concrete are to meet requirements of Section S504 Portland Cement Concrete, and NYSDOT Section 501 Portland Cement Concrete - General.

Freshly poured concrete is to be secured from vandalism or other mishap. Repair any damage as soon as possible.

Concrete sidewalk section is to be minimum of 5 feet in width, and consists of 5 inches of Class K concrete, placed over thoroughly compacted subbase course Type 1 material with minimum thickness of 6 inches after compaction.

Concrete sidewalk section in areas where concrete sidewalk crosses driveway, for concrete sidewalk access ramps including landing area, for concrete sidewalk located within area of intersection radius, and for concrete driveways, is to consist of 7 inches of Class K concrete, placed over thoroughly compacted subbase course Type 1 material with minimum thickness of 6 inches after compaction.

Subbase course Type 1 material is to be placed in accordance with NYSDOT Section 304 Subbase Course.

If required by Project Manager, temporary driveway access is to be provided until permanent driveway restoration can be done.

B. Excavation and Backfill

Area on which concrete is to be placed is to be excavated, and subgrade shaped and compacted with vibratory compactor to relatively smooth surface. Soft areas in subgrade are to be eliminated in order to provide uniform support of concrete.

Finished subgrade is to be parallel to surface of proposed grade. Before compacting subgrade material, cull material of all large stones, tree roots, or any other foreign substances. Use subbase course Type 1 material to adjust subgrade elevations and to replace unsuitable subgrade material. Subbase course material is to be thoroughly compacted and wetted prior to placement of concrete.

Excavation includes complete removal and disposal of existing materials, including paved areas, tree roots, dirt, and any other material encountered within area to be excavated.

Stockpiling of excavated material at project site is not allowed. Excavated materials must be disposed of off project site by end of each work day.

When excavating and removing an existing paved area, take any necessary precaution to prevent any damage from occurring to adjacent paved areas that are to remain. Perimeter of existing paved area to be excavated is to be saw cut full depth with concrete saw before starting excavation. Saw cut and excavate existing concrete areas at nearest joint.

Concrete must be poured within 3 calendar days of area having been excavated. Only excavate an area that can be restored within 3 calendar days at any one time. Except for adverse weather conditions, under no other circumstances are excavated areas to remain open for greater than 3 calendar days.

No driveway, including sidewalk area, is to be excavated on Friday or day before legal holiday. Vehicular driveway access must be restored within 6 calendar days of original excavation.

Adjacent paved areas that are in satisfactory condition and are subsequently damaged by construction activities are to be restored.

C. Forms

Forms are to be minimum of 5 inches high, free from warp and have sufficient strength to resist springing out of shape. Nominal thickness of wood forms is to be 2 inches, except for those in areas with curved construction lines. Before being used, forms are to be thoroughly cleaned of any mortar, concrete, dirt or any other extraneous materials. Forms are to be well staked or otherwise held to established construction lines, with upper edges conforming to established grade. Before placing concrete, wood forms are to be thoroughly wetted, and steel forms oiled. In areas where concrete placement crosses other paved areas, forms are to be carried through area to provide uniform width of concrete.

D. Joints

1. *Edges*. Edges, including joints, are to be finished smooth and plumb with an approved jointing tool which has minimum 5/8 inch radius, so made as to slightly round corners of edge or joint.

2. *Construction Joint*. Construction joints are joints where two successive placements of concrete meet.

3. *Transverse Joint*. Transverse joints are joints that are perpendicular to length of new sidewalk and are spaced at regular intervals. Transverse joints 12 feet long or shorter are to be saw cut or finished smooth with jointing tool. Transverse joints longer than 12 feet are to be saw cut, except when placed as construction joint. Transverse joints that are saw cut are to be saw cut minimum of 1/4 of thickness of concrete slab. Tooled transverse joints are to have maximum width of 1/2 inch, excluding rounded edges of jointing tool.

4. *Longitudinal Joint*. Longitudinal joints are joints that run length of new sidewalk. Longitudinal joints 12 feet long or shorter are to be saw cut or finished smooth with jointing tool. Longitudinal joints longer than 12 feet are to be saw cut, except when placed as construction joint. Longitudinal joints that are saw cut are to be saw cut minimum of 1/4 of thickness of concrete slab. Tooled longitudinal joints are to have maximum width of 1/2 inch, excluding rounded edges of jointing tool.

5. *Scoring Pattern*. Sidewalks with areas greater than 36 square feet are to be scored with joints.

Transverse joints are to be scored at intervals of 5 feet on center so that finished sidewalk area will be marked in squares, unless otherwise indicated in Contract Documents, or as directed by Project Manager. Transverse joints are to be straight and perpendicular to longitudinal line of straight sidewalk at street side of sidewalk, and radial to line of curved sidewalk, or as directed by Project Manager.

Longitudinal joints are to be parallel to longitudinal edge of sidewalk at street side of sidewalk, unless otherwise indicated in Contract Documents, or as directed by Project Manager.

Scoring patterns at street corners and other large areas will be as indicated in Contract Documents. If Contract Documents do not indicate scoring pattern, Project Manager must approve proposed scoring pattern prior to construction of joints.

Score joints minimum length of 2 feet diagonally off corners of structures, such as pole bases, handholes, manholes, et cetera, that are located in sidewalk area. Joints can be scored with either with jointing tool or saw cut.

6. *Construction and Expansion Joint.* Construction and expansion joints are to be finished smooth with an approved jointing tool which has minimum 5/8 inch radius, so made as to slightly round corners of joint.

Construction and expansion joints are to be filled with 1/2 inch thick premoulded expansion joint material. Premoulded expansion joint material is not to protrude above finished grade.

Expansion joints are to be placed at least once every 30 feet of continuous sidewalk, and are to extend full thickness and width of sidewalk. When continuous length of sidewalk is at least 15 feet, but less than 30 feet, one piece of premoulded expansion joint material is to be placed. When continuous length of sidewalk is less than 15 feet, placement of premoulded expansion joint material is not necessary.

7. *Joints at Structures.* Premoulded expansion joint material, 1/2 inch in thickness, is to be placed between edges of concrete construction where it butts up against back edge of curb, concrete gutter, existing concrete areas, buildings, walls, around pole bases, and any other structure and appurtenance located within area of concrete construction. Top of premoulded expansion joint material is to be recessed 5/8 inch below top of concrete, with recessed area filled in with caulking sealant.

8. *Saw Cutting.* Saw cut joints within 24 hours of placement of concrete. Saw cuts are to be done with an abrasive diamond type blade. Saw cut edges are to be smooth and straight, with unbroken corners. Saw cut joint is to be 1/4 inch wide, and minimum of 1/4 of thickness of concrete slab.

9. *Joint Tolerances and Quality.* Outer edges, expansion joints, construction joints and scored joints constructed with either jointing tool or by saw cut, are to be straight and smooth.

Joints and edges are to have uniform, fine broomed surface free of holes, tears, pock marks, broken corners and other defects. Joints are to be clear of excess concrete and mortar material resulting from brooming or finishing of adjacent concrete.

Variations of edge of joint as measured from straight edge or string line set along that edge, that are greater than 1/8 inch from 5 feet straight line, or 1/4 inch from 10 feet straight line, or 1/2 inch from 20 feet straight line, will be cause for rejection of joint and adjacent sidewalk at that joint.

Transverse joints are to be constructed to required spacing, perpendicular to longitudinal line of straight sidewalks, and radial to longitudinal line of curved sidewalks at street side of sidewalk. Transverse joints not perpendicular or radial by more than 1 inch per 5 feet of transverse joint, and transverse joints at spacing 2 inches greater or less than required spacing, will be cause for rejection of transverse joint and adjacent sidewalk at that transverse joint.

Longitudinal joints and outer edges are to be constructed parallel to longitudinal line of sidewalk at street side of sidewalk. Longitudinal joints not parallel or differing in offset from longitudinal line of street side of sidewalk by more than 3 inches in 25 feet of longitudinal length of sidewalk, will be cause for rejection of longitudinal joint and adjacent sidewalk at that longitudinal joint.

10. *Driveways.* Joints and scoring pattern for driveways must be approved by Project Manager prior to construction of joints and scoring pattern. Joints and scoring pattern are to in accordance with Subsection S608-3.06D. Joints.

E. Concrete Placement

Upon placement of concrete, wet mix is to be struck off level with top of forms and bull floated to eliminate high and low spots and to force large particles back from surface in such manner as to prevent sealing of surface. After surface has been leveled and smoothed, edging and jointing is to be done.

After waiting until normal bleeding has ceased, excess water is to be removed from surface of concrete before floating with an aluminum or magnesium float. Surface is then to be sealed by steel troweling and re-edged and re-jointed. Surface is to be lightly broomed transversely, with care taken to eliminate, or fill, joints left by edging tool. Curing procedures are to begin immediately upon final finishing of surface.

Concrete surface is to be constructed level and smooth with lightly broomed surface. Variations in level of surface as measured from 5 foot straight edge that are greater than 1/8 inch, will be cause for rejection of concrete area located at unsatisfactory surface as bounded by joints surrounding such unsatisfactory surface.

F. Curing

Concrete is to be cured immediately by application of chemical curing compound. Curing compound is to be applied in accordance with manufacturer's instructions and as approved by Project Manager.

G. Barricades

Open excavations and freshly poured concrete areas are to be barricaded so as to prevent accidental intrusion into work area. Barricades in form of orange construction fencing or full saw horse type, are to be placed immediately after excavation, or after removal of any temporary access material. Barricades are to be placed so as to totally isolate construction area, and are to remain in place until concrete is finished and functional. In addition, post top mounted flashers or any other similar devices may be used along pavement edge.

H. Unsatisfactory Work

Concrete is to be constructed with surface, edges and joints being level, smooth, straight, and of proper alignment and thickness. Areas of improperly constructed concrete will be rejected, with imperfections being corrected, or rejected concrete area removed and replaced.

In lieu of correcting or removing and replacing rejected concrete areas due to an unsatisfactory surface, or improperly constructed joints or edges, Project Manager may choose to accept defective work. If Project Manager accepts any defective work, monetary reduction in amount owed Contractor will be made as outlined under General Terms and Conditions, Article 11 Warranty and Guarantee; Tests and Inspections; Correction, Removal or Acceptance of Defective Work, Section 11.7 Acceptance of Defective Work.

**S608-3.07 Colored Decorative Concrete**

Colored decorative concrete areas and subbase course are to be constructed in accordance with Subsection S608-3.06 Concrete Sidewalk and Driveway, except as modified herein.

Use same quality concrete mix design, water to cement ratio, and maintain consistent slump throughout project. Concrete surface is to be protected from rapid evaporation of bleed water. Use an evaporation reducer as recommended by color additive manufacturer. Do not use plastic sheeting or water to cure decorative colored concrete.

**S608-3.08 Exposed Aggregate Concrete**

Exposed aggregate concrete areas and subbase course are to be constructed in accordance with Subsection S608-3.06 Concrete Sidewalk and Driveway, except as modified herein.

Length of exposed aggregate concrete slab and contraction joints are to correspond to pattern of existing surface. Exposed aggregate concrete slab is to be constructed to grade and cross slope consistent with existing surface and surrounding area.

Contractor may propose changes to this specification in order to provide an end result which will match above referenced areas. All proposed changes must be approved by Project Manager prior to use.

Before construction of exposed aggregate concrete is to commence, construct sample area at least 25 square feet in size for approval by Project Manager. Sample area is to be constructed within project limits at location acceptable to Project Manager. Construct or reconstruct as many sample areas as necessary until an acceptable end product has been achieved.

Construction of overall exposed aggregate concrete areas cannot begin until approval of sample area has been obtained. If approved by Project Manager, sample area may be left in place and incorporated into overall work. Overall exposed aggregate concrete areas are to be constructed to match approved sample area. If sample area is not incorporated into overall work, sample area is to be removed and properly disposed of.

As soon as water sheen is no longer visible on finished concrete surface area, generally within 1 hour after placement of concrete, retarder is to be sprayed onto finished concrete surface area in accordance with manufacturer's instructions. Immediately after concrete area has been sprayed with retarder, concrete area is to be covered with polyethylene or curing blankets.

After sufficient time has passed to insure that surface aggregate is securely imbedded within concrete, concrete surface is to be power washed and broomed to produce desired exposed aggregate finish. Within 24 hours after exposed aggregate concrete surface has been flushed, exposed aggregate concrete surface is to be covered with sealant placed in accordance with manufacturer's instructions.

**S608-3.09 Sidewalk Access Ramp**

Sidewalk access ramps are to be concrete constructed in accordance with Section S608 Sidewalk and Driveway, except as modified herein.

Sidewalk access ramp is to be located so as to be totally accessible by wheelchair, and is to be free of any object which would prohibit or impede intended use of sidewalk access ramp. Sidewalk access ramp and pavement area immediately in front of sidewalk access ramp are to be free of any object which might tend to become slippery or icy during inclement weather; or which might have an exposed pattern that could conceivably prevent or impede usage of sidewalk access ramp by wheelchair. Sample of such objects would be handhole/manhole cover, catch basin grate, utility valves, et cetera.

At signalized intersections, sidewalk access ramp is to be located such that wheelchair bound pedestrian can activate pedestrian signal without having to stop on sidewalk access ramp. Crosswalk and stop line markings are to be located to stop traffic before sidewalk access ramp crossing.

Drainage structures are not to be located directly in front of sidewalk access ramp, but may be located within transition area. Low points should be designed such that catch basins are located before main sidewalk access ramp.

When establishing curb elevations and pavement edge profile, they may be adjusted so as to eliminate any low point and ponding of water that would occur within area of sidewalk access ramp. It is extremely important that all ponding of water within sidewalk access ramp area be eliminated, and intended use of sidewalk access ramp not be compromised by ponding of water.

Prior to excavation, pavement area immediately adjacent to sidewalk access ramp is to be flooded with water to determine if adjustment to proposed grades is necessary. It is important that all ponding of water within sidewalk access ramp be kept to an absolute minimum.

Sidewalk access ramp is to have uniform grade, free of bumps, sags or short abrupt grade changes, with maximum slope of 1:12.

Surface texture of sidewalk access ramp is to be obtained by coarse brooming concrete transverse to slope of sidewalk access ramp.

Sidewalk access ramp construction will be limited to one side of street at time. Concrete for sidewalk access ramp must be poured within 3 calendar days of area having been excavated. Only excavate areas that can be restored within 3 calendar days. Except for adverse weather conditions, under no other circumstances are excavated areas to remain open for greater than 3 calendar days. Sidewalk access ramp must be finished and functional before commencing any work on other side of street.

If required, temporarily backfill excavated area with subbase course Type 1 material until placement of concrete is to occur.

**S608-3.10 Detectable Warning System**

Preferred method for constructing detectable warning system is by using embedded or precast brick detectable warning units.

Surface applied method for constructing detectable warning system is generally not acceptable except in select locations, as deemed appropriate by and approved of by Project Manager.

At least 30 days prior to installation, Contractor is to submit copy of manufacturer's documentation to Project Manager for approval which describes products to be used, recommended installation procedures and recommended routine maintenance.

Contractor is to follow manufacturer's recommendations for environmental conditions, surface preparation, installation procedures, curing procedures, and materials compatibility.

A. Embedded or Precast Brick Detectable Warning System

Units are not to be installed when ambient air temperature is under 40°F, or is expected to fall below 40°F within following 24 hour period.

Cutting straight edges of units is to be done with water cooled radial cut-off type masonry saw for sharp, straight edge. Cutting circular edges of units is to be done with concrete hole saw which produces sharp circular edge.

Foundation is to be concrete constructed in accordance with Section S608 Sidewalk and Driveway. Concrete is to be formed and poured integral with surrounding sidewalk access ramp area, and surface is to be level, without any indentations or projections.

Weep hole is to be provided at low point in foundation. Weep hole is to be 2 inches in diameter, and extend thru concrete and into subbase course material. Weep hole can be installed by either coring hole after concrete has set up, or by installing 2 inch schedule 40 PVC drain pipe along with pouring concrete. PVC drain pipe is to extend above and thru concrete and is to be thoroughly supported so it remains plumb until concrete has set up. After concrete has set up, top of PVC drain pipe is to be cut off flush with top of concrete. Weep hole is to be thoroughly cleaned out of all cuttings and fines, then flooded with water. After water has completely dissipated, weep hole is to be filled with coarse sand material.

Coarse sand bedding material is to be placed on top of concrete foundation and thoroughly compacted to minimum thickness of 1 inch after compaction, moist but not saturated, with uniformly even surface.

Units are to be placed on bedding material in required pattern, with straight courses and hand tight joints. Units are to be tamped down and leveled, and after compaction are to be true to surrounding cross-slope and grade, and free of any movement.

Unit joints are to be filled with polymeric jointing sand. Before applying polymeric jointing sand material, surface of units must be completely dry as moisture will activate binder agent of polymeric jointing sand. Cover area with polymeric jointing sand, then sweep polymeric jointing sand over and into all joints until joints are overfilled. Sweep entire surface clean removing all excess polymeric jointing sand material. Compact overall area, repeating process until joints are filled solid with polymeric jointing sand. Lightly moisten polymeric jointing sand material with water several times at 5 to 10 minute intervals gradually moistening entire depth of joint.

B. Embedded and Precast Brick Detectable Warning System at Existing Location

Saw cut perimeter of existing area to dimensions necessary to install detectable warning system. Saw cuts are to be done with an abrasive diamond type blade, full depth of existing material. Saw cut edges are to be smooth and straight, with unbroken corners. Remove and dispose of existing material.

Installation is to be in accordance with Subsection S608-3.08A Embedded or Precast Brick Detectable Warning System

C. Surface-Applied Detectable Warning System at New or Existing Location

Surface-applied detectable warning system is to be installed in accordance with manufacturer's recommendations.

**S608-3.11 Concrete Entrance Walk**

Concrete entrance walks are defined as those walks which are privately owned, and generally extend from public sidewalk back to house or building, providing means of pedestrian access.

Concrete entrance walks are to be constructed in accordance with Section S608 Sidewalk and Driveway, except as modified herein.

Concrete entrance walks are to be constructed with pattern, grades and cross slope consistent with existing walk and surrounding area.

**S608-3.12 Concrete Steps**

Concrete steps are to be constructed in accordance with Section S608 Sidewalk and Driveway, except as modified herein.

Concrete steps are to be constructed with pattern, grades and cross slope consistent with existing walk and surrounding area.

Concrete steps are to be minimum of 3 feet wide for residential properties, and 4 feet wide for commercial properties. Risers and treads are to be of uniform size and shape. Riser height is to be between 4 inches and 7 inches, tread is to be minimum 11 inches. Tolerance between largest and smallest riser/tread is not to exceed 3/8 of an inch within any set of steps. All edges are to be rounded with 1/2 inch radius.

**S608-3.13 Heavy-Duty Commercial Concrete Driveway**

Heavy-duty commercial concrete driveways are for businesses that generate significant amount of semi-tractor trailer truck traffic. Coordinate with individual businesses that are directly affected by work to schedule construction activities such as to minimize as much as possible any disruption of business's daily operations.

If required by Project Manager, temporary driveway access is to be provided until permanent driveway restoration can be done.

Area on which concrete is to be placed is to be excavated, and subgrade shaped and compacted with vibratory compactor to relatively smooth surface. Soft areas in subgrade are to be eliminated in order to provide uniform support of concrete.

Finished subgrade is to be parallel to surface of proposed grade. Before compacting subgrade material, cull material of all large stones, tree roots, or any other foreign substances. Use subbase course Type 4 material to adjust subgrade elevations and to replace unsuitable subgrade material. Subbase course material is to be thoroughly compacted and wetted prior to placement of concrete.

When excavating and removing an existing paved area, take any necessary precaution to prevent any damage from occurring to adjacent paved areas that are to remain. Perimeter of existing paved area to be excavated is to be saw cut full depth with concrete saw before starting excavation. Saw cut and excavate existing concrete areas at nearest joint.

Forms are to be minimum of 5 inches high, free from warp and have sufficient strength to resist springing out of shape. Nominal thickness of wood forms is to be 2 inches, except for those in areas with curved construction lines. Before being used, forms are to be thoroughly cleaned of any mortar, concrete, dirt or any other extraneous materials.

Forms are to be well staked or otherwise held to established construction lines, with upper edges conforming to established grade. Before placing concrete, wood forms are to be thoroughly wetted, and steel forms oiled. In areas where concrete placement crosses other paved areas, forms are to be carried through area to provide uniform width of concrete.

Scoring pattern and final location of joints must be approved by Project Manager prior to construction of such.

Subbase course is to be constructed in accordance with requirements of NYSDOT Section 304 Subbase Course.

Welded wire fabric is to be placed in accordance with requirements of NYSDOT Section 556 Reinforcing Steel for Concrete Structures.

Concrete and construction joint is to be constructed in accordance with requirements of NYSDOT Section 555 Structural Concrete.

**S608-3.14 Asphalt Driveway**

Asphalt top is to be placed in accordance with NYSDOT Section 401 Plant Mix Pavements – General. Asphalt binder and base is to be placed in accordance with NYSDOT Sections 401 Plant Production and 402 Hot Mix Asphalt (HMA) Pavements.

Subbase course Type 2 material is to be placed in accordance with NYSDOT Section 304 Subbase Course.

Seams between existing and new asphalt surfaces is to be sealed with asphalt joint and crack filler material in accordance with NYSDOT Section 702 Bituminous Materials.

**S608-3.15 Temporary Driveway**

Temporary driveway is to blend in with adjacent slopes and grades, is to be constructed and operational before existing driveway access is closed, and is to be maintained to provide adequate access at all times until permanent driveway is operational.

Excavate area to depth sufficient to construct temporary driveway, and if necessary remove existing curb. Remove any features such as fencing, guide rail, bollards, or any other miscellaneous features that are in way. Store removed features in safe location until they can be reinstalled.

After permanent driveway has been constructed and is operational, temporary driveway is to be removed. Backfill excavation with select backfill material excavated from site, and restore surface as required.

**S608-3.16 Brick**

Brick is to be placed in pattern as required in Contract Documents, and to uniformly even surface. Brick is not to be installed when ambient air temperature is under 40°F, or is expected to fall below 40°F within following 24 hour period.

Cutting straight edges of brick is to be done with water cooled radial cut-off type masonry saw for sharp, straight edge. Cutting circular edges of brick is to be done with concrete hole saw which produces sharp circular edge.

Premoulded expansion joint material, 1/2 inch in thickness, is to be placed between edges of brick construction where it butts up against back edge of curb, concrete gutter, concrete areas, buildings, walls, around pole bases, and any other structure/appurtenance located within area of brick construction. Top of premoulded expansion joint material is to be recessed 5/8 inch below top of brick, with recessed area filled in with caulking sealant.

Subbase material is be minimum of 6 inches thick, and is to be subbase course type 1 material. Bottom of subbase material is to be even with or below bottom of surrounding subbase material.

Surface of underlying subbase material should be thoroughly clean and dry before installation of bedding material. Screed rails should be set on surface of subbase to proper line and level. Verify elevations of subbase to ensure that bedding material will be at consistent thickness after compaction, with isolated high and low spots being corrected before placement of bedding material. Bedding material should not be used to bring subbase to proper grade.

An allowance should be made in overall thickness of setting bed material for compaction during brick installation. Overall placement thickness of setting bed material should be established so that after brick has been compacted, top surface of brick will be maximum of 1/8 inch above finished grade to allow for limited in-service settlement.

To prevent disturbance, bedding material should not be spread too far ahead of brick laying face. Voids left after removing screed rails should be filled. Protect screeded bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and rescreeded. Extensive areas of screeded bedding material should not be left exposed overnight unless they are properly protected from disturbance and moisture. Moisture content of bedding material should be kept as uniform as possible to minimize undulations in brick surface, and should be kept in damp condition conducive to packing. Water should not be applied except by very light misting. Stockpiled bedding material is to be covered to protect it from wind and rain.

Install rigid paver edge restraint material along outer edge of brick driveways, and across entire opening of any adjacent open tree pit located within brick sidewalk area. Paver edge restraint is to be installed in accordance with Subsection S608-3.24 Paver Edge Restraint. Paver edge restraint is not required where concrete foundation is being installed as part of brick construction,

Bricks are to be placed by hand on bedding material, in required pattern, with straight courses. Bricks should be tamped down and leveled with mechanical vibrator. After compaction, top of brick is to be maximum 1/8 inch above finished grade, true to surrounding cross-slope and grade, and free of any movement.

Joints between bricks are to be between 1/16 and 3/16 of an inch, with no joint width to exceed 3/16 of an inch. Joints are to be filled with polymeric jointing sand to within 1/8 inch of brick surface after compaction. Before applying polymeric jointing sand material, surface of brick must be completely dry as moisture will activate binder agent of polymeric jointing sand. Cover area with polymeric jointing sand, then sweep polymeric jointing sand over and into all joints until joints are overfilled. Sweep entire surface clean removing all excess polymeric jointing sand material as soon as possible so polymeric jointing sand does not get stuck in surface texture of brick. Compact overall area, repeating process until joints are filled solid with polymeric jointing sand. Lightly moisten polymeric jointing sand material with water several times at 5 to 10 minute intervals gradually moistening entire depth of joint.

**S608-3.17 Brick – Optional Concrete Foundation**

Brick is to be constructed in accordance with Subsection S608-3.16 Brick, except as modified herein.

Foundation is to be concrete in accordance with Section S608 Sidewalk and Driveway. Surface of concrete is to be level, without any indentations or projections.

Weep hole is to be provided for every 100 square feet of brick area, and at any low point in foundation. Weep hole is to be 2 inches in diameter, and extend thru concrete and into subbase course material. Weep hole can be installed by either coring hole after concrete has set up, or by installing 2 inch schedule 40 PVC drain pipe along with pouring concrete. PVC drain pipe is to extend above and thru concrete and is to be thoroughly supported so it remains plumb until concrete has set up. After concrete has set up, top of PVC drain pipe is to be cut off flush with top of concrete. Weep hole is to be thoroughly cleaned out of all cuttings and fines, then flooded with water. After water has completely dissipated, weep hole is to be filled with coarse sand material.

Coarse sand bedding material is to be placed on top of concrete foundation and thoroughly compacted to minimum thickness of 1 inch after compaction, moist but not saturated, with uniformly even surface.

**S608-3.18 Brick Border - Bus Stop Landing Pad**

Brick border at bus stop landing pad is to be constructed in accordance with Subsection S608-3.16 Brick and S608-3.17 Brick – Optional Concrete Foundation, except as modified herein.

Weep holes are to be provided every 4 feet on center, and at any low point in foundation.

**S608-3.19 Reset Existing Brick**

Reset existing brick is to be constructed in accordance with Subsection S608-3.16 Brick and S608-3.17 Brick – Optional Concrete Foundation, except as modified herein.

Caution is to be taken in removing existing brick to minimize any breakage. Brick is to be cleaned of all foreign or extraneous matter. Removal and cleaning of brick is to be done such that overall structural integrity of brick is maintained. Brick is to be stored at location that is safe from damage, and is to be placed on level ground which will provide even bearing across brick surface. Work is to be phased so as to reduce to minimum amount of time brick is to be stored.

Existing bedding material is to be removed and properly disposed of, and new coarse sand bedding course material installed.

If required, existing foundation is to be removed and properly disposed of, and new concrete foundation complete with weep holes is to be constructed.

**S608-3.20 Salvage Existing Brick**

Use extra caution when removing and handling existing brick that is to be salvaged, and when working adjacent to brick areas that are to remain, so that there is to be no breakage caused by ongoing operations. Existing brick that is to be salvaged, and is damaged due to Contractor's operations, is to be replaced with new brick. Replacement brick is to match existing brick in general size, thickness, shape, form and color as much as possible.

Project Manager will pre-determine which existing bricks are structurally acceptable to be salvaged. Carefully excavate around and remove existing brick such that overall structural integrity of brick is not compromised. Clean removed brick of all extraneous materials, including concrete, in such manner as to be non-deleterious to brick. Existing brick that is broken during excavation, salvage or cleaning operations, is to be disposed of.

Salvaged brick is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Brick is not to be stacked more than five high, with bottom row placed on level ground to provide even bearing across entire brick surface. Work is to be phased so as to reduce to minimum amount of time brick is to be stored.

If required, salvaged brick that was installed by an adjacent property owner is to be placed and stacked on owner's property, and off of public right-of-way.

If required, after removing existing brick, existing setting bed material and/or foundation is to be removed and properly disposed of.

**S608-3.21 Slate/Stone Paver**

A. General

Use extra caution when handling and installing slate/stone paver, and when working adjacent to existing slate/stone paver areas that are to remain, so that there is to be no breakage caused by ongoing operations.

Slate/stone paver is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Slate/stone paver is not to be stacked more than five high, with bottom row placed on level ground to provide even bearing across entire slate/stone paver surface. Individual layers of stacked slate/stone paver are to be separated with 2x2 wooden sticker strips placed across entire surface of slate/stone paver. Work is to be phased so as to reduce to minimum amount of time slate/stone paver is to be stored.

Slate/stone paver is to be placed in pattern as required in Contract Documents, and to uniformly even surface. Slate/stone paver is not to be installed when ambient air temperature is under 40°F, or is expected to fall below 40°F within following 24 hour period.

Premoulded expansion joint material, 1/2 inch in thickness, is to be placed between edges of slate/stone construction where it butts up against back edge of curb, concrete gutter, concrete areas, buildings, walls, around pole bases, and any other structure and appurtenance located within area of slate/stone construction. Top of premoulded expansion joint material is to be recessed 5/8 inch below top of slate/stone, with recessed area filled in with caulking sealant.

Install rigid paver edge restraint material along outer edge of slate/stone paver driveways, and across entire opening of any adjacent open tree pit located within slate/stone paver sidewalk area. Paver edge restraint is to be installed in accordance with Subsection S608-3.24 Paver Edge Restraint. Paver edge restraint is not required where concrete foundation is being installed as part of slate/stone paver construction,

Cutting edges of slate/stone paver is to be done with stone or diamond cut-off type saw for sharp, straight edges. Cutting diagonal edges of slate/stone paver is to be done with angle grinder following pre-marked line on slate/stone paver.

Slate/stone pavers are to be placed by hand on bedding material, in required pattern, with straight courses. Slate/stone pavers are to be tamped down and leveled with mechanical vibrator. After compaction, top of slate/stone paver is to be maximum 1/8 inch above finished grade, true to surrounding cross-slope and grade, and free of any movement.

Joints for slate and rock-face cut stone paver are to be between 3/8 and 3/4 of an inch, with no joint width to exceed 3/4 of an inch. Joints for small ashlar cut stone paver are to be between 1/16 and 3/16 of an inch, with no joint width to exceed 3/16 of an inch. Joints are to be filled with polymeric jointing sand. Before applying polymeric jointing sand material, surface of slate/stone paver must be completely dry as moisture will activate binder agent of polymeric jointing sand. Cover area with polymeric jointing sand, then sweep polymeric jointing sand over and into all joints until joints are overfilled. Sweep entire surface clean removing all excess polymeric jointing sand material. Compact overall area, repeating process until joints are filled solid with polymeric jointing sand. Lightly moisten polymeric jointing sand material with water several times at 5 to 10 minute intervals gradually moistening entire depth of joint.

B. Light-Duty

Subbase material is be minimum of 6 inches thick, and is to be subbase course type 1 material. Bottom of subbase material is to be even with or below bottom of surrounding subbase material.

Bedding is to be coarse sand bedding material.

Surface of underlying subbase material should be thoroughly clean and dry before installation of bedding material. Verify elevations of subbase to ensure that bedding material will be at consistent thickness after compaction, with isolated high and low spots being corrected before placement of bedding material. Bedding material should not be used to bring subbase to proper grade.

Screed rails should be set on surface of subbase to proper line and level.

An allowance should be made in overall thickness of bedding material for compaction during slate/stone paver installation, and for additional in service settlement. Overall placement thickness of bedding material should be established so that after slate/stone pavers have been compacted, top surface of slate/stone pavers will be maximum of 1/8 inch above finished grade to allow for limited settling in place.

To prevent disturbance, bedding material should not be spread too far ahead of slate/stone paver laying face. Voids left after removing screed rails should be filled. Protect screeded bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and rescreeded. Extensive areas of screeded bedding material should not be left exposed overnight unless they are properly protected from disturbance and moisture. Moisture content of bedding material should be kept as uniform as possible to minimize undulations in slate/stone paver surface, and should be kept in damp condition conducive to packing. Water should not be applied except by very light misting. Stockpiled bedding material is to be covered to protect it from wind and rain.

C. Medium-Duty

Foundation is to be concrete constructed in accordance with Section S608 Sidewalk and Driveway. Surface of concrete is to be level, without any indentations or projections.

Weep hole is to be provided for every 100 square feet of slate/stone paver area, and at any low point in foundation. Weep hole is to be 2 inches in diameter, and extend thru concrete and into subbase course material. Weep hole can be installed by either coring hole after concrete has set up, or by installing 2 inch schedule 40 PVC drain pipe along with pouring concrete. PVC drain pipe is to extend above and thru concrete and is to be thoroughly supported so it remains plumb until concrete has set up. After concrete has set up, top of PVC drain pipe is to be cut off flush with top of concrete. Weep hole is to be thoroughly cleaned out of all cuttings and fines, then flooded with water. After water has completely dissipated, weep hole is to be filled with coarse sand material.

Coarse sand bedding material is to be placed on top of foundation, with an allowance being made in overall thickness for compaction during slate/stone paver installation, and for additional in-service settlement. Overall placement thickness of bedding material should be established so that after slate/stone pavers have been compacted, top surface of slate/stone pavers will be maximum of 1/8 inch above finished grade to allow for limited settling in place.

To prevent disturbance, bedding material should not be spread too far ahead of slate/stone paver laying face. Voids left after removing screed rails should be filled. Protect screeded bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and rescreeded. Extensive areas of screeded bedding material should not be left exposed overnight unless they are properly protected from disturbance and moisture.

Moisture content of bedding material should be kept as uniform as possible to minimize undulations in slate/stone paver surface, and should be kept in damp condition conducive to packing. Water should not be applied except by very light misting.

Stockpiled bedding material is to be covered to protect it from wind and rain.

**S608-3.22 Reset Existing Slate/Stone Paver**

Reset existing slate/stone pavers are to be constructed in accordance with Subsection S608-3.21 Slate/Stone Paver, except as modified herein.

Use extra caution when removing and handling existing slate/stone paver that is to be reset, and when working adjacent to slate/stone paver areas that are to remain, so that there is to be no breakage caused by ongoing operations.

Existing slate/stone paver that is to be reset, and is damaged due to Contractor's operations, is to be replaced with new slate/stone paver. Replacement slate/stone paver is to match existing slate/stone paver in general size, thickness, shape, form and color as much as possible.

Project Manager will pre-determine which existing slate/stone pavers are structurally acceptable to be reset. Carefully excavate around and remove existing slate/stone paver such that overall structural integrity of slate/stone paver is not compromised. Clean removed slate/stone paver of all extraneous materials, including concrete, in such manner as to be non-deleterious to slate/stone paver. Existing slate/stone paver that is broken during excavation, salvage or cleaning operations, is to be disposed of.

Slate/stone paver that is to be reset, is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Slate/stone paver is not to be stacked more than five high, with bottom row placed on level ground to provide even bearing across entire slate/stone paver surface. Individual layers of stacked slate/stone paver are to be separated with 2x2 wooden sticker strips placed across entire surface of slate/stone paver. Work is to be phased so as to reduce to minimum amount of time slate/stone paver is to be stored.

Existing bedding material is to be removed and properly disposed of, and new coarse sand bedding material installed.

If required, existing foundation is to be removed and properly disposed of, and new concrete foundation with weep holes is to be constructed.

**S608-3.23 Salvage Existing Slate/Stone Paver**

Use extra caution when removing and handling existing slate/stone paver that is to be salvaged, and when working adjacent to slate/stone paver areas that are to remain, so that there is to be no breakage caused by ongoing operations. Existing slate/stone paver that is to be salvaged, and is damaged due to Contractor's operations, is to be replaced with new slate/stone paver. Replacement slate/stone paver is to match existing slate/stone paver in general size, thickness, shape, form and color as much as possible.

Project Manager will pre-determine which existing slate/stone pavers are structurally acceptable to be salvaged. Carefully excavate around and remove existing slate/stone paver such that overall structural integrity of slate/stone paver is not compromised. Clean removed slate/stone paver of all extraneous materials, including concrete, in such manner as to be non-deleterious to slate/stone paver. Existing slate/stone paver that is broken during excavation, salvage or cleaning operations, is to be disposed of.

Slate/stone paver that is to be salvaged, is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Slate/stone paver is not to be stacked more than five high, with bottom row placed on level ground to provide even bearing across entire slate/stone paver surface. Individual layers of stacked slate/stone paver are to be separated with 2x2 wooden sticker strips placed across entire surface of slate/stone paver. Work is to be phased so as to reduce to minimum amount of time slate/stone paver is to be stored.

On cleaned side surface, label width and running length of individual slate/stone paver with marking paint.

Salvaged slate/stone paver is to be delivered to City's Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, (585) 428-7479. Street Maintenance Division requires minimum of 2 working days advance notice to make arrangements for delivery of salvaged materials.

Salvaged slate/stone paver is to be delivered to location as designated by Street Maintenance Division. Slate/stone paver is to be stacked no more than five high, with bottom row placed on level ground to provide even bearing across entire slate/stone paver surface. Individual layers of stacked slate/stone paver are to be separated with 2x2 wooden sticker strips placed across entire surface of slate/stone paver.

If required, after removing existing slate/stone paver, existing setting bed material and/or foundation is to be removed and properly disposed of.

**S608-3.24 Paver Edge Restraint**

Install rigid paver edge restraint material along outer edge of brick/slate/stone paver driveways, and across entire opening of any adjacent open tree pit located within brick/slate/stone paver sidewalk area. Paver edge restraint is not required where concrete foundation is being installed as part of brick/slate/stone paver construction.

Paver edge restraint material is to provide secure rigid edge restraint against which to install brick, slate or stone paver, and coarse sand bedding material. Paver edge restraint is to be installed on top of compacted subbase material, and anchored into subbase material with 10 to 12 inch long spikes or soil nails, or as recommended by manufacturer. After paver edge restraint has been properly installed, place and compact coarse sand bedding material, and brick, slate or stone paver.

**S608-3.25 Coarse Sand Bedding Material**

Surface of underlying subbase material should be thoroughly clean and dry before installation of bedding material. Verify elevations of subbase to ensure that bedding material will be at consistent thickness after compaction, with isolated high and low spots being corrected before placement of bedding material. Bedding material should not be used to bring subbase to proper grade.

Screed rails should be set on surface of subbase to proper line and level. An allowance should be made in overall thickness of bedding material for compaction during pavement material installation, and for additional in service settlement. Overall placement thickness of bedding material should be established so that after pavement material has been compacted, top surface of pavement material will be maximum of 1/8 inch above finished grade to allow for limited settling in place.

To prevent disturbance, bedding material should not be spread too far ahead of pavement material laying face. Voids left after removing screed rails should be filled. Protect screeded bedding material from wind or rain as well as by wayward construction operations. If bedding material is disturbed, it is to be loosened and rescreeded. Extensive areas of screeded bedding material should not be left exposed overnight unless they are properly protected from disturbance and moisture. Moisture content of bedding material should be kept as uniform as possible to minimize undulations in pavement material surface, and should be kept in damp condition conducive to packing. Water should not be applied except by very light misting. Stockpiled bedding material is to be covered to protect it from wind and rain.

**S608-3.26 Replace Existing Coarse Sand Bedding Material**

Existing bedding material is to be removed and properly disposed of. Subgrade is to be prepared and new coarse sand bedding material placed in accordance with Subsection S608-3.25 Coarse Sand Bedding Material.

## S608-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be either number of cubic yards, square feet or linear feet of each item either constructed, reset or salvaged.

## S608-5 BASIS OF PAYMENT

**S608-5.01 General all Items**

Unit price bid for all items includes cost of: preserve, safeguard and maintain survey monument; coordinating work with adjacent businesses; furnishing and distributing written notification to residents of adjacent properties; plastic bags; protection of overall work from damage, vandalism or other mishap; furnishing, installing and maintaining barricades; flaggers; furnishing, placing, maintaining and removing temporary access; layout of proposed work to required grade and cross-slope; quality control; saw cutting; cutting and disposal of tree roots; preparation of subgrade; furnishing and applying water; expansion joints; furnishing and installing premoulded expansion joint material; caulking sealant; cleaning finished work; equipment; site cleanup; correction or replacement of unsatisfactory work; and furnishing all labor, material and equipment necessary to complete work.

Adjustment of appurtenances such as monument frames and covers, utility valve box frames and covers, utility manhole/handhole/pullbox frames and covers, areaway/vault frames and covers, areaway/vault frames and hatchway doors, window well frames and grates, et cetera, will be paid for under separate bid items.

Removal of unsatisfactory subgrade material and installation of additional subbase course material as replacement backfill for additional excavated area, will be paid for under separate bid items.

Restoration of lawn areas including furnishing and installing topsoil, seed, hydroseed, sod, mulch and fertilizer, will be paid for under separate bid items.

Restoration of adjacent paved areas done as part of overall work will be paid for under separate bid items.

Restoration or replacement of existing features, including paved areas, that are damaged by Contractor's operations will be done at Contractor's expense.

**S608-5.02 Excavation and Subbase Course**

Excavation and subbase course will be paid for under separate bid items or included in unit price bid for each item as indicated in item description.

Excavation includes complete removal and disposal of existing materials, paved areas including concrete, asphalt or other pavement material types, tree roots, dirt, and any other material encountered within area to be excavated.

Excavation that is included in pay item does not include rock excavation. Rock excavation will be paid for under separate bid item. Rock excavation consists of boulders exceeding 1/2 cubic yard in volume; and ledge rock which cannot in opinion of Project Manager, be removed without blasting or use of pneumatic hammers. Concrete pavements and pavement foundations, and utility appurtenances will not be considered rock.

**S608-5.03 Concrete Sidewalk and Driveway – all Related Bid Items**

Unit price bid also includes cost of: flooding pavement with water; layout of pavement/curb/sidewalk/ sidewalk access ramp cross-slope and grade; construction of sidewalk access ramp; furnishing, placing and finishing concrete; forms; edges; construction, transverse and longitudinal joints; scoring pattern; joints at appurtenances; curing compounds; brooming; polyethylene or curing blankets; conforming to joint tolerance and quality requirements.

In addition, unit price bid for following individual work items will also include cost of:

A. Concrete Sidewalk and Driveway

Unit price bid also includes cost of: all required work necessary to construct concrete sidewalk and driveways.

B. Colored Decorative Concrete

Unit price bid also includes cost of: all required work necessary to construct colored decorative concrete slab; color admixture; evaporation reducer; sealer.

C. Exposed Aggregate Concrete

Unit price bid also includes cost of: all required work necessary to construct exposed aggregate concrete slab; constructing and removing sample(s); surface retardant; power washing; additional brooming; sealer.

D. Concrete Entrance Walk

Unit price bid also includes cost of: all required work necessary to construct concrete entrance walk.

E. Concrete Steps

Unit price bid also includes cost of: all required work necessary to construct concrete steps.

F. Heavy-Duty Commercial Concrete Driveway

Unit price bid also includes cost of: all required work necessary to construct heavy-duty commercial concrete driveway; contraction and construction joints; tie bars; uncoated steel reinforcement.

**S608-5.04 Detectable Warning System – all Methods**

Unit price bid also includes cost of: furnishing sample(s); preparation of existing surface; furnishing, cutting, placing and finishing detectable warning system; doing work in accordance with manufacturer's recommendations.

For precast brick detectable warning system, unit price bid will also include cost of: furnishing, compacting and placing coarse sand bedding material; polymeric jointing sand; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes.

Excavation, furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

**S608-5.05 Detectable Warning System at Existing Location – all Methods**

Unit price bid also includes cost of: furnishing sample(s); preparation of existing surface; furnishing, cutting, placing and finishing detectable warning system; doing work in accordance with manufacturer's recommendations.

For precast brick detectable warning system, unit price bid will also include cost of: excavation; additional saw cutting; furnishing, compacting and placing coarse sand bedding material; removing and disposing existing material; furnishing and installing new concrete foundation and subbase course material; polymeric jointing sand; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes.

For embedded detectable warning system, unit price bid will also include cost of: excavation; additional saw cutting; removing and disposing existing material; furnishing and installing new concrete foundation and subbase course material; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes.

**S608-5.06 Asphalt Driveway**

Unit price bid also includes cost of: excavation; furnishing and placing asphalt top; asphalt joint and crack filler; subbase course material.

For medium-duty driveway, unit price bid will also include cost of: furnishing and placing asphalt binder course.

For heavy-duty driveway, unit price bid will also include cost of: furnishing and placing asphalt binder and asphalt base courses.

**S608-5.07 Temporary Driveway**

Unit price bid also includes cost of: excavation; furnishing, installing, maintaining, removing and disposing asphalt and subbase course material; removing, cleaning, storing and reinstalling curb or other materials as specified.

**S608-5.08 Brick; Brick – Cultural District**

Unit price bid also includes cost of: furnishing and installing brick; coarse sand bedding material; furnishing and installing cored or PVC weep holes for concrete foundation; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; cutting brick; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

**S608-5.09 Brick Border - Bus Stop Landing Pad**

Unit price bid also includes cost of: furnishing and installing brick; coarse sand bedding material; furnishing and installing cored or PVC weep holes for concrete foundation; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; cutting brick; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

**S608-5.10 Reset Existing Brick; Reset Existing Brick – Cultural District**

Unit price bid also includes cost of: removing, storing, cleaning, cutting and reinstalling existing brick; removing and disposing existing bedding material; furnishing and installing new coarse sand bedding material; furnishing and installing cored or PVC weep holes for concrete foundation; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

**S608-5.11 Salvage Existing Brick**

Unit price bid also includes cost of: excavation; removing, cleaning and storing brick; furnishing new brick as replacement for existing brick damaged by Contractor's negligence; disposal of damaged brick; placing and stacking salvaged brick on adjacent private property; removing and disposing existing concrete foundation; backfill.

**S608-5.12 Slate/Stone Paver – Light Duty**

Unit price bid also includes cost of: furnishing, cutting and installing slate/stone paver; coarse sand bedding material; polymeric jointing sand; compaction; patterning.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

**S608-5.13 Slate/Stone Paver – Medium-Duty**

Unit price bid also includes cost of: furnishing, cutting and installing slate/stone paver; coarse sand bedding material; furnishing and installing cored or PVC weep holes; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

**S608-5.14 Reset Existing Slate/Stone Paver**

Unit price bid also includes cost of: removing, storing, cleaning, cutting and reinstalling existing slate/stone paver; furnishing new slate/stone paver as replacement for existing slate/stone paver damaged by Contractor's negligence; removing and disposing existing bedding material; furnishing and installing new coarse sand bedding material; furnishing and installing cored or PVC weep holes for concrete foundation; cleaning, flooding and filling weep holes; brooming; polymeric jointing sand; compaction; patterning.

Furnishing and installing concrete foundation and subbase course material will be paid for under appropriate concrete sidewalk bid item.

Furnishing and installing paver edge restraint will be paid for under separate bid item.

**S608-5.15 Salvage Existing Slate/Stone Paver**

Unit price bid also includes cost of: excavation; removing, cleaning, storing, delivering and stock piling slate/stone paver; furnishing new slate/stone paver as replacement for existing slate/stone paver damaged by Contractor's negligence; labeling; sticker strips; disposal of damaged slate/stone paver; removing and disposing existing concrete foundation; backfill.

**S608-5.16 Paver Edge Restraint**

Unit price bid also includes cost of: furnishing and installing paver edge restraint.

**S608-5.17 Coarse Sand Bedding Material**

Unit price bid also includes cost of: furnishing, placing and compacting coarse sand bedding material.

**S608-5.18 Replace Existing Coarse Sand Bedding Material**

Unit price bid also includes cost of: excavation; removing and disposing existing bedding material; preparing existing subgrade; furnishing, placing and compacting new coarse sand bedding material.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S608.12 | Concrete Sidewalk and Driveway | Cubic Yard |
| S608.13 | Concrete Sidewalk and Driveway (Including Excavation) | Cubic Yard |
| S608.14 | Concrete Sidewalk and Driveway (Including Excavation and Subbase Course) | Cubic Yard |
| S608.15 | Asphalt Driveway - Light-Duty | Square Foot |
| S608.16 | Asphalt Driveway - Medium-Duty | Square Foot |
| S608.17 | Asphalt Driveway - Heavy-Duty | Square Foot |
| S608.180201 | Brick | Square Foot |
| S608.180202 | Brick (Including Excavation) | Square Foot |
| S608.180203 | Brick (Including Excavation and Subbase Course) | Square Foot |
| S608.180301 | Brick – Cultural District | Square Foot |
| S608.180302 | Brick – Cultural District (Including Excavation) | Square Foot |
| S608.180303 | Brick – Cultural District (Including Excavation and Subbase Course) | Square Foot |
| S608.180401 | Brick Border - Bus Stop Landing Pad | Square Foot |
| S608.180402 | Brick Border - Bus Stop Landing Pad (Including Excavation) | Square Foot |
| S608.180403 | Brick Border - Bus Stop Landing Pad (Including Excavation and Subbase Course) | Square Foot |
| S608.180501 | Reset Existing Brick | Square Foot |
| S608.180502 | Reset Existing Brick (Including Excavation) | Square Foot |
| S608.180503 | Reset Existing Brick (Including Excavation and Subbase Course) | Square Foot |
| S608.180601 | Reset Existing Brick – Cultural District | Square Foot |
| S608.180602 | Reset Existing Brick – Cultural District (Including Excavation) | Square Foot |
| S608.180603 | Reset Existing Brick – Cultural District (Including Excavation and Subbase Course) | Square Foot |
| S608.1902 | Salvage Existing Brick | Square Foot |
| S608.200101 | Slate - Light-Duty | Square Foot |
| S608.200102 | Slate - Light-Duty (Including Excavation) | Square Foot |
| S608.200103 | Slate - Light-Duty (Including Excavation and Subbase Course) | Square Foot |
| S608.200201 | Slate - Medium-Duty | Square Foot |
| S608.200202 | Slate - Medium-Duty (Including Excavation) | Square Foot |
| S608.200203 | Slate - Medium-Duty (Including Excavation and Subbase Course) | Square Foot |

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S608.200301 | Reset Existing Slate - Light-Duty | Square Foot |
| S608.200302 | Reset Existing Slate - Light-Duty (Including Excavation) | Square Foot |
| S608.200303 | Reset Existing Slate - Light-Duty (Including Excavation and Subbase Course) | Square Foot |
| S608.200401 | Reset Existing Slate - Medium-Duty | Square Foot |
| S608.200402 | Reset Existing Slate - Medium-Duty (Including Excavation) | Square Foot |
| S608.200403 | Reset Existing Slate - Medium-Duty (Including Excavation and Subbase Course) | Square Foot |
| S608.2103 | Salvage Existing Slate | Square Foot |
| S608.220101 | Stone Paver - Light-Duty | Square Foot |
| S608.220102 | Stone Paver - Light-Duty (Including Excavation) | Square Foot |
| S608.220103 | Stone Paver - Light-Duty (Including Excavation and Subbase Course) | Square Foot |
| S608.220201 | Stone Paver - Medium-Duty | Square Foot |
| S608.220202 | Stone Paver - Medium-Duty (Including Excavation) | Square Foot |
| S608.220203 | Stone Paver - Medium-Duty (Including Excavation and Subbase Course) | Square Foot |
| S608.220301 | Reset Existing Stone Paver - Light-Duty | Square Foot |
| S608.220302 | Reset Existing Stone Paver - Light-Duty (Including Excavation) | Square Foot |
| S608.220303 | Reset Existing Stone Paver - Light-Duty (Including Excavation and Subbase Course) | Square Foot |
| S608.220401 | Reset Existing Stone Paver - Medium-Duty | Square Foot |
| S608.220402 | Reset Existing Stone Paver - Medium-Duty (Including Excavation) | Square Foot |
| S608.220403 | Reset Existing Stone Paver - Medium-Duty (Including Excavation and Subbase Course) | Square Foot |
| S608.2303 | Salvage Existing Stone Paver | Square Foot |
| S608.24 | Temporary Driveway | Square Foot |
| S608.32 | Concrete Entrance Walk | Square Foot |
| S608.33 | Concrete Entrance Walk (Including Excavation) | Square Foot |
| S608.34 | Concrete Entrance Walk (Including Excavation and Subbase Course) | Square Foot |
| S608.35 | Exposed Aggregate Concrete | Cubic Yard |
| S608.36 | Exposed Aggregate Concrete (Including Excavation) | Cubic Yard |
| S608.37 | Exposed Aggregate Concrete (Including Excavation and Subbase Course) | Cubic Yard |
| S608.380601 | Precast Brick Detectable Warning System | Square Foot |
| S608.380602 | Embedded Detectable Warning System | Square Foot |
| S608.380603 | Surface-Applied Detectable Warning System | Square Foot |
| S608.380701 | Precast Brick Detectable Warning System at Existing Location | Square Foot |
| S608.380702 | Embedded Detectable Warning System at Existing Location | Square Foot |
| S608.380703 | Surface-Applied Detectable Warning System at Existing Location | Square Foot |
| S608.51 | Coarse Sand Bedding Material | Square Foot |
| S608.52 | Replace Existing Coarse Sand Bedding Material | Square Foot |
| S608.53 | Heavy-Duty Commercial Concrete Driveway | Cubic Yard |
| S608.54 | Heavy-Duty Commercial Concrete Driveway (Including Excavation) | Cubic Yard |
| S608.55 | Heavy-Duty Commercial Concrete Driveway (Including Excavation and Subbase Course) | Cubic Yard |
| S608.5601 | Colored Decorative Concrete | Cubic Yard |
| S608.5602 | Colored Decorative Concrete (Including Excavation) | Cubic Yard |
| S608.5603 | Colored Decorative Concrete (Including Excavation and Subbase Course) | Cubic Yard |
| S608.57 | Paver Edge Restraint | Linear Foot |
| S608.5801 | Concrete Step | Cubic Yard |
| S608.5802 | Concrete Step (Including Excavation) | Cubic Yard |
| S608.5803 | Concrete Step (Including Excavation and Subbase Course) | Cubic Yard |

REVISED May 1, 2013

REV. 2/14

# SECTION S609 - CURB

## S609-1 DESCRIPTION

Work consists of installation of new curb and resetting of existing curb as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addenda.

## S609-2 MATERIALS

### S609-2.01 General

Materials are to be in accordance with NYSDOT Section 700 Materials Details:

| | |
|---|---|
| Concrete Repair Material | 701-04 |
| Concrete Grouting Material | 701-05 |
| Anchoring Material – Chemically Curing | 701-07 |
| Premoulded Resilient Joint Filler | 705-07 |
| Masonry Mortar | 705-21 |
| Bar Reinforcement, Grade 60 | 709-01 |
| Stone Curb Anchor Bars | 709-07 |
| Quilted Covers (for Curing) | 711-02 |
| Plastic Coated Fiber Blankets (for Curing) | 711-03 |
| Polyethylene Curing Covers (White Opaque) | 711-04 |
| Membrane Curing Compound | 711-05 |
| Precast Concrete Curb | 714-04 |
| Structural Steel | 715-01 |
| Galvanized Coatings and Repair Methods | 719-01 |
| Epoxy Resin System | 721-01 |

### S609-2.02 Concrete Cradle and Backing

Concrete cradle and backing is to be Class L in accordance with Section S504 Portland Cement Concrete.

### S609-2.03 Stone Curb

A. General

Top width of curb will be 4 or 5 inches as required in Contract Documents.

Following dimensional requirements are based on 4 and 5 inch width curb. Dimensional requirements for other width curb will be as required in Contract Documents.

Stone curb is to be either sandstone, bluestone or granite, and is to come from approved quarries. Stone is to be sound and durable, free from seams which impair its structural integrity and of smooth splitting and machining character. Natural color variations that are characteristic of overall deposit will be permitted. Acceptance of any curb containing discoloration other than cleanable surface stains is subject to approval by Project Manager.

B. Dimensional Requirements

1. *General.* Curb is to be cut to conform to shape and size required in Contract Documents.

2. *Length.* Curb is to be furnished in minimum lengths of 3 feet.

3. *Width*. Top width is to be 4 or 5 inches. Bottom width is to be 4 inches minimum for 2/3's of length of individual piece of curb.

4. *Depth*. Curb is to have depth of 16 inches, plus or minus 1 inch. Header curb is to have depth of 12 inches.

5. *Radius Curb*. Radius curb with radius of 100 feet or less is to be shaped to required curvature with ends cut on radial lines. Radius curb with radius of 2 feet or less is to be shaped from solid block cut to required arc with radial joints.

6. *Bridge Curb*. Bridge curb is to have top width of 4 or 5 inches, with depth of 12 inches. Provide two 3/4 inch diameter anchor holes drilled into back of bridge curb, pitched downward at 45° angle, 3 inches deep. Each anchor hole is to be 12 inches from each end of bridge curb, 5 inches down from top of bridge curb. Anchor bars are to be 12 inch long, 1/2 inch diameter galvanized bent steel bar.

7. *Mountable Curb*. Mountable curb is to have top width of 4-1/2 inches, including width of beveled edge; with depth of 16 inches, plus or minus 1 inch. Bottom width is to be 4 inches minimum for 2/3's of length of individual piece of curb.

C. Finish

1. *Top Surface*. Top surface is to be finished to approximately true planes. When sawed, hammered or thermal finishes are applied, no projection or depression is to be greater than 3/16 inch. Saw marks normal to sawing process will be permitted if within 3/16 inch tolerance.

2. *Arris Lines*. Top front arris line is to be straight and true with no variations greater than 1/8 inch as measured from 2 foot straightedge placed along arris line. Exposed arris lines at joints are not to project beyond plane of split face, and are not to fall under plane of split face more than 1/8 inch.

3. *Front Exposed Face*. Front exposed face of straight curb, when split, is to have no projection greater than 3/4 inch or depression greater than 1/2 inch as measured from vertical plane passing through top front arris line at top of split face for distance of 8 inches down from top. Front exposed face of radius curb, when split, is to have no projection greater than 1-1/4 inches. Front face of curb below 8 inches down from top is to have no projection or depression greater than 1 inch as measured in same manner.

4. *Back Surface*. Back surface is to have no projection or depression which exceeds batter of 1 inch in 3 inches for distance of 3 inches down from top.

5. *Ends*. Ends are to be approximately square with plane of exposed curb surface. Ends are to be finished so that when curb is set no space greater than 1/2 inch, or less than 1/8 inch, is to show in joints for full length of exposed joint. Curb ends below pavement surface are not to break over 6 inches from joint plane.

6. *Drill Holes*. Drill holes will not be permitted in exposed portion of curb surface.

7. *Transition and Header Curb for Driveway – Top Front Edge*. Top front edge of transition and header curbs to be used for driveways is to be machine rounded with 1/2 inch radius. Radius is to present continuous smooth transition between top and front surface of curb without any evidence of lip, nor is it to have any depressions, projections, or sharp edges.

Only transition and header curbs that are to be used for driveways are to be provided with top front edge rounded. All other lengths of standard curb, radius curb, and transition and header curb to be used for sidewalk access ramps, are not to be rounded.

D. Exceptions to Finish Requirements - Mountable Curb

1. *Arris Lines*. Arris lines at joints are not to project beyond plane of split face, and are not to fall more than 1/4 inch under plane of split face.

2. *Front Exposed Face.* Front exposed face is to be smooth and quarry split to an approximately true plane, have no projection or depression greater than 1 inch as measured from 2 foot straightedge placed as closely as possible to plane of curb face.

3. *Ends.* Ends are to be approximately square with plane of exposed curb surface. Ends are to be finished so that when curb is set no space greater than 7/8 inch is to show in joints for full width of face

4. *Drill Holes.* Drill holes will be permitted along bottom edge of curb, and are not to be more than 3-1/2 inches long and 1/2 inch deep.

E. Basis of Acceptance

Curb will be inspected by Project Manager for compliance with material requirements upon arrival at Project site. Curb not in compliance with material requirements will be rejected.

**S609-2.04 Concrete Curb**

A. Conventionally Formed

Conventionally formed concrete curb is to be Class K concrete in accordance with material requirements, mix preparation and manufacturing of concrete per Section S504 Portland Cement Concrete.

B. Machine Formed

Machine formed concrete curb is to be Class J concrete in accordance with material requirements, mix preparation and manufacturing of concrete per NYSDOT Section 501 Portland Cement Concrete - General.

**S609-2.05 Steel Curb**

Steel plate and channel is to be in accordance with *New York State Steel Construction Manual* and NYSDOT Section 715-01 Structural Steel.

Steel plate is to be 22 inches high, 3/8 inch thick, with width matching top width of adjacent curb . Steel plate is to be provided with 3/4 inch diameter hole, located 4 inches down from top, centered on plate.

Steel channel is to be C9X15 of variable length, with maximum length of 10 feet. Actual length of steel channel will be as required in Contract Documents.

**S609-2.06 Saw Cutting**

Saw cutting for pavement is to be in accordance with Section R622 Saw Cutting.

**S609-2.07 Pavement Restoration Materials**

Materials to be used are:

- Subbase material Type 1 and Type 2 in accordance with NYSDOT Section 304 Subbase Course
- Asphalt pavement courses in accordance with NYSDOT Section 402 Hot Mix Asphalt (HMA) Pavements, for following mixes: 37.5 F9 base course HMA 80 series compaction, 19 F9 binder course HMA 80 series compaction, and 9.5 F2 top course HMA 80 series compaction
- Concrete foundation for pavement, Class C in accordance with NYSDOT Section 503 Portland Cement Concrete Foundation for Pavement
- Tack coat is to be diluted or straight tack coat in accordance with Section S407 Tack Coat.

**S609-3 CONSTRUCTION DETAILS**

**S609-3.01 General**

Prior to excavation, existing pavement is to be saw cut full depth in accordance with Section R622 Saw Cutting.

Trench for installation of curb is to be as narrow as possible to accomplish work and to minimize disruption to existing tree root systems. Where it is necessary to cut existing tree roots for installation of curb, tree roots are to be cut with sharp cutting tools, and according to current arboricultural standards. Cut tree roots are to be removed and disposed of off-site.

Remaining tree roots that are exposed are to be re-buried as soon as possible. Until tree roots can be re-buried, exposed tree roots are to be covered with wet burlap to keep tree roots from drying out. Burlap is to be kept wet until tree roots can be re-buried.

Curb is to be set true to line and grade, and within continuous concrete cradle. Dry mix concrete is to be used for portion of concrete cradle located under bottom of curb. Wet mix concrete is to be used for portion of concrete cradle located behind curb. Subbase materials beneath curb are to be thoroughly compacted to provide firm and uniform bearing.

After curb has been installed and concrete cradle set, remaining portion of excavation behind curb is to be backfilled with either embankment in place, or granular backfill material, placed to within 4 inches of finished grade and material thoroughly compacted. Embankment in place is to be locally excavated material determined by Project Manager to be suitable for use as backfill. Embankment in place material is to consist of hard durable materials and soil, free of organic material, debris, clay, frozen material and stone having any dimension greater than 4 inches. Granular backfill material is to be in accordance with subbase course material being utilized for pavement restoration.

**S609-3.02 Stone Curb**

A. General

Adjoining pieces of curb are not to touch each other, with space between individual pieces of curb not to be less than 1/8 inch or more than 1/2 inch.

Joints between individual pieces of curb are to be filled with cement mortar for minimum of 12 inches down from top of curb. Top and exposed front face of joint are to be neatly pointed, flush with curb surfaces, and cleaned of all excess mortar.

Where standard curb butts up to driveway transition curb that has top front edge rounded, corner of standard curb is to be redressed by grinding to eliminate any sharp protuberance.

Curb is to be kept clean, in its alignment, and protected from damage until completion of Contract.

B. Sidewalk Access Ramps

When establishing curb elevations they may be adjusted so as to eliminate any low point and ponding of water that would occur within area of sidewalk access ramp. It is extremely important that all ponding of water within sidewalk access ramp area be eliminated, and intended use of sidewalk access ramp not be compromised by ponding of water.

C. Bridge Curb

Prior to placement of concrete backing, implant anchor bars into pre-drilled anchor holes. Protruding portion of anchor bars are to be be encased within concrete backing.

D. Resetting Existing Curb

Only existing curb that is in good condition and is approved by Project Manager as acceptable is to be reset. Existing curb is to be solid, without being cracked, chipped, or show any other forms of deterioration.

Carefully excavate and remove existing curb to avoid any unnecessary breakage. Extraneous materials, including concrete, are to be removed from existing curb in such manner as to be non-deleterious to existing curb.

Removed curb is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Curb is to be placed on level ground to provide even bearing across curb surface. Curb broken during excavation or salvage operations, or found to be unacceptable for reuse by Project Manager, is to be properly disposed of.

If necessary, top and ends of curb are to be redressed. Curb ends are to be redressed such as to provide for good fit with adjacent curb pieces.

Top front edge of existing stone curb that is to be used as transition and header curb for driveways, is to be rounded with 1/2 inch radius by grinding. Radius is to present continuous smooth transition between top and front surface of curb without any evidence of lip, nor is it to have any depressions, projections, or sharp edges.

**S609-3.03 Salvage Existing Curb**

Only existing curb that is in good condition and is approved by Project Manager as acceptable, is to be salvaged. Existing curb is to be solid, without being cracked, chipped, or show any other forms of deterioration. Existing curb to be salvaged could be either sandstone, bluestone, granite or medina stone curb.

Carefully excavate and remove existing curb to avoid any unnecessary breakage. Extraneous materials, including concrete, are to be removed from existing curb in such manner as to be non-deleterious to existing curb.

Removed curb is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Curb is to be placed on level ground to provide even bearing across curb surface. Curb broken during excavation or salvage operations, or found to be unacceptable for reuse by Project Manager, is to be properly disposed of.

Each individual piece of salvaged curb is to be labeled on top surface with yellow marking paint, indicating top width and running length. Radius curb is to be marked with radius size.

Salvaged curb is to be delivered to City's Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, (585) 428-7479. Street Maintenance Division requires minimum of 2 working days advance notice to make arrangements for delivery of salvaged materials.

When delivered, curb is to be stacked neatly and orderly, according to width, type and style, at location designated by City's Street Maintenance Division. Stacked curb is to be separated into layers using 2x2 wooden sticker strips.

**S609-3.04 Concrete Curb**

A. General

Concrete curb is to be either conventionally formed or machine formed to required size and shape.

Curing is to be in accordance with NYSDOT Subsection 502-3.11 Curing.

Concrete curb is to be kept clean, in proper alignment, and protected from damage until final acceptance of work.

Expansion joints are to be 3/4 inch in width, provided at 20 feet intervals, and formed with premoulded resilient joint filler. Premoulded resilient joint filler material is to be cut to conform to cross section of concrete curb. Additional expansion joints are to be provided at all immovable objects, and at expansion joints in concrete pavement.

B. Conventionally Formed Concrete Curb

Concrete curb is to be cast in segments having uniform length of approximately 10 feet. Segments are to be separated by construction joints, with provisions made at each joint for 1/4 inch expansion. When concrete curb is constructed next to concrete pavement, concrete curb construction joint is to line up with pavement joint.

Forms are to be steel or wood, straight, free from warp, and of such construction that there will be no interference to inspection for grade or alignment. All forms are to extend for full curb depth and are to be braced and adequately secured so that no displacement from alignment will occur during placing of concrete.

Concrete is to be placed in forms in accordance with NYSDOT Subsection 555-3.04 Handling and Placing Concrete, and are to be compacted with an approved, immersion type mechanical vibrator. Vibrator is to be of size and weight capable of thoroughly vibrating entire mass without damaging or misaligning forms. Forms are to be left in place until concrete has hardened sufficiently to permit removal without damaging concrete curb. Upon removal of forms, exposed face of concrete curb is to be immediately rubbed to uniform surface. No plastering will be permitted.

C. Machine Formed Concrete Curb

Concrete curb is to be machine formed to proper line and grade. Project Manager may require demonstration be performed of specific equipment proposed to be used, to ensure that such equipment is capable of satisfactorily placing and forming concrete mix.

Contraction joints are to be formed or saw cut every 10 feet, to depths slightly below surface of adjacent pavement, and are to be left unfilled. When concrete curb is constructed next to concrete pavement, concrete curb construction joint is to line up with pavement joint.

**S609-3.05 Modify Existing Curb - Saw Cutting**

Existing curb is to be modified to form driveway or sidewalk access ramp curb opening.

Power saw with diamond or abrasive blades are to be those designed for such work. Power saw is to be capable of saw cutting curb horizontally, and if necessary at varying degrees of pitch to match slopes of driveway or sidewalk access ramp.

After excavating area behind existing curb, saw cut existing curb horizontally to reshape top of existing curb to required configuration. Saw cutting is to be done for full width of existing curb, to depth sufficient to reform top of existing curb, and along neat, straight lines. Cut pieces are to be properly disposed of.

Saw cut portion of curb is to be milled or ground finished to smooth level surface free from burrs, nicks, or other markings or damage from saw cutting operation. Existing joints are to be re-pointed with masonry mortar mix.

Top front edge of existing curb that is to be used as transition and header curb for driveways, is to be rounded with 1/2 inch radius by grinding. Radius is to present continuous smooth transition between top and front surface of curb without any evidence of lip, nor is it to have any depressions, projections, or sharp edges.

Care is to be taken so as not to disturb or damage any adjacent existing features that are to remain. Any adjacent existing features that are damaged by Contractor's operations are to be repaired at no additional cost.

Temporarily backfill excavated area with gravel until construction of driveway or sidewalk ramp begins.

**S609-3.06 Medina Stone Curb**

Medina stone curb is to be used to replace existing medina stone curb that is in poor condition, or to fill-in areas where curb is missing. Medina stone curb is to be either as excavated from Project site, or salvaged and imported from another location. Medina stone curb that is imported from another location is to conform in size and color to existing medina stone curb on Project site.

Only existing medina stone curb that is in good condition and is approved by Project Manager as acceptable, is to be salvaged. Existing curb is to be solid, without being cracked, chipped, or show any other forms of deterioration.

Carefully excavate and remove existing medina stone curb to avoid any unnecessary breakage. Extraneous materials, including concrete, are to be removed from existing curb in such manner as to be non-deleterious to existing curb.

Removed medina stone curb is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap. Curb is to be placed on level ground to provide even bearing across curb surface. Curb broken during excavation or salvage operations, or found to be unacceptable for reuse by Project Manager, is to be properly disposed of.

If necessary, top and ends of curb are to be redressed. Curb ends are to be redressed such as to provide for good fit with adjacent curb pieces.

Medina stone curb is to be set in accordance with Subsections S609-3 Construction Details.

**S609-3.07 Steel Curb**

Steel curb is to be installed in front of selected trees to minimize disruption of tree root system. An opening is to be left in curb line large enough to accommodate installation of steel curb. Piece of steel curb is to be centered on tree as much as practical, making allowances and adjustments as necessary to accommodate any adjacent driveway. Maximum length of opening and steel curb section will be 10 feet.

Steel plates are to be anchored to end of stone curb by use of rebar and epoxy resin system, installed thru steel plate and into end of stone curb. Adjacent pieces of stone curb are to be pre-drilled with 3/4 inch hole to align with hole drilled in steel plate. After installation, steel plate is to abut tightly with stone curb. Bottom of steel plate is to be encased minimum of 6 inches with same wet mix concrete cradle material used for stone curb backing. Wet mix concrete cradle is not to be placed adjacent to cut tree roots.

Steel channel section is to be welded to steel plate, and is to be set true to line and grade. Galvanized areas damaged by welding operation are to be repaired.

Additional granular backfill material is to be used to fill in spaces beneath and behind steel curb, and thoroughly compacted.

**S609-3.08 Reset Existing Steel Curb**

Salvage only existing steel curb pieces that are in good condition, and are approved by Project Manager as acceptable to be reset. Steel curb that is salvaged is to be solid, without being cracked, or show any other forms of deterioration.

Steel curb is to be carefully excavated and removed. Extraneous materials including concrete, are to be removed from steel curb. Steel curb is to be stored at location that is safe and secure from damage by Contractor's ongoing operations, and from vandalism, theft or other mishap.

Steel Curb is to be reset in accordance with Subsection S609-3.07 Steel Curb.

**S609-3.09 Curb (CR Curb)**

A. General

This section covers work to install CR curb along an existing street to re-define pavement edge. Existing street pavement edge may already consist of curb or concrete gutters, or may be unimproved without any definition.

CR curb items include all work necessary to layout and install curb, complete with full pavement restoration section. Overall pay limits of CR curb items and pavement restoration section will be as required in Contract Documents.

CR stone curb and CR steel curb are to be installed in accordance with Subsection S609-3 Construction Details.

B. Layout

City will pre-set alignment points, such as PK nails/tacks, along centerline of existing pavement. Alignment points will be set approximately every 50 feet and at any critical break points. Alignment points will be used to establish center of proposed improvements, with new curb line generally being equidistant from centerline of pavement. Initial curb alignment will be based on offsets from alignment points, and existing pavement crown line.

Stake curb alignment with iron pins and string line to initial offsets and existing pavement elevations, to establish preliminary grade and top of curb elevations. In establishing top of curb elevations, Contractor is to take into account that City is standardized on basic curb reveal of 0.60 feet (7-1/4 inches). Deviations from this standard may be made, but only to accommodate existing elevations and drainage, and only as approved of by Project Manager. Stakeout is to be done minimum of 24 hours prior to installation of curb, and may be done either before or after excavation for curb is done. Stakeout is to be done in accordance with NYSDOT Subsection 625-3.01 Survey Operations.

Iron pins are to be set at maximum intervals of 25 feet and at any critical break points. After installation of iron pins and string line, Contractor is to work with Project Manager to make adjustments to basic curb grade line to fit existing conditions and elevations. Adjust string line as necessary and excavate or fill excavated curb subgrade to establish required curb grade. Maintain final curb grade line alignment and elevations until curb installation, and if necessary re-stake curb alignment for actual installation. String line between iron pins should not be left overnight.

Loss of alignment information will not be cause for claim for delay to re-establish alignment during curb installation.

C. Pavement Restoration

Pavement restoration section may consist of either concrete or asphalt base, as required in Contract Documents. Pavement restoration section will be complete, including subbase courses; either class C concrete foundation or asphalt base course; asphalt binder course; asphalt top course; and asphalt tack coat.

### S609-3.10 Pavement Restoration and Cleanup

After completion of curb work, existing pavement areas removed and/or disturbed by work are to be restored.

Use asphalt cement joint filler material to cap seam asphalt pavement joints.

After completion of work, and as directed by Project Manager, clean street and all other areas disturbed by work. All debris, unused materials and equipment is to be removed and properly disposed.

## S609-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of linear feet of curb installed, reset, salvaged or saw cut as measured along top front arris line of curb to nearest tenth (0.10) of foot.

## S609-5 BASIS OF PAYMENT

### S609-5.01 General all Items

Unit price bid for all items includes cost of: trimming and maintaining tree root systems; gravel necessary to adjust subgrade elevation; select backfill material; granular backfill material; cleanup including removing and disposing all debris and unused materials; and furnishing all labor, material and equipment necessary to complete work.

Overall pay limits will be as required in Contract Documents.

Curb radii with radius of 100 feet or less, including transition and header curb which falls within confines of curb radii, will be measured and paid as radius stone curb.

Curb radii with radius of more than 100 feet, will be measured and paid as (straight) stone curb, or transition and header curb for driveway.

Payment will be made only after all of curb joints have been properly pointed.

**S609-5.02 Stone Curb**

Unit price bid also includes cost of: furnishing and installing stone curb; steel anchor rods for bridge curb; concrete cradle; cement mortar; and pointing of joints.

Unit price bid also includes cost of: grinding corner of stone curb that butts up to driveway transition curb that has top front edge rounded, to eliminate any sharp protuberance.

Transition and header curb for driveways will be paid for under separate bid item.

**S609-5.03 Radius Stone Curb**

Unit price bid also includes cost of: furnishing and installing radius stone curb; grinding corner of radius stone curb that butts up to driveway transition curb that has top front edge rounded; concrete cradle; cement mortar; and pointing of joints.

Unit price bid also includes cost of: rounding top front edge of any transition and header stone curb for driveway that falls within limits of radius curb.

**S609-5.04 Transition and Header Stone Curb for Driveway**

Unit price bid also includes cost of: furnishing and installing stone curb; rounding top front edge of transition and header stone curb; concrete cradle; cement mortar; and pointing of joints.

**S609-5.05 Reset Existing Stone Curb**

Unit price bid also includes cost of: removing, cleaning, redressing, storing and reinstalling existing stone curb; rounding top front edge of any transition and header stone curb for driveway; steel anchor rods for bridge curb; concrete cradle; cement mortar; and pointing of joints.

**S609-5.06 Salvage Existing Curb**

Unit price bid also includes cost of: excavation; pavement saw cutting; removing, cleaning, redressing, storing, delivering, and stacking salvaged curb; disposing unsalvageable stone curb; handling; stockpiling; labeling; and wooden sticker strips.

**S609-5.07 Concrete Curb**

Unit price bid also includes cost of: furnishing and installing new concrete curb; joint dowels; expansion joints; bituminous joint filler; forms; and finishing of concrete surface including rubbing and curing materials.

**S609-5.08 Modify Existing Curb - Saw Cutting**

Unit price bid also includes cost of: horizontal saw cut; removal and disposal of curb cuttings; refinishing saw cut portion of curb; cement mortar; repointing existing joints; and furnishing and placing temporary gravel backfill.

Unit price bid also includes cost of: rounding top front edge of transition and header stone curb for driveway.

**S609-5.09 Reset Existing Medina Stone Curb**

Unit price bid also includes cost of: excavation; removing, cleaning, redressing, storing and resetting existing medina stone curb; salvaging and importing existing medina stone curb from other locations; concrete cradle; cement mortar; and pointing of joints.

**S609-5.10 Steel Curb**

Unit price bid also includes cost of: furnishing and installing galvanized steel plate and channel; rebar; epoxy resin system; field galvanizing; welding; and concrete cradle.

**S609-5.11 Reset Existing Steel Curb**

Unit price bid also includes cost of: removing and disposing existing materials; removing, cleaning, storing and resetting existing galvanized steel plate and channel; rebar; epoxy resin system; field galvanizing; welding; and concrete cradle.

**S609-5.12 General all CR Curb Items**

Unit price bid for all CR curb items also includes cost of: survey work necessary to establish, re-establish, adjust and maintain curb alignment and elevations; pavement saw cutting; removing and disposing existing material; concrete cradle; embankment in place; asphalt cement joint filler; excavation; backfill; and pavement restoration.

Overall pay limits will be as required in Contract Documents.

Curb radii with radius of 100 feet or less, including transition and header curb which falls within confines of curb radii, will be measured and paid as radius stone curb (CR Curb).

Curb radii with radius of more than 100 feet, will be measured and paid as (straight) stone curb (CR Curb), or transition and header curb for driveway (CR Curb).

Payment will be made only after curb installation and pavement restoration work have been satisfactorily completed, and all of curb joints properly pointed.

Underdrain will be paid for under separate bid item.

**S609-5.13 Excavation, Backfill, Pavement Base Restoration and Pavement Restoration – all Items**

Excavation, backfill and either pavement base or pavement restoration, will be paid for under separate bid items or included in unit price bid for item as indicated in item description.

Excavation that is included in bid item does not include rock excavation. Rock excavation will be paid for under separate bid item.

Where bid item includes cost of pavement base restoration, pavement base may consist of either concrete base or asphalt base course, as required in Contract Documents. Unit price bid will be same regardless of which type of pavement base is used, and bid items will include cost of: subbase courses type 1 and type 2; either Class C concrete foundation or asphalt base course.

Where bid item includes cost of pavement restoration, pavement base may consist of either concrete base or asphalt base course, as required in Contract Documents. Unit price bid will be same regardless of which type of pavement base is used, and bid items will include cost of: subbase courses type 1 and type 2; either Class C concrete foundation or asphalt base course; asphalt binder course; asphalt top course; and asphalt tack coat.

Payment will be made under:

*Note: XX in bid item number and X" in item description represents new curb top width other than standard 5 inch. i.e.: 8 inch curb would be bid as S609.4308 8" Stone Curb.*

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S609.2304 | 4" Stone Curb | Linear Foot |
| S609.2305 | 5" Stone Curb | Linear Foot |
| S609.2404 | 4" Radius Stone Curb | Linear Foot |
| S609.2405 | 5" Radius Stone Curb | Linear Foot |
| S609.2501 | Mountable Stone Curb | Linear Foot |
| S609.2601 | Mountable Radius Stone Curb | Linear Foot |
| S609.27 | Reset Existing Stone Curb | Linear Foot |
| S609.3004 | 4" Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.3005 | 5" Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.3104 | 4" Radius Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.3105 | 5" Radius Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.3202 | Mountable Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.3302 | Mountable Radius Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.340101 | Reset Existing Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.35 | Salvage Existing Curb | Linear Foot |
| S609.36 | Concrete Curb | Linear Foot |
| S609.37 | Precast Concrete Curb | Linear Foot |
| S609.380101 | Concrete Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.40 | Modify Existing Curb - Saw Cutting | Linear Foot |
| S609.410201 | Reset Existing Medina Stone Curb | Linear Foot |
| S609.410301 | Reset Existing Medina Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.43XX | X" Stone Curb | Linear Foot |
| S609.44XX | X" Radius Stone Curb | Linear Foot |
| S609.45XX | X" Mountable Stone Curb | Linear Foot |
| S609.46XX | X" Mountable Radius Stone Curb | Linear Foot |
| S609.4702XX | X" Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.4802XX | X" Radius Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.4902XX | X" Mountable Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.5002XX | X" Mountable Radius Stone Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.51 | Steel Curb | Linear Foot |
| S609.52 | Reset Existing Steel Curb | Linear Foot |
| S609.5301 | Steel Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.5401 | Reset Existing Steel Curb (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.5504 | 4" Transition and Header Stone Curb for Driveway (Including Rounding) | Linear Foot |
| S609.5505 | 5" Transition and Header Stone Curb for Driveway (Including Rounding) | Linear Foot |
| S609.5604 | 4" Transition and Header Stone Curb for Driveway (Including Rounding) (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |
| S609.5605 | 5" Transition and Header Stone Curb for Driveway (Including Rounding) (Including Excavation, Backfill and Pavement Base Restoration) | Linear Foot |

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S609.6004CR | 4" Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6005CR | 5" Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6104CR | 4" Radius Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6105CR | 5" Radius Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6202CR | Mountable Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6302CR | Mountable Radius Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6401CR | Reset Existing Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6501XXCR | X" Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6601XXCR | X" Radius Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6701XXCR | X" Mountable Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.6801XXCR | X" Mountable Radius Stone Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.7001CR | Steel Curb (CR Curb) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.7101CR | Reset Existing Steel Curb (CR Curb) (Including Excavation, Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.7204CR | 4" Transition and Header Stone Curb for Driveway (CR Curb) (Including Rounding) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |
| S609.7205CR | 5" Transition and Header Stone Curb for Driveway (CR Curb) (Including Rounding) (Including Excavation, Backfill and Pavement Restoration) | Linear Foot |

REVISED February 25, 2014

# SECTION S610 - LANDSCAPE

## S610-1 DESCRIPTION

Work consists of establishment and maintenance of turf in lawn areas, and miscellaneous treatment of planting areas as required in Contract Documents and as directed by Project Manager.

## S610-2 MATERIALS

### S610-2.01 Turf Establishment

Contractor must provide following certifications to Project Manager:

- Certification statement from grass seed mixture vendor stating botanical and common names, percentage by weight, and percentage of purity and germination for each type of grass seed provided in mixture
- Certification statement from material manufacturer for fertilizers, soil amendments, herbicides and pesticides, and any other chemicals that may be required, including instructions for proper application method
- Certification statement from material manufacturer for turf mulch and tackifier

Pesticide appliers must be licensed and fully trained in use and application of pesticides. In no case is Contractor to permit use or application of any pesticide material by non-approved, unlicensed and untrained personnel, or by any non-approved application method.

### S610-2.02 Topsoil Material

Topsoil material is to be in accordance with requirements of Section S613 Topsoil.

### S610-2.03 Soil Amendments

Soil amendments that are to be used for adjustment of soil chemistry are to be standard commercial type including but not limited to ground limestone, gypsum, products containing phosphorus, potassium, sulphur, et cetera.

### S610-2.04 Limestone

Limestone is to be standard, pulverized commercial type having minimum total neutralizing value of 88 percent calcium carbonate equivalence, which is to be applied at rate sufficient to bring pH of topsoil material to range of 6.0 to 7.5, as determined by testing lab.

### S610-2.05 Grass Seed Mixture

Grass seed is to be fresh, clean or new crop seed. Grass seed mixture is not to contain more than 0.10 percent poa annua, is to be free of bent grass and noxious weed seed, and is to be composed of varieties listed in Grass Seed Mixture table, or approved equivalent. Grass seed mixture is to be composed to specified species proportions by weight, and tested to minimum percentages of purity and germination.

Equivalent grass seed varieties proposed for use are to be branded grass seed varieties that have been tested by an independent or New York State certified testing organization, and have shown average or better performance under low maintenance conditions in northeastern region of United States.

Generic or non-branded grass seed varieties are not to be used. Fine fescues should be combination of rhizomatous creeping red fescue and some chewings fine fescue varieties.

| Grass Seed Mixture | | |
|---|---|---|
| **Species** | **Maximum Percent of Mix by Weight** | **Varieties** |
| Fine Fescue | 35% | creeping red fescue varieties: dawson, flyer, jasper, seabreeze, shademaster II (rhizomatous chewings fine fescue variety may be used in combination with creeping red fescue variety, but is not to exceed 1/2 of fine fescue blend) |
| Kentucky Bluegrass | 30% | baron, baronie, bartitia, caliber, canterbury, dragon, eagleton, kenblue, northstar, rambo |
| Perennial Ryegrass | 20% | blazer III, brightstar II, line drive, monterey, palmer III, panther, secretariat, SR4200, top hat |
| Alkali Grass | 15% | fults, SL-633 (variety of above species that performs similarly in alkali soil turf grass tests may be substituted) |

**S610-2.06 Turf Fertilizer**

Apply any fertilizer necessary to produce an acceptable uniform viable turf.

**S610-2.07 Turf Mulch and Mulch Tackifier**

Turf mulch is to be wood fiber hydromulch with mulch tackifier.

Straw mulch is to be clean oat or wheat straw well seasoned before baling, free from mature seed bearing stalks, foreign matter or roots of prohibited or noxious weeds. Mulch tackifier is to be vegetable-based, PAM-based, or other non-asphaltic tackifier suitable for an urban street environment.

Hay mulch, plastic mulch, and mulches derived from or contaminated by insulation manufacture, are not to be used.

**S610-2.08 Weed Killer**

Weed killer is to be registered weed control product that complies with applicable Federal, State, and local laws and regulations.

**S610-2.09 Shredded Bark Mulch**

Shredded bark mulch is to be maximum 1/2 to 1 inch in size, partially decomposed, free of disease and debris, with no green leaf matter or sprouts.

**S610-2.10 Pea Stone**

Pea stone is to be washed, well graded, free from organic or other deleterious materials and is to meet following gradation requirements:

| Screen Size | Percent Passing by Weight |
|---|---|
| 1/2 inch | 100% |
| 1/4 inch | 85 to 100% |
| 1/8 inch | 0 to 15% |

Material will be accepted on basis of Magnesium Sulfate Soundness Loss after 4 cycles of 20 percent or less.

Not more than 30 percent, by weight, of particles retained on 1/2 inch sieve is to consist of flat or elongated particles. Flat or elongated particle is defined as one which has its greatest dimension more than 3 times its least dimension. Acceptance for this requirement will normally be based on visual inspection by Project Manager. When City elects to test for this requirement, material with percentage of flat or elongated particles that exceeds maximum 30 percent will be rejected. All material is to meet specified gradation requirements prior to placement. All processing of material is to be completed at originating source.

Materials are to be stockpiled. Stockpile construction requirements, sampling, testing and acceptance or rejection procedures will be as stipulated in appropriate NYSDOT departmental publication.

**S610-2.11 Water**

Water is to have pH of between 6.0 and 8.0, and is to be free of oil and any other substance that may be harmful to plant growth.

## S610-3 CONSTRUCTION DETAILS

**S610-301 General**

Minimum of 14 days prior to commencing work, written schedule of planned operations for seeding/reseeding of lawn areas, application of fertilizers and weed killers is to submitted to Project Manager for approval. Such written schedule is also to include specific methods and materials to be used.

At least 5 days prior to application, written notice is to be provided to Project Manager and residents of intent to apply grass seed, turf mulch and mulch tackifier, fertilizers and/or weed killers. Written notice to residents is to be in format as approved of by Project Manager.

Do not apply weed killer at locations where resident objects to such application of weed killer.

Existing surface areas are to be free of all undesirable material which is larger than 1 inch in its greatest dimension. Such undesirable materials are, but not limited to: refuse; paving materials such as concrete, asphalt, brick; materials which are toxic to plant growth and grass seed; subsoil; woody vegetation, stumps, roots, brush; clods, hard lumps, and rocks. Sod and herbaceous growth such as grass and weeds need not be removed from existing soil, but are to be thoroughly broken up and mixed into overall soil material. All embedded foreign objects are to be removed and resultant hole filled-in with topsoil material. Contractor is to remove and dispose of any undesirable materials prior to treating surface area.

Existing surface is to be regraded as necessary to be uniform in contour and to meet required grades and cross-slopes without any irregularities. Finished grades and cross-slopes are to be uniformly sloping between tops of adjacent features such as sidewalks, driveways, curbs, or other existing lawn areas. Final surface contour is to be checked for accordance to required grades and cross-slopes by use of surveying instruments or other method as approved by Project Manager. Eliminate irregularities which form low areas and may tend to pond water when regrading, or by filling-in low area with either topsoil or embankment in place material.

Excavation and disposal is to be in accordance with NYSDOT Section 203 Excavation and Embankment. Properly dispose of all excavated material off site within 24 hours. Stockpiling of excavated material at project site is not allowed.

Buildings, paved areas, plantings and other non-seeded areas are to be protected from any excessive over-spray of any of materials that are being applied.

**S610-3.02 Tree Protection**

Existing trees and tree roots within project limits are to be protected from damage by construction activities. Construction or excavated materials are not to be placed or stockpiled within limits of canopy of any existing tree, to prevent smothering of existing tree root system. Vehicles and other construction equipment are not to be parked on any tree root system, nor left running (idling) under limits of canopy of any existing tree.

Where cutting of existing tree roots is necessary, it is to be done with sharp cutting tools. Exposed tree roots are to be re-buried as soon as possible. Until exposed tree roots can be re-buried, exposed tree roots are to be covered with wet burlap. Burlap is to be kept wet until exposed tree roots can be re-buried.

Existing trees that are damaged by construction activities are to be repaired within 72 hours using current arboricultural standards. Those existing trees that are determined by City Forester to be damaged beyond repair, are to be removed and replaced by Contractor.

Topsoil that is placed around an existing tree is not to be placed any higher than 3 inches of original surface area at base of existing tree.

**S610-3.03 Soil Amendments**

Soil amendments are to be applied at rate sufficient to bring chemistry of existing soil to an pH acceptable range as determined by testing lab. Soil amendments are to be applied in accordance with manufacturer's instructions for safe and effective application.

**S610-3.04 Topsoil and Compaction**

Topsoil material is to be placed and compacted in accordance with Section S613 Topsoil.

**S610-3.05 Surface Preparation for Turf Establishment**

Finished surface is to be flush with, or not greater than 1/4 inch above finished surface of adjacent surfaces. Prior to seeding, existing surface is to be prepared per Subsection S610-3.01 General.

Finished surface is to be uniform and smooth, and in accordance with required grades and cross-slopes. Finished surface is not to have any irregularities greater than 1 inch as measured from 10 foot long straight edge laid on finished surface. In built-up and residential areas, this may require that existing surface be regraded and hand raked. Topsoil material is to be used to adjust existing surface to required degree of smoothness and uniformity.

Finished surface is to be maintained to required grades and cross-slopes, placing any additional topsoil material that may be necessary to correct any irregularities that may have developed. If additional topsoil material is required, surface is to be properly prepared to ensure cohesiveness between materials.

Tops and bottoms of all slopes are to be rounded to blend into each other and into existing adjacent surface areas so as not to leave any noticeable sharp breaks. Cuts and fills are to have maximum slope of 3 feet horizontally to 1 foot vertically.

Surface preparation work is to in accordance with Method 1, unless Method 2 has been specifically required in Contract Documents. Regardless of which method is used, finished surface of any area that is to be seeded is not to be rougher, or more uneven, than any adjacent existing lawn areas.

A. Method 1

Surface area to be seeded is to be scarified to depth of 1/2 inch to break-up surface crust immediately before seeding. undesirable materials are to be removed and properly disposed of off-site.

B. Method 2

Surface area to be seeded is to be harrowed, disced, or otherwise completely pulverized to state of tillage acceptable to Project Manager. Undesirable materials are to be removed and properly disposed of off-site.

**S610-3.06 Turf Establishment**

A. General

Utilize all measures as may be necessary to produce finished product that provides continuous blanket of turf, that demonstrates relatively uniform height that is free of undesirable grasses, weeds, molds, mosses, algae, lichens, disease, and other undesirable characteristics.

Within 2 days of having applied grass seed, Contractor is to provide written notice to residents on proper procedure for protecting and caring for seeded areas. Written notice to is to be in format as approved of by Project Manager.

Areas disturbed by construction activities that are not to be paved or otherwise landscaped, are to be fine graded and seeded.

B. Hydroseeding (Two Step Method)

Use hydromulcher (sprayer) and apply materials in accordance with manufacturer's recommendations. Apply materials at rate of application sufficient to meet required performance criteria, but not less than following:

- Grass seed - rate recommended by manufacturer
- Wood fiber mulch - 1,500 pounds per acre
- Mulch tackifier - rate recommended by manufacturer

C. Dry Seeding

Perform grass seeding operations when soil, wind, and other conditions are appropriate, at rate of application sufficient to meet required performance criteria, but not less than rate recommended by grass seed vendor.

D. Straw Mulch

Straw mulch may be used in lieu of hydromulch and only if approved for use by Project Manager.

Straw mulch is to be placed uniformly in continuous blanket on seeded areas within 24 hours of having placed seed, and anchored with liquid tackifier.

Apply materials at rate of application sufficient to meet required performance criteria, but not less than following:

- Straw mulch - 2-1/2 tons per acre, or two 50 pound bales per 1,000 square feet of area
- Liquid tackifier - rate recommended by manufacturer

**S610-3.07 Weed Killer**

Apply an approved weed killer as necessary to help produce relatively weed free turf. Weed killer may be used only after having received written approval from Project Manager.

Weed killer is to be applied according to manufacturer's safety and application recommendations, and in compliance with all applicable Federal, State and local ordinances, laws and regulations for public notice and methods of application.

**S610-3.08 Turf Maintenance**

Maintain all seeded areas until they have obtained continuous blanket of turf that is of relatively uniform height that is free of undesirable grasses, weeds, molds, mosses, algae, lichens, disease, and other undesirable characteristics, and has been accepted by City.

Maintenance will include but is not limited to: soil amendment; fertilizing; watering; de-weeding; mowing; applications of herbicides, fungicides, insecticides; regrading and reapplication of topsoil; and reseeding. Areas of topsoil or seeded areas that become washed out, eroded, rutted, damaged, settled below required grades, or achieve unsatisfactory germination, are to be repaired.

Water is to be applied to adequately maintain surface soil moisture for proper seed germination. After seed has germinated, continue to regularly water seeded area until initial growth of turf has been accepted by City.

Until initial growth of turf has been accepted by City, turf areas are to be mowed as frequently as necessary to maintain maximum turf height of 4 inches and to minimize weed growth. No more than 1/3 of height of grass blade is to be mowed off during any one mowing operation.

After reasonable period of time has elapsed, if Project Manager determines that any seeded area has failed to have satisfactorily produced thriving turf due to seeding operations and/or lack of proper maintenance, Contractor is to repeat all of work required by this specification to repair such failed area until satisfactory growth of turf has been established.

Acceptance of established turf by City will be based on turf having achieved performance standards in accordance with Subsection S610-3.09 Performance Acceptance Measures.

**S610-3.09 Performance Acceptance Measures**

Only turf that demonstrates that it has achieved required growth and quality characteristics as outlined in this specification to satisfaction of Project manager, will be accepted by City. Factors for assessing turf will include, but not be limited to: topsoil pH; uniformity of turf color, texture, height and density of growth; overall coverage of areas designated for seeding; absence of undesirable grasses, weeds, molds, mosses, algae, lichens, disease, and other undesirable characteristics; and uniformity of slope and overall drainage of surface.

**S610-3.10 Shredded Bark Mulch/Pea Stone**

If required, weed fabric barrier is to be placed over area to be treated before shredded bark mulch/pea stone is placed. Shredded bark mulch/pea stone is to be uniformly spread to required thickness and lightly compacted.

Shredded bark mulched/pea stone area is to be cared for until final acceptance of project. Such care is to consist of providing protection against pedestrian traffic by installing approved warning signs and barricades. Treated areas damaged by erosion, wind, fire or other causes are to be repaired as soon as possible to reestablish condition and grade of area prior to placing shredded bark mulch/pea stone, then retreated with new shredded bark mulch/pea stone.

**S610-3.11 Development Site Preparation**

Development site is to shaped and graded to final lines and grades as required in Contract Documents, and as required by Project Manager. Clean topsoil material stripped during shaping and grading operation is to be stockpiled on-site. Each stockpile is to contain at least 200 cubic yards of topsoil material, is to be at least 4 feet high, and is to be trimmed, shaped and maintained to uniform surfaces and slopes. Straw bales are to be placed around entire bottom of stockpile and staked to ground to help control erosion.

Stockpile is to be either thoroughly covered with weatherproof material, or seeded. Until stockpile has been adequately covered, periodically water down stockpile to minimize dust erosion. Weatherproof material used to cover stockpile is to be staked, tied, or otherwise weighted down. Weatherproof material is to be maintained as necessary by reaffixing any areas that become loose, replacing any areas where weatherproof material becomes torn, damaged or otherwise missing. Stockpile that is to be seeded, is to be seeded and maintained per requirements of this specification.

After all other phases of work are completed, all ground areas that are to be seeded are to be prepared in accordance with this specification. If there is an insufficient amount of stockpiled topsoil material available, supply and spread new topsoil material in accordance with Section S613 Topsoil.

Any excess stockpiled topsoil material will become property of and maintained by Developer(s).

### S610-3.12 Water

Water may be brought to project site and applied via water truck, or may be applied through use of any existing hydrant. Before being allowed to use water from existing hydrants, obtain necessary permit(s), and install backflow prevention device and approved water meter.

Water is to be applied in such manner that required volume of water being applied does not damage, cause any erosion or otherwise disrupt any existing vegetation, mulch, plant saucers, sod, or areas of stockpiled topsoil material.

### S610-3.13 Clean-up and Repair

Within 72 hours of having completed any of miscellaneous landscape operations, or of having received written notification of any damage, clean and/or repair all adjacent surfaces to treated areas that have become messed-up or otherwise damaged by Contractor's ongoing operations. This includes but is not limited to removing all over-spray or scattered materials.

## S610-4 METHOD OF MEASUREMENT

### S610-4.01 Turf Establishment, Limestone

Quantity to be measured for payment will be number of square feet of surface area treated.

### S610-4.02 Shredded Bark Mulch and Pea Stone

Quantity to be measured for payment will be number of cubic yards of material placed.

### S610-4.03 Development Site Preparation

Quantity to be measured for payment will be on lump sum basis for each site.

### S610-4.04 Water

Quantity to be measured for payment will be measured in thousand (1,000) gallon units of water applied, as determined by use of water meters, or by meters attached to water tanks/trucks.

## S610-5 BASIS OF PAYMENT

### S610-5.01 Hydroseeding and Seeding

Unit price bid includes cost of: notifications; surface preparation; removal and disposal of undesirable materials; grading; furnishing and applying soil amendments, seed, hydromulch, straw mulch, mulch tackifier, fertilizer, weed killer; watering; testing; permits, hydrant water meter, backflow prevention; mowing; site maintenance and protection; repair of treated areas until acceptance of resulting turf; and furnishing all labor, material, and equipment necessary to complete work.
No payment will be made under this work until an acceptable turf area has been satisfactorily produced throughout total project area, or in case of multi-street project, along an individual street segment. Acceptance of turf will be based upon having achieved performance criteria as specified in Subsection S610-3.09 Performance Acceptance Measures.

### S610-5.02 Shredded Bark Mulch and Pea Stone

Unit price bid includes cost of: surface preparation; removal and disposal of undesirable materials; grading; weed barrier fabric; furnishing and placing shredded bark mulch/pea stone; watering; protection; and furnishing all labor, material and equipment necessary to complete work.

**S610-5.03 Development Site Preparation**

Lump sum price bid includes cost of: shaping and grading development site; stockpiling stripped topsoil material; trimming, shaping and maintaining stockpiles; furnishing, placing and maintaining weatherproof material/hydroseed; furnishing, placing, staking and maintaining straw bales; watering; finish grading, compacting and maintaining ground areas; eliminating irregular areas; filling in low spots; removal and disposal of undesirable materials; and furnishing all labor, material and equipment necessary to complete work.

Additional topsoil material supplied will be paid for under separate bid item.

**S610-5.04 Limestone**

Unit price bid includes cost of: furnishing and applying limestone; and furnishing all labor, material and equipment necessary to complete work.

**S610-5.05 Water**

Unit price bid includes cost of: furnishing and applying water; and furnishing all labor, material and equipment necessary to complete work.

Payment will be made under:

*Note: XX in bid item number represents each individual development site. i.e.: S610.0901 Development Site Preparation (Clarissa Street).*

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S610.0502 | Hydroseeding | Square Foot |
| S610.0602 | Seeding | Square Foot |
| S610.07 | Shredded Bark Mulch | Cubic Yard |
| S610.08 | Pea Stone | Cubic Yard |
| S610.09XX | Development Site Preparation (Site) | Lump Sum |
| S610.10 | Limestone | Square Foot |
| S610.11 | Water | 1000 Gallons |

REVISED May 1, 2013

# SECTION S611 - PLANTING

## S611-1 DESCRIPTION

Work consists of furnishing and planting trees, shrubs, vines and ground cover as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYSDOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addenda.

Hereinafter, in general trees, shrubs, vines and ground cover will be referred to as plant materials.

## S611-2 MATERIALS

### S611-2.01 General

Plant materials are to be purchased directly from nursery growers located within east coast to mid-west regions of United States to ensure compatibility with local climatic conditions. Listing of nursery(s), including contact person, from which plant materials are being purchased is to be supplied to Project Manager within 14 calendar days of purchasing plant materials.

Plants are to be true to botanical name, grown in nurseries in USDA Zone 5 or colder and must meet standards of American Standard for Nursery Stock, latest edition as published by American Association of Nurserymen (AAN) of Washington, D.C.

Prior to delivery of plant materials to project site, City reserves right to inspect plant materials at nursery which are tagged for installation, and prior to digging of such plant materials. Plant materials which do not meet standards of quality and uniformity will be rejected. Such inspection and rejection may occur at nursery and/or project site. City will inspect replacement plant materials to ensure that they meet standards of quality and uniformity.

Balled and burlapped plants are to be freshly dug. Heeled-in or cold-storage plants will be accepted only with prior written approval from City. Manufactured, cracked or broken root balls are not acceptable.

Plant sizes are minimum size required, and plants will be accepted at larger sizes specified providing plants meet requirements of AAN standards of size and quality. Plants are to be live, healthy, and vigorous, free of disease, insect pests and their eggs and larvae. Plants are to be free of physical damage such as scrapes, broken or split branches or canes, unhealed scars, bark abrasions, sun scalds, fresh limb cuts, disfiguring knots, or any other defects.

Plants stored temporarily at nursery or at Contractor's site are to be properly heeled-in, protected from injury, and properly cared for to maintain plant's life, health, and vigor.

Container grown plants are to have been grown in container long enough for new fibrous roots to develop so that root ball is firm and will retain its shape and hold together when removed from container. Containers are to be sufficiently rigid and sound to hold root ball shape and protect root ball during shipping and handling.

Balled and burlapped plants are to be dug immediately before shipment, and properly dug and protected to preserve natural earth which is in contact with roots. Plants are to have labels securely attached indicating nursery of origin, plant size, and plant identification.

Tarpaulins or other covers are to be placed over plants being transported by open truck or open freight car to prevent wind damage and desiccation. Closed trucks and boxcars that are used for transportation of plants are to be adequately ventilated to prevent sweating.

**S611-2.02 Trees**

Trees are to be specimen quality trees grown for street tree usage with single strong central leaders for minimum of 3/4's of overall tree height. Trees are to have outstanding form, being symmetrical, heavily branched with even branch distribution and straight trunks, and densely foliated when in leaf. Trees are to possess normal balance between height and spread.

Tree caliper is to be 3 to 3-1/2 inches. Branching height for trees is to begin no lower than 6 feet from grade for major tree species, and 4 feet from grade for minor tree species, as measured at nursery.

Tree roots are to be balled and burlapped. Usage of wire baskets for balling tree roots is acceptable, but only natural burlap and jute twine may be used for wrapping root ball. Bare root tree stock is unacceptable.

Trees are to have well developed fibrous root system typical of their species. Trees are not to be pruned at or by nursery at any point during digging, loading and delivery process. Trees vegetative crown is to be securely tied prior to shipping to prevent damage.

**S611-2.03 Shrubs**

Shrubs are to be matched specimens from single block source.

Shrubs may be either container grown material or balled and burlapped. Bare shrub root materials will be accepted only with prior written approval from City.

**S611-2.04 Vines and Ground Cover**

Vines are to be of size specified and trained on vertical lattice or other framework, unless otherwise specified.

Ground cover plants are to be minimum 2 years old and well rooted.

**S611-2.05 Planting Medium**

Non-native planting medium is to consist of 80 percent coarse sand and 20 percent soil material by volume.

Soil material is to be natural, fertile, friable soil typical of region. Soil material is to be from surface layer of soil, free of undesirable materials which are larger than 1 inch in its greatest dimension. Types of undesirable materials are, but not limited to: refuse; paving materials such as concrete, asphalt, brick; materials which are toxic to plant growth and grass seed; subsoil; woody vegetation, stumps, roots, brush; clods, hard lumps, and rocks. Sod and herbaceous growth such as grass and weeds need not be removed from soil material, but are to be thoroughly broken up and mixed into overall soil material. Soil material is to contain between 3 and 6 percent of natural organic matter as determined by loss on ignition of moisture-free samples dried and tested in accordance with current methods of Association of Official Agricultural Chemists.

Soil material is to meet following requirements:

- Acidity range between 6.0 to 7.2 pH inclusive
- Fertility rate high in natural nutrients or amended to acceptable levels, as based on Cornell Soil Test
- Should tests and analysis indicate that soil material is deficient in any requirements, system of amelioration is to be proposed for approval

Soil material is to be tested prior to acceptance and placement. Testing is to be done by an approved independent testing laboratory, or by an agriculture unit of State university system. Representative sample of soil material is to be provided minimum of 21 days before use, to testing laboratory for analysis to allow sufficient time for testing. Test reports are to contain specific recommendations for amelioration including types of additive and fertilizer, and composition and rate and means of application, based upon soil test results and type of plant material to be planted.

At minimum, analysis is to include:

- Percent organic content
- Soil pH
- Percent clay, silt, sand particles, and fractionation
- Nutrient analysis

Soil material approved for use is to be stockpiled so as not to be mixed with other fill materials. Amelioration recommendations are to be followed during planting operations.

**S611-2.06 Structural Soil**

Structural soil is to be three component mix consisting of crushed stone, soil, and hydrogel, meeting following mix proportion:

| Component | Percent by Dry Weight |
|---|---|
| Crushed Stone | 80% |
| Soil | 20% |
| Hydrogel | 0.03% |

Total optimum moisture at mixing should be 10 percent in accordance with AASHTO T 99 (ASTM D 698).

Crushed stone is to be highly angular granite or sandstone, without any fines, meeting following gradation requirements:

| Screen Size | General Limits Percent Passing by Weight |
|---|---|
| 1-1/2 inch | 100% |
| 3/4 inch | 0% |

Soil is to be loam to heavy clay loam in accordance with USDA soil classification system, with minimum of 20 percent clay. Organic matter should range between 2 percent and 20 percent.

Hydrogel is used as tackifier to prevent separation of crushed stone and soil during mixing and installation. Hydrogel is to be non-toxic, non-phytotoxic, natural or synthetic polymer, such as Gelscape as manufactured by Amereq Corporation; Soilmoist as manufactured by JRM Chemical Inc.; Supersorb as manufactured by Aquatrols Corporation; or approved equivalent.

**S611-2.07 Curbed Planting Bed**

A. General

Curbed planting bed composition and plantings will be as specified in Contract Documents.

B. Planting Soil

Non-native planting soil is to consist of 60 percent soil, 20 percent builder sand and 20 percent well decomposed compost material by volume. Soil is to be in accordance with Subsection S611-2.05 Planting Medium.

C. Mulch

Mulch is to be in accordance with Subsection S611-2.09 Mulch.

D. Geotextile Fabric

Geotextile fabric is to be in accordance with Subsection S611-2.10 Geotextile Fabric.

E. Stone Curb

Stone curb is to be either medina stone, blue stone or granite stone in accordance with Section S609 Curb. Width will be as specified in Contract Documents

F. Concrete Curb

Concrete curb is to be in accordance with Section S609 Curb.

**S611-2.08 Sump Stone**

Sump stone is to be underdrain filter material in accordance with requirements of Section S605 Underdrain.

**S611-2.09 Mulch**

Mulch is to be well shredded hardwood, maximum 1/2 to 1 inch in size, partially decomposed, free of disease and debris, with no green leaf matter or sprouts.

**S611-2.10 Geotextile Fabric**

Geotextile fabric is to be 100 per cent staple polyester and polypropylene non-woven needle-punched geotextile fabric designed for long-term passage of water, as per AEF 480HS as manufactured by American Engineering Fabrics Inc., FX-40HS as manufactured by Carthage Mills, 140NC as manufactured by Mirafi/TenCate, or approved equivalent.

**S611-3 CONSTRUCTION DETAILS**

**S611-3.01 General**

Planting seasons for deciduous plants is between March 15th and May 15th, and between October 15th and December 1st. No planting is to take place between December 2nd and March 14th.

Deciduous plants may be planted between May 16th and October 14th only with prior approved by Project Manager, and require weekly watering until final acceptance.

No planting is to be done in frozen soil, or soil in an unsatisfactory working condition.

Rocks or other underground obstructions encountered during excavation are to be removed to depth necessary to permit planting, or planting site moved to another location, as directed by Project Manager.

City will inspect all plants on Project site prior to their being planted. City reserves right to reject plants that are not in accordance with these specifications. Rejected plants are to be replaced in-kind with plants that are in accordance with these specifications.

**S611-3.02 Preparation and Planting**

A. General

Mark and outline limits of planting areas before commencing any digging operations, and completely clean planting area of debris, grass, weeds and other forms of vegetation. Removed debris and other undesirable excavated materials are to be properly disposed of off-site.

Excavate entire planting pit to minimum of twice diameter of root ball, and stockpile excavated material on-site for possible reuse as backfill material.

Plants are to be set plumb in all directions and at such level that after settlement, it bears same relationship to surrounding grade as it originally did before being transplanted. Plants are to be centered in planting pit on undisturbed subgrade material, or on well compacted backfill material.

Prior to backfilling planting pit, top half of root ball is to be exposed. Wire basket is to be cut or bent back, burlap and twine is to be cut and removed or peeled back. Bottom half of root ball is to remain contained, do not completely remove wire basket or burlap and twine from entire root ball. Synthetic fabric and/or synthetic rope is to be completely removed from entire plant.

Girdling and/or encircling roots on potted plants are to be loosened or cut.

Backfill planting pit with planting medium, or acceptable excavated material. Before excavated material can be reused for backfill, it is to be thoroughly cleaned of debris that is greater than 1 inch in diameter. Backfill is to be placed in multiple layers, 4 to 6 inches thick, thoroughly watering-in each successive layer to remove any air pockets.

B. Tree Planting Grass Area

Tree is to be set at such level that after settlement, top of root ball is 2 to 3 inches below finished grade. Backfill remaining planter pit area with planting medium, and minimum of 3 inches of mulch.

C. Tree Planting Paved Area

1. *Tree Planting Paved Area – Stone/Brick Pavers.* Drainage sumps are to be provided in accordance with Subsection S611-3.02C5 Sump Installation. Tree is to be set at such level that after settlement, top of root ball is 1 to 2 inches below bottom of stone/brick pavers. Place geotextile fabric over entire opening of tree pit area, leaving an opening for tree trunk. Backfill remaining tree pit area with sand and stone/brick pavers in accordance with Section R616 Tree Planter.

2. *Tree Planting Paved Area – Tree Grate.* Drainage sumps are to be provided in accordance with Subsection S611-3.02C5 Sump Installation. Tree is to be set at such level that after settlement, top of root ball is 2 to 3 inches below bottom of tree grate. Place geotextile fabric over entire opening of tree pit area, leaving an opening for tree trunk. Backfill remaining tree pit area with pea stone or mulch up to bottom of tree grate. Tree grate is to be installed in accordance with Section R616 Tree Planter.

3. *Tree Planting Paved Area – Mulch.* Drainage sumps are to be provided in accordance with Subsection S611-3.02C5 Sump Installation. Tree is to be set at such level that after settlement, top of root ball is 2 to 3 inches below finished grade. Place geotextile fabric over entire opening of tree pit area, leaving an opening for tree trunk. Backfill remaining tree pit area with minimum of 3 inches of mulch.

4. *Tree Planting Paved Area – Flexible Porous Product.* Tree is to be set at such level that after settlement, top of root ball is 2 to 3 inches below finished grade. Place flexible porous product over entire opening of tree pit area up to finish grade, leaving 3 to 4 inch opening around tree trunk. Flexible porous product is to be installed in accordance with Section S409 Flexible Porous Product.

5. *Sump Installation.* Drainage sumps can be constructed by excavating with an auger, post hole digger, or other such device. Drainage sump excavations are to be completely filled with underdrain filter material. After drainage sump excavations are completely filled, cover bottom of tree pit area, including drainage sumps, with geotextile fabric.

D. Tree Pit - Plantings by Others

Construct tree pit in accordance with Subsections S611-3.02 Preparation and Planting. Trees will be supplied by and planted by others.

E. Shrubs

Shrubs are to be set at such level that after settlement, top of root ball is 2 to 3 inches below finished grade. Backfill remaining planter pit area with planting medium, and minimum of 3 inches of mulch.

F. Vines and Ground Cover

Place 1-1/2 to 2 inches of peat moss over planting bed material, and thoroughly saturate with water. Rototil planting bed area until saturated peat moss is thoroughly and uniformly blended with and into top 3 inches of planting bed material.

**S611-3.03 Curbed Planting Bed**

Curbed planting bed composition and plantings will be as specified in Contract Documents.

Mark and outline limits of curbed planting bed area before commencing any digging operations. Excavate entire area of curbed planting bed to minimum depth of 2.50 feet below finished grade, removing all materials. Excavated materials are to be removed and properly disposed of off-site in accordance with NYSDOT Section 203 Excavation and Embankment.

Curb is to installed in accordance with Section S609 Curb.

Plantings are to be set at such level that after settlement, top of root ball is 2 to 3 inches below finished grade. Plants are to be set and planted in accordance with Subsections S611-3.02B Tree Planting Grass Area, S611-3.02F Shrubs and S611-3.02G Vines and Ground Cover, for types of plants to be planted.

Backfill excavation with planting soil to within 3 inches of top of curb. Backfill is to be placed in multiple layers 4 to 6 inches thick, thoroughly watering-in each successive layer to remove any air pockets.

If required, place geotextile fabric over entire opening of curbed planting bed area and on top of planting soil, leaving 3 to 4 inch opening around each plant. Finish curbed planting bed with minimum of 3 inches of mulch, evenly spread over entire planting box area. Mulch is not to extend over top of curb.

**S611-3.04 Structural Soil**

Structural soil is to be prepared and installed in accordance with manufacturer's instructions.

Typically structural soil components are delivered to site, and are mixed in batches as material is required for placement. Structural soil mix is to be mixed until uniform blend is produced. Structural soil mix is placed in lifts not exceeding 6 inches in thickness prior to compaction, and compacted to not less than 95 percent of standard Proctor density.

Structural soil is to be at or near optimum compaction moisture content in accordance with AASHTO T 99 (ASTM D 698), and is not to be placed in frozen, wet or muddy excavations.

Structural soil is to be protected from exposure to excess water and from erosion at all times. Do not stockpile or store structural soil, unless it is properly covered and protected with waterproof covering. Excess water that is introduced into structural soil after grading, is to be allowed to drain until optimum compaction moisture content is reached.
Excavate and compact proposed subgrade to depths, slopes and widths as required. Areas to receive structural soil are to be inspected by installer before starting work, and all defects such as incorrect grading, compaction, and inadequate drainage are to be reported to Project Manager and corrected before placing structural soil.

Excavation area is to be clear of all construction debris, trash, rubble and any other foreign material. In event that fuels, oils, concrete washout silts or other material harmful to plants have been spilled into subgrade material, excavate and remove contaminated subgrade material. Fill any over excavation with approved fill and compact to required subgrade compaction.

Do not proceed with placement of structural soil until all utility work in excavated area has been finished.

Clean up all trash and any soil or dirt spilled on any paved surface at end of each working day.

**S611-3.05 Pruning**

Pruning is to be limited only to those branches which are dead, damaged, weak, diseased, insect infested, rubbing against another branch, cross over another branch, or have tight branching angle or sucker growth. Pruning can also be done to reshape plant to improve overall shape or silhouette of plant by thinning or removing unnecessary branches. Use sharp clean pruning tools to cut branch, with final cut being made at branch collar. When heading is necessary, final cut is to be to lateral branch that is 1/3 to 1/2 diameter of branch to be removed.

**S611-3.06 Mulch**

Minimum of 3 inches of mulch is to be spread evenly to required thickness over entire planting area.

**S611-3.07 Wrapping**

Wrapping is not permitted unless otherwise specifically specified in Contract Documents.

**S611-3.08 Fertilizer**

Plantings are to be treated with slow release nitrogen fertilizer at manufacturer's recommended rates, and thoroughly watered in. Type of fertilizer to be used is to be as approved by Project Manager prior to application.

**S611-3.09 Restoration**

Areas disturbed by planting operations are to be restored in-kind. Excess backfill material is to be disposed of off-site.

**S611-3.10 Care - Trees**

Care of trees is to begin immediately after each tree is planted and is to continue for period of 2 years from date of planting. Care of trees is to include watering, pruning, fertilizing, and other reasonable means of ensuring that tree remains live, viable, and vigorous. At end of 2 year care period Contractor is to completely remove all staking and guying materials, and cease care.

If City determines that any tree has failed and is not live, viable or vigorous at any time during 2 year care period due to lack of proper installation or care, Contractor is to replace failed tree during next available planting season with new tree in accordance with these specifications. Contractor is to then care for new tree planting for an additional period of 2 years. At end of additional 2 year care period Contractor is to completely remove all staking and guying materials and cease care.

**S611-3.11 Care – Shrubs, Vines and Ground Covers**

Care of shrubs, vines and ground covers is to begin immediately after each plant is planted and is to continue for period of 1 year from date of planting. Care is to include watering, pruning, fertilizing, and other reasonable means of ensuring that plants remain live, viable, and vigorous. At end of 1 year care period Contractor is to completely remove all staking and guying materials, and cease care.

If City determines that any plant has failed and is not live, viable or vigorous at any time during 1 year care period due to lack of proper installation or care, Contractor is to replace failed plant during next available planting season with new plant in accordance with these specifications. Contractor is to then care for new plant for an additional period of 1 year. At end of additional 1 year care period Contractor is to completely remove all staking and guying materials and cease care.

**S611-3.12 Warrantee**

Trees are to be warranted for period of 2 years from date of planting against failure due to lack of proper installation and care as outlined in Section S611-3 Construction Details.

Shrubs, vines and ground cover plants are to warranted for period of 1 year from date of planting against failure due to lack of proper installation and care as outlined in Section S611-3 Construction Details.

## S611-4 METHOD OF MEASUREMENT

### S611-4.01 Plantings

Quantity to be measured for payment will be number of plants installed.

### S611-4.02 Curbed Planting Bed

Quantity to be measured for payment will be number of square feet of curbed planting bed constructed, by measuring top surface area of curbed planting bed.

### S611-4.03 Structural Soil

Quantity to be measured for payment will be number of cubic yards installed.

## S611-5 BASIS OF PAYMENT

### S611-5.01 General All Items

Unit price bid for all items includes cost of: inspection; layout; excavation; removing and disposing obstructions, debris, rubble, sod and other vegetation; ground preparation; furnishing, installing, pruning, wrapping and caring for plant; removing and disposing wire baskets, burlap, twine, rope and synthetic material; furnishing and installing backfill material, soil amendments, mulch, fertilizer, water, stakes, wire and webbing; replacement and additional care of any failed plant; and furnishing all labor, materials, and equipment necessary to complete work.

### S611-5.02 Tree Planting Paved Area

Unit price bid also includes cost of: planting medium; mulch; sump installation; furnishing and installing underdrain filter material and geotextile fabric.

Furnishing and placing of stone/brick pavers, tree grates, and flexible porous product will be paid for under separate bid items.

### S611-5.03 Tree Planting Paved Area – at Existing Tree Pit

Unit price bid also includes cost of: excavation; removing and disposing existing plant, backfill, fabric, left over guying materials; planting medium; sump installation; furnishing and installing underdrain filter material and geotextile fabric.

### S611-5.04 Vines and Ground Cover

Unit price bid also includes cost of: furnishing and installing peat moss; planting medium; and rototiling.

### S611-5.05 Tree Pit - Plantings by Others

Unit price bid includes cost of: excavation; removing and disposing obstructions, debris, rubble, sod and other vegetation; ground preparation; sump installation; furnishing and installing underdrain filter material and geotextile fabric; furnishing and installing planting medium, soil amendments; mulch; and furnishing all labor, materials, and equipment necessary to complete work.

Furnishing and placing of stone/brick pavers, tree grates, and flexible porous product will be paid for under separate bid items.

### S611-5.06 Curbed Planting Bed

Unit price bid includes cost of: excavation; removing and disposing all excavated materials; furnishing and installing curb, planting soil, soil amendments, mulch; furnishing and installing geotextile fabric if required; and furnishing all labor, materials, and equipment necessary to complete work.

Furnishing and installing plantings for curbed planting bed will be paid for under bid Items S611.04XX Tree Planting, S611.07XX Shrub Planting, and S611.08XX Vines and Ground Cover.

**S611-5.07 Structural Soil**

Unit price bid includes cost of: excavation; removing and disposing all excavated materials; furnishing, preparing and installing structural soil; soil amendments; stockpiling; waterproof covering; protection; and furnishing all labor, materials, and equipment necessary to complete work.

**S611-5.08 Excavation**

Excavation will be measured from top of existing surface at time of excavation.

Excavation that is included in pay item does not include rock excavation. Rock excavation will be paid for under separate bid item.

Payment will be made under:

*Note: XX in bid item number represents each individual species of planting. i.e.: Kwanzan Cherry tree would be bid as S611.0401 Tree Planting (Prunus Serrulata "Kwanzan" - Kwanzan Cherry).*

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S611.04XX | Tree Planting (species) | Each |
| S611.05XX | Tree Planting Paved Area (species) | Each |
| S611.06XX | Tree Planting Paved Area - at Existing Tree Pit (species) | Each |
| S611.07XX | Shrub Planting (species) | Each |
| S611.08XX | Vines and Ground Cover (species) | Each |
| S611.09 | Tree Pit - Plantings by Others | Each |
| S611.1001 | Curbed Planting Bed | Square Feet |
| S611.11 | Structural Soil | Cubic Yard |

REVISED May 1, 2013

# SECTION S613 - TOPSOIL

## S613-1 DESCRIPTION

Work consists of furnishing and placement of topsoil as required in Contract Documents and as directed by Project Manager.

## S613-2 MATERIALS

### S613-2.01 Topsoil

Topsoil material is to be natural, fertile, friable soil typical of local region. Topsoil material is to be surface layer of soil, and is to be free of all undesirable material which is larger than 1 inch in its greatest dimension. Sod and herbaceous growth such as grass and weeds need not be removed from topsoil material, but are to be thoroughly broken up and mixed into overall topsoil material. Undesirable materials are but not limited to refuse; paving materials such as concrete, asphalt, brick; materials which are toxic to plant growth and grass seed; subsoil, woody vegetation, stumps, roots, brush, clods, hard lumps, stones and rocks.

Topsoil material is to have pH range of between 6.0 and 7.5, organic content of between 2 and 20 percent (dry weight basis), and is to meet following gradation requirements:

| Screen Size | Percent Passing by Weight |
|---|---|
| 2 inch | 100% |
| 1 inch | 85 to 100% |
| 1/4 inch | 65 to 100% |
| #200 | 20 to 80% |

Submit certification statement from topsoil supplier stating existing pH level, percentage of organic content and gradation. If necessary certification is to also state any recommendations on usage of amendments required to produce topsoil material conforming to required pH range. Topsoil material amendments that are to be used for adjustment of soil chemistry are to be standard commercial type including but not limited to ground limestone; gypsum; products containing phosphorus, potassium, sulphur, et cetera.

Limestone is to be standard, pulverized commercial type having minimum total neutralizing value of 88 percent calcium carbonate equivalence, which is to be applied at rate sufficient to bring existing pH of topsoil material to required range of 6.0 to 7.5, as determined by testing.

### S613-2.02 Stockpiling and Testing

Topsoil material may be acquired from previously approved site that is designated in Contract Documents. If no such previously approved site has been designated, Contractor is to notify Project Manager of intended source of topsoil material minimum of 21 days prior to scheduled use to allow for sampling and testing of topsoil material. Topsoil material is to come from stockpile that contains at least 200 cubic yards of topsoil material, is at least 4 feet high, and is trimmed, shaped and maintained to uniform surfaces and slopes.

### S613-2.03 Rejection/Acceptance of Topsoil Material

Topsoil material which does not conform to material requirements, receives any unsatisfactory test result, contains any undesirable foreign material; has offensive or objectionable overpowering odor, or lacks certification statement from supplier, will be rejected.

Acceptance of topsoil material will be based upon satisfactory test results, absence of any offensive or objectionable overpowering odor, and receipt of supplier's certification statement.

Project Manager will notify Contractor in writing that topsoil material has been rejected, or accepted for use.

## S613-3 CONSTRUCTION DETAILS

### S613-3.01 General

Where Contractor is required to place topsoil material on existing surface that has been prepared by others, Contractor is to notify Project Manager in writing if existing surface is unsuitable for placement of topsoil material. Appropriate action is to be taken to rectify condition of existing surface before placing any topsoil material.

### S613-3.02 Tree Protection

Contractor is to protect all existing trees and tree roots within project limits from damage by construction activities. Contractor is not to place or stockpile any construction or excavated materials within limits of canopy of any existing tree to prevent smothering of existing tree's root system. Vehicles and other construction equipment are not to be parked on any tree root system, nor left running (idling) under limits of canopy of any existing tree.

Where cutting of existing tree roots is necessary, it is to be done with sharp cutting tools. Exposed tree roots are to be re-buried as soon as possible. Until exposed tree roots can be re-buried, exposed tree roots are to be covered with wet burlap. Burlap is to be kept wet until exposed tree roots can be re-buried.

Existing trees that are damaged by construction activities are to be repaired within 72 hours using current arboricultural standards. Those existing trees that are determined by City Forester to be damaged beyond repair, are to be removed and replaced by Contractor.

Topsoil that is placed around an existing tree is not to be placed any higher than 3 inches of original surface area at base of existing tree.

### S613-3.03 Soil Amendments

If required, soil amendments are to be applied according to manufacturer's instructions for safe and effective application, and at rate sufficient to bring chemistry of topsoil material to required pH range.

During turf establishment, City may have further tests done on topsoil material. Any topsoil material which is not in accordance is to be further treated with amendments or replaced with new topsoil material.

### S613-3.04 Surface Preparation

Existing surface is to be re-graded as necessary to be uniform in contour, to meet required grades and cross-slopes, and to be free of irregularities. Finished grades and cross-slopes are to be uniformly sloping between adjacent features. Final surface contour is to be checked for accordance to required grades and cross-slopes by use of any approved method. Irregularities which form low areas and may tend to pond water are to be eliminated when existing surface is re-graded. If necessary, low areas that cannot be eliminated by re-grading are to be filled in with topsoil material.

Existing surface is to be culled of all undesirable material which is larger than 1 inch in its greatest dimension. Sod and herbaceous growth such as grass and weeds need not be removed from existing soil material, but are to be thoroughly broken up and mixed into overall soil material. Undesirable materials are but not limited to refuse; paving materials such as concrete, asphalt, brick; materials which are toxic to plant growth and grass seed; subsoil, woody vegetation, stumps, roots, brush, clods, hard lumps and rocks.

All embedded foreign objects are to be removed and resultant hole filled-in with topsoil material. All undesirable materials are to be removed and disposed of prior to treating surface area.

Excavation and disposal is to be in accordance with NYSDOT Section 203 Excavation and Embankment. All excavated material is to be properly disposed of off Project site within 24 hours of being excavated. Stockpiling of excavated material at Project site is not allowed.

### S613-3.05 Compaction

After placement, topsoil material is to be compacted with approved lawn roller to minimize as much as possible any further settlement. If necessary after initial rolling, add additional topsoil material to fill-in any voids or depressions. Continue to compact and re-work topsoil material until finished surface area is uniform and meets required grades and cross-slopes.

## S613-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of cubic yards of topsoil material placed, as computed in its final compacted state.

Measurement for payment based on delivery tickets of topsoil material is not acceptable.

## S613-5 BASIS OF PAYMENT

Unit price bid includes cost of: furnishing, testing, amending, placing, compacting, grading topsoil material; surface preparation; grading; minor excavation; removal and disposal of all undesirable materials; survey and stakeout necessary to establish required elevations, grades and cross-slopes; tree protection; furnishing and installing necessary protection against pedestrian and vehicular traffic; re-work and correction of grades and cross-slopes; and furnishing all labor, material, and equipment necessary to complete work.

Minor excavation that is included in unit price bid for topsoil is defined as any general excavation that is less than 3 inch deep. Minor excavation is further defined as specific excavation area that is deeper than 3 inch but has contiguous surface area that encompasses less than 50 square feet and is necessary for preparation of surface area.

General excavation that is 3 inch or greater in depth, and specific excavation area that encompasses contiguous surface area that is larger than 50 square feet, will be paid for under separate bid item.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S613.03 | Topsoil | Cubic Yard |

REVISED May 1, 2013

# SECTION S614 - CARE OF PLANTS

## S614-1 DESCRIPTION

Work consists of pruning, transplanting, or removal of existing plants and stumps as required in Contract Documents and as directed by Project Manager.

## S614-2 MATERIALS

None specified.

## S614-3 CONSTRUCTION DETAILS

### S614-3.01 General

Trunks, branches, rubbish and debris resulting from work is to be removed and disposed of in accordance with NYSDOT Section 201 Clearing and Grubbing.

Existing features within public right-of-way and private property immediately adjacent to public right-of-way are to be protected to limit any possible damage from occurring due to Contractor's operations. Any damage incurred while performing any work under this specification is to be immediately repaired.

Workers are not permitted to climb trees with climbing spurs, but are to employ other acceptable tree climbing methods. Only tools and methods of work that are acceptable are to be used. Cutting surfaces of all tools, ladders, ropes, soles of workers shoes and other objects coming into contact with plant are to be washed with approved disinfectant at start of any work on plant to prevent spread of any plant born disease. If in opinion of Project Manager, unsafe tools, equipment or methods are being used, work will be stopped until such unsafe conditions have been corrected.

### S614-3.02 Pruning

All work is to be performed in accordance with ANSI Z133.1, ISA Tree Pruning Guidelines and as required by City Forester.

Existing plant is to be pruned of undesirable wood, and resulting crown re-shaped to natural habit of plant. Branches interfering with or hindering healthy growth of existing plant are to be removed. Diseased or dead branches are to be removed. Branches which may be partially dead, yet has healthy lateral branch at least 1/3 diameter of parent branch, are to be trimmed beyond healthy portion of branch, providing result does not prove to be unsightly in which case branch is to be completely removed. Stubs or improper cuts resulting from former pruning operations are to be removed.

Branches on existing plants that interfere with vehicular or pedestrian sight distance, traffic signs or street lights, are to be removed. Overhanging branches that are less than 16 feet above any part of roadway, or 7 feet above any part of sidewalk, are to be removed. Existing plants are to be additionally pruned so as to allow minimum lateral clearance along sidewalk of 12 inches.

Cuts are to be cleanly made with sharp tools as close to parent trunk or limb as possible, without disturbing callus collar. Large bark wounds are to be scar traced in accordance with good horticultural practice. Nails, spikes, wire or other foreign materials driven into or fastened to plant are to be either removed, or if approved cut flush in manner to permit complete healing over.

### S614-3.03 Transplanting

Existing plants are to be transplanted in accordance with ANSI Z60.1 Transplanting. Transplanting is to be done by using tree spade of proper dimensions for size of plant which is to be transplanted.

Transplanted plants are to be planted at same depth as plant originally grew. Transplanted plants are to be planted and maintained in accordance with Section S611 Planting.

Pit at least twice size of root ball is to be dug, and plant set centered and plumb within pit. Burlap wrap and twine enclosing root ball is to be peeled back to expose top 1/2 of root ball, and all wraps and ropes removed. Prepared soil mix backfill material consisting of 2 parts native excavated material, 1 part saturated peat moss and 1 part topsoil is to be placed in 6 inch layers and thoroughly watered in to eliminate air pockets. Additional backfill material is to be placed and further watered in to compensate for any settlement. Backfill material is to be treated with slow release nitrogen thoroughly watered into backfill material.

**S614-3.04 Removal**

No cutting is to begin on any existing plant that is scheduled to be removed until approval has been received from Project Manager.

Trees are to be topped and limbed before felling.

Stumps are to be removed by grubbing, grinding or cutting. Stump holes are to be backfilled and compacted within 2 working days after removal of stump.

## S614-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of existing plants pruned, transplanted or removed. Multiple plants growing out of same general excavation or pit will be measured as one plant.

Measurement for payment of removal of existing trees and stumps under this section, will only be for those existing trees and stumps that are 6 inches in diameter and larger. Payment for removal of existing trees and stumps that are less than 6 inches in diameter will be included under Item 203.02 Unclassified Excavation and Disposal.

Diameter of existing tree is to be measured before beginning work, with measurement being made 4 feet 6 inches above ground, commonly referred to as DBH (Diameter at Breast Height).

Measurement range for tree and stump removal will be as noted, with measurement being rounded to nearest inch. For example, 11.4 inch will be made as 11 inch, 11.5 inch will be made as 12 inch.

Separate payment for removal of existing stumps is limited only to existing stumps where tree was previously removed by others. Stumps that result from removal of respective existing tree by Contractor, will be paid for under appropriate tree removal item.

## S614-5 BASIS OF PAYMENT

**S614-5.01 General All Items**

Unit price bid for all items includes cost of: removal and disposal of wood debris; protection of existing features; coordination with utilities; and furnishing all labor, material and equipment necessary to complete work.

**S614-5.02 Prune Existing Plant**

Unit price bid also includes cost of: cutting, removing and disposing undesirable growth and foreign materials; shaping plant crown; and repair of bark wounds.

**S614-5.03 Transplant Existing Plant**

Unit price bid also includes cost of: removing, balling, storing, trimming and re-planting existing plants; staking system; burlap; rope; prepared soil mix; hardwood mulch; water well; mulch retention pit; excavation and backfill.

**S614-5.04 Remove Existing Shrub**

Unit price bid also includes cost of: removing and disposing existing shrub and stump; excavation and backfill.

Removal of existing shrubs will be paid for under either NYSDOT Section 201 Clearing and Grubbing, Section R203 Excavation and Embankment, or Section S614 Care of Plants, as indicated in Contract Documents.

**S614-5.05 Remove Existing Tree**

Unit price bid also includes cost of: removing and disposing existing tree and stump; excavation and backfill.

**S614-5.06 Remove Existing Stump**

Unit price bid also includes cost of: grubbing, grinding, cutting and disposing existing stump; excavation and backfill.

Payment will be made under:

*Note: XX in bid item number represents each individual size of tree to be transplanted. i.e.: 6" tree would be bid as S614.3306 Transplant Existing Tree – 6" DBH.*

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S614.30 | Prune Existing Shrub | Each |
| S614.31 | Prune Existing Tree | Each |
| S614.32 | Transplant Existing Shrub | Each |
| S614.33XX | Transplant Existing Tree - X" DBH | Each |
| S614.34 | Remove Existing Shrub | Each |
| S614.35 | Tree Removal - 6" to 11" DBH | Each |
| S614.36 | Tree Removal - 12" to 17" DBH | Each |
| S614.37 | Tree Removal - 18" to 23" DBH | Each |
| S614.38 | Tree Removal - 24" to 29" DBH | Each |
| S614.39 | Tree Removal - 30" to 35" DBH | Each |
| S614.40 | Tree Removal - 36" to 41" DBH | Each |
| S614.41 | Tree Removal - 42" to 47" DBH | Each |
| S614.42 | Tree Removal - 48" and over DBH | Each |
| S614.43 | Stump Removal - 6" to 11" Diameter | Each |
| S614.44 | Stump Removal - 12" to 17" Diameter | Each |
| S614.45 | Stump Removal - 18" to 23" Diameter | Each |
| S614.46 | Stump Removal - 24" to 29" Diameter | Each |
| S614.47 | Stump Removal - 30" to 35" Diameter | Each |
| S614.48 | Stump Removal - 36" to 41" Diameter | Each |
| S614.49 | Stump Removal - 42" to 47" Diameter | Each |
| S614.50 | Stump Removal - 48" Diameter and Over | Each |

# SECTION S617 - TREE PROTECTION

## S617 GENERAL

It is responsibility of Contractor to provide tree protection fencing for all existing trees and tree root systems that are located within and immediately adjacent to Project limits to minimize any possible damage due to construction activities.

## S617-1 DESCRIPTION

Work consists of protection and care of existing trees as required in Contract Documents and as directed by Project Manager.

## S617-2 MATERIALS

Tree protection fence material may be either fluorescent orange construction safety fencing, or wood rail and post. Tree protection fence is to be at least 4 feet high.

Water is to be in accordance with NYSDOT Section 712-01 Water.

## S617-3 CONSTRUCTION DETAILS

### S617-3.01 General

Tree protection is to be provided to protect all existing trees within and immediately adjacent to project limits against any accidental cutting, breaking, skinning, or bruising of tree roots, tree bark and tree branches due to Contractor's operations. Tree protection fencing is to be installed before any construction activities commence, and is to remain in place until Contractor is ready to perform final grading and seeding operations. Before commencing any work within any established tree protection zone, Contractor is to receive written authorization from representative of City Forester's office.

Contractor is not to place or stockpile any construction or excavated materials within limits of canopy of any existing tree to prevent smothering of existing tree's root system. Vehicles and other construction equipment are not to be parked on any tree root system, nor left running (idling) under limits of canopy of any existing tree.

Cutting of existing sod and topsoil materials within 4 feet of existing tree trunk for removal to establish new finished grade must be done manually.

Existing tree root system must remain adequate for existing tree to withstand heavy windstorms. If any existing tree roots that are 2 inches in diameter or larger are in conflict with any proposed work and need to be cut, before cutting those tree roots Contractor must notify City Forestry section by calling (585) 428-7581 to arrange for inspection of existing tree root system.

### S617-3.02 Fencing

Existing tree is to be fenced in such manner that tree protection fencing encompasses entire limit of canopy of existing tree. In no case is tree protection fencing to be less than 2 feet from outer edge of existing tree trunk. In those areas where existing tree is bordered by paved surface, curb, wall or building, and minimum tree protection fence dimensions cannot be achieved, tree protection fence is to be installed to within 12 inches of nearest edge of such paved surface, curb, wall or building.

Tree protection fencing is to be installed around existing tree according to following extents:

| Tree Diameter (DBH) (inches) | Minimum Distance of Fence from Tree Trunk – each side (feet) |
|---|---|
| less than 10 | 6 |
| 10 thru 14 | 10 |
| 15 thru 19 | 12 |
| 20 and over | 15 |

**S617-3.03 Maintenance**

Tree protection fencing is to be maintained in good condition, and in an upright position. Tree protection fencing that has been damaged, collapsed or been knocked down, or otherwise damaged, is to be restored within 24 hours.

Where cutting of existing tree roots is necessary, it is to be done with sharp cutting tools. Exposed tree roots are to be re-buried as soon as possible. Until exposed tree roots can be re-buried, exposed tree roots are to be covered with wet burlap. Burlap is to be kept wet until exposed tree roots can be re-buried.

Where extensive cutting of existing tree root system has occurred, existing tree root system is to be watered to extent of limits of canopy of existing tree. Apply minimum 1/2 inch of water within 72 hours of when extensive cutting of existing tree root system has occurred.

When weather conditions are consistently dry and when less than 1/2 inch of rain has fallen during any given week, water existing tree root system to extent of limits of canopy of existing tree with at least 1 inch of water.

Existing trees that are damaged by construction activities are to be repaired within 72 hours using current arboricultural standards. Those existing trees that are determined by City Forester to be damaged beyond repair, are to be removed and replaced by Contractor.

**S617-3.04 Utility Installation**

Where underground installation of new utility is required to be done within outer limits of canopy of existing tree, tunneling operation is to be used for installation of new utility. Tunneling within outer limits of canopy of existing tree is to be done according to following:

| Tree Diameter (DBH) (inches) | Distance of Tunnel From Tree Trunk – each side (feet) | Minimum Recommended Depth (feet) |
|---|---|---|
| less than 10 | 6 | 2-1/2 |
| 10 thru 14 | 10 | 3 |
| 15 thru 19 | 12 | 3-1/2 |
| 20 and over | 15 | 4 |

**S617-4 METHOD OF MEASUREMENT**

Quantity to be measured for payment will be number of linear feet of tree protection fence installed, as measured along top of tree protection fence, center to center of end posts.

**S617-5 BASIS OF PAYMENT**

Unit price bid includes cost of: furnishing, installing, maintaining and removing tree protection fence; hardware; watering; cutting, maintenance and repair of damaged tree roots; burlap; repair or replacement of damaged existing trees; and furnishing all labor, material and equipment necessary to complete the work.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S617.01 | Fencing for Tree Protection | Linear Foot |

REVISED May 1, 2013

# SECTION S626 - SURVEY MONUMENT

## S626 GENERAL

As of the date of the start work order, the protection of all survey monuments on the job site is the responsibility of the general Contractor.

If a destroyed survey monument is found after this date, and the responsible party is unclear or undeterminable, the survey monument shall be replaced at the General Contractor expense.

It shall be the Contractor's responsibility to contact the City's Maps and Surveys Office to verify that the necessary ties have been taken to all existing survey monuments, prior to construction.

Survey monument issues that remain unresolved over 90 calendar days, from the date of destruction, may result in a declaration of Contract default.

In the case of utility Contractors, permits for proposed utility work may be withheld until any outstanding monument issues have been resolved.

All horizontal control survey monuments, whether new or set to replace destroyed monuments, will have the monument line intersection physically defined with the mark appropriate to the survey monument type.

## S626-1 DESCRIPTION

The work shall consist of the installation of new survey monuments; adjustment, or removal of existing survey monuments; installation of new survey monument frames and covers; resetting of existing monument frames and covers; related survey work, submittal of survey data and monument certification; all as required in the Contract Documents, as directed by the City's Maps and Surveys Office and the Project Manager.

## S626-2 MATERIALS

### S626-2.01 Horizontal Control Survey Monument (RCS)

Granite survey monuments shall be used for horizontal control only.

Granite shall be from approved quarries. The granite shall be hard and durable, of a light color, free from seams which impair its structural integrity, and of a good, smooth splitting appearance. The granite shall be rough quarried to the dimensions as shown on the detailed drawings. The top shall have a smooth finish, and quarrying holes will be permitted only in the sides and bottom.

### S626-2.02 Brass Disc Survey Marker (RCS)

Brass disc survey marker will supplied by the City. The Contractor is to pick up and sign for the brass disc survey marker during normal business hours. The Maps and Surveys Office requires a minimum of at least 24 hours advance notice to make arrangements for pick up of the brass disc survey marker.

### S626-2.03 Vertical Control Survey Monument (RTS)

Concrete survey monuments shall be used for vertical control only.

Concrete survey monument and base shall be constructed of Class K concrete with a number 5 (5/8 inch) iron rod set in the center of the concrete survey monument for its full length. The iron rod shall be topped with a 2 inch diameter domed cap with plastic insert, and tapered internal hole capable of accommodating ends of irregular shaped rebar.

### S626-2.04 Monument Frame and Cover

Monument frame and cover shall be cast iron. Cover shall be 8-3/4 inches in diameter, 1/2 inch thick, without a ribbed section, with a 1 inch by 1/4 inch slot along the edge, and the letters "RCS" (1-1/2 inches high) cast into the top of the cover.

### S626-2.05 Select Granular Fill

Select granular fill shall conform to the requirements of Section R203 Excavation and Embankment.

### S626-2.06 Concrete

Concrete shall be Class K conforming to the requirements of Section S504 Portland Cement Concrete.

## S626-3 CONSTRUCTION DETAILS

### S626-3.01 General

Survey monument shall be set under the direction of a Land Surveyor licensed to practice in the State of New York. The City shall be provided with the required data for survey monument certification submittal and certification cards per Section S626-4 Monument Survey, Submittal and Certification Requirements.

The Contractor shall excavate for and install new survey monument, including frame and cover. The top of the survey monument shall not be less than 4 inches or more than 6 inches below finished grade (except for brass disc survey markers), and the frame and cover centered over the survey monument. Survey monument installation shall be coordinated with the installation of any surrounding work. The surface around the new survey monument shall be restored by the Contractor.

Special attention is directed to Section 104-22 of the Municipal Code of the City of Rochester, regarding requirements for a permit when working in the vicinity of a survey monument, as reiterated herein:

> *Section 104-22. Interference with survey monuments.*
>
> > *No person shall interfere with, disturb or move any survey monument without having obtained a permit in writing from the City Engineer. Interference for the purpose of this section shall be defined as any excavation work within three (3) feet of a survey monument or any extensive excavation work further than three (3) feet from a survey monument that may affect the accuracy of the monument.*

A survey monument will be considered destroyed that has been:

- Moved more than 0.02 of a foot in any direction from its City tied position
- Broken
- Disturbed to a point that the survey monument's position is no longer fixed or stable
- Removed from the ground for any reason
- Vertically adjusted without the written authorization of the Maps and Surveys Office

In the event that a survey monument is destroyed during construction, the survey monument shall be replaced with a new unused survey monument of the type destroyed. The theoretical position of the intersection of the two monument lines shall be marked with a drill hole on a granite horizontal control survey monument, or a punch mark and cross on a brass disc survey marker. An elevation of a new vertical control survey monument will be established. The required data for survey monument certification submittal shall be prepared by a NYS Licensed Land Surveyor and provided to the Maps and Surveys Office by the Contractor, via the Project Manager.

Submittal of either horizontal (RCS) or vertical (RTS) monument certification data to the Maps and Surveys Office, via the Project Manager, does not constitute acceptance of the survey monument. Written acceptance or rejection of each survey monument will be made to the Project Manager by the Maps and Surveys Office after review of the submission.

**S626-3.02 New Survey Monument**

For the purposes of this specification, a new survey monument is defined as a survey monument designated by the Maps and Surveys Office to be set, excluding those survey monuments which are to be set to replace any destroyed survey monuments. New monument frame and cover shall be installed with each new survey monument installation.

New survey monument situations include:

- Survey monuments set to upgrade monument network density
- Survey monuments set to replace existing survey monuments in poor physical condition
- Survey monuments set within new streets to be dedicated or accepted by the City

*RCS Monument* - Rochester City Survey monument refers to a horizontal control survey monument set to define the limits of the City street right-of-way as shown on the City's official mapping. The RCS monument is typically set and marked with a drill hole at the intersection of two City monument lines, said monument lines being parallel to and 4.00 feet offset into the right-of-way from the street property lines (right-of-way lines).

*RTS Monument* - Rochester Topographic Survey monument refers to a vertical control survey monument set as a permanent benchmark referenced to elevations in the Rochester "City Datum".

**S626-3.03 Theoretical Position**

Horizontal control survey monument shall be placed, centered and marked at the intersection of the two monument lines located 4.00 feet from and parallel to the street property lines (right-of-way lines), unless otherwise authorized in writing by the Maps and Surveys Office.

**S626-3.04 Drill Hole**

Drill hole shall be 0.01 of a foot in diameter, a minimum of 0.03 of a foot deep, and at least 1/2 inch from the outer edge of the top of the horizontal control survey monument. A punch mark and cross shall be used on brass disc survey marker.

In both instances, the mark will be set to indicate the theoretical position of the intersection of two monument lines.

**S626-3.05 Brass Disc Survey Marker**

A. General

Where pre-existing physical conditions prohibit the installation of a granite survey monument, brass disc survey marker may be installed. Brass disc survey marker can be used only when approved in writing by the Maps and Surveys Office.

At the request of the Contractor, a representative of the Maps and Surveys Office will inspect the proposed installation site, determine if conditions warrant a brass disc survey marker installation, and provide written authorization and direction.

The use of brass disc survey marker without prior written approval may result in the replacement of the brass disc survey marker with a new granite survey monument, and recertification, at the Contractor's expense.

The monument line intersection shall be set with a punch mark and cross.

B. Sidewalk Installation

For installation in existing concrete sidewalk, brass disc shall be installed recessed to half the dome height, and epoxy in place (1/8 inch all around). For installation in new concrete sidewalk, brass disc shall be installed embedded to half the dome height within the concrete, and before the concrete has set-up.

C. Installation over Subsurface Obstruction

Brass disc is to be installed top center of a poured-in-place, 12 inch top diameter, Class K, concrete column, with new monument frame and cover. The concrete column shall extend down to and rest on top of the subsurface obstruction. A minimum of two 1/2 inch diameter PVC pipe weeps shall be installed thru the top of the concrete column.

**S626-3.06 New Monument Frame and Cover**

New monument frame and cover shall be furnished and installed with new survey monuments, or to replace existing monument frames and covers, or over existing survey monuments where existing frame and cover is missing. New monument frame and cover shall be set centered over the survey monument, placed true to line and grade, make full and even bearing on the underlying surface, and are to be non-rocking when in place. The new monument frame and cover shall be set flush with the finished grade.

**S626-3.07 Vertical Adjustment of Existing Horizontal Survey Control Monument**

Survey monument vertical height adjustment is to take place only at the written direction of the Maps and Surveys Office. Survey monument vertical height adjustment performed without prior written authorization from the Maps and Surveys Office shall be considered destruction of the survey monument, and require monument replacement and certification. Adjustment of vertical survey control monuments is not allowed.

The existing monument frame and cover shall be removed, and the top of the existing survey monument cut off. All survey monuments adjusted are to be not less than 4 inches or more than 6 inches below finished grade. The theoretical position of the monument is to be reestablished, a new drill hole made and new monument certification prepared. All extraneous material shall be removed from the existing monument frame and cover. Existing monument frame and cover shall be set centered over the survey monument, placed true to line and grade, make full and even bearing on the underlying surface, and are to be non-rocking when in place. The existing monument frame and cover shall be set flush with the finished grade.

**S626-3.08 Remove Existing Survey Monument**

The existing survey monument, including frame and cover, shall be carefully excavated for and removed. Existing survey monument, including frame and cover, that is solid, undamaged and acceptable for re-use shall be cleaned of all extraneous material in such a manner as to be non-deleterious to the existing survey monument. Existing survey monument, including frame and cover, shall be safely stored on site, and the Maps and Surveys Office notified to arrange for pick up. The excavation shall be backfilled with select granular backfill and the disturbed surface area restored.

Any existing survey monument, and/or frame and cover, that are damaged or found to be unacceptable for reuse shall be disposed of by the Contractor.

**S626-3.09 Destroyed Survey Monument**

Destroyed survey monument shall be replaced with a new unused survey monument of the type destroyed.

Survey monuments destroyed after the date of the start work, and the responsible party is unclear or undeterminable, shall be replaced at the general Contractor expense.

**S626-3.10 Reset Existing Monument Frame and Cover**

The existing monument frame and cover shall be removed, cleaned of all extraneous material and reset over the existing survey monument. Existing monument frame and cover shall be set centered over the survey monument, placed true to line and grade, make full and even bearing on the underlying surface, and are to be non-rocking when in place. The reset existing monument frame and cover shall be set flush with the finished grade.

## S626-4 MONUMENT SURVEY, SUBMITTAL AND CERTIFICATION REQUIREMENTS

### S626-4.01 General

In developing the theoretical block street line configuration and subsequent monument lines, monument line intersections and horizontal control survey monument positions, the City of Rochester official "SBL Mapping" should be the basis, in conjunction with the more detailed data available from the City District Mapping System and various land data records.

### S626-4.02 Minimum Horizontal Survey Specifications (RCS)

Minimum station spacing:

- 300 feet

Horizontal directions:

- 2 positions, direct and reverse (main traverse)
- 5 seconds rejection from the mean of the 2 direct and reverse
- 1 position, direct and reverse (side shots)

Reciprocal vertical angles on theodolite traverses:

- 1 direct and reverse
- 20 seconds maximum spread

Maximum angular mis-closure:

- 10 seconds $\sqrt{\phantom{x}}$ = Number of sides/traverse angles
- not to exceed 5 seconds per station

Minimum positional closure:

- 1:20,000 closure after angle error distribution

Only properly maintained, 1 second least count, directional theodolites or total stations shall be used.

Only tripod fixed, precisely marked targets and prism with centers resolvable at minimum control station spacing shall be used.

Stable, properly maintained tripods shall be used.

Tribrach and instrument optical plummets shall be adjusted to within 0.003 of a foot at a 5.00 foot height of instrument.

Deviation from minimum specifications may be granted in writing by the Maps and Surveys Office under certain circumstances.

Electronic Distance Meters (EDM):

- Must be capable of a high degree of resolution and small inherent error, to maintain a high relative accuracy on the typically short traverse legs of City Survey lines - not to exceed Å (03MM + 2 PPM), verified by baseline results
- Must have been calibrated on any NGS certified EDM baseline within the last 6 months and data showing same provided with each Project submittal - include make, model and instrument serial number
- Steel taping of short distances to be accomplished with a calibrated invar tape or a tape compared to a standardized tape with applied temperature, sag, tension and slope corrections
- Meteorological conditions shall be measured on site, recorded and corrections applied. (Temperature measured to 1°F, pressure measured to 0.10 inch mercury)

- EDM distances of traverse legs shall be the mean of a minimum of 5 measurements in each direction

As a minimum, the block containing the survey monument to be set shall be traversed and all existing survey monument stones on both sides of the streets are to be located and used in the analyzation.

As a minimum, the field locations of three existing marked RCS survey monuments shall be analyzed in the determination of each RCS survey monument to be set. The final scope of located RCS survey monument required to reliably fit the developed theoretical figure to existing field locations of RCS survey monuments is a professional judgement decision of the NYS Licensed Land Surveyor.

**S626-4.03 Required Data for Horizontal Control Survey Monument Certification Submittals via the Project Manager**

Complete Land Surveyor sealed copies of the EDM calibration performed within 6 months of the monument work. The calibration is to be performed on any NGS certified EDM baseline. Provided data will include final reduced results, adjustment made and the instrument make, model and serial number.

Complete Land Surveyor sealed copies of the field notes demonstrating adherence to minimum survey specifications (RCS) and noting:

- Date and temperature
- Crew
- Instrument make, model and serial number

Traverse print out indicating:

- Raw angular closure
- Closure after angular error distribution
- Final adjusted traverse configuration

Point number sheet for the Project area with corresponding coordinate dumps presented in a manner clearly delineating theoretical points from physical field measured points with a complete description of the field point.

Reference to SBL maps, District maps and any other data sources used to develop the theoretical block configurations.

Outline of adjustments, both linear and angular, made to record block configurations to create closed figures.

Two each 3 inches by 5 inches certification cards as shown in Contract Documents.

**S626-4.04 Horizontal Control Survey Monument Certification Cards**

The submittal of two 3 inches by 5 inches certification cards on standard card stock, in the format shown in Contract Documents, are required for each survey monument to be certified.

Provide a minimum of five angle and distance ties to substantial, well defined and described, permanent points from the RCS monument drill hole or punch mark and cross set. Ties to nails in trees are not acceptable.

RCS monument drill holes set are to be 0.01 of a foot in diameter, 0.03 of a foot deep and at least 1/2 inch from the outer edge of the survey monument.

Maps and Surveys Office will furnish the monument number to be shown on the submitted certification cards.

A NYS Licensed Land Surveyor is to place their seal, sign and date the back of each card.

Certification to read:

> "*I _(printed name)_ NYSPLS # _____ hereby certify to the City of Rochester that the monument shown on the reverse side has been established on a 4.00 foot offset from the property lines (right of way) and that the monument line intersection has been marked with a drill hole or punch mark and cross. All in accordance with City of Rochester Specification S626.*" (Certification is to be on back of the card)

**S626-4.05 Minimum Vertical Survey Specifications (RTS)**

Instrumentation, calibration procedures, field and office procedures shall be in accordance with Federal Geodetic Control Committee Standards and Specifications to attain Second Order Class II results.

Peg test and rod calibration to be performed within 7 days prior to runs.

Minimum acceptable closures to be:

- 0.033 of a foot

Level runs to begin at either an RTS monument or a Geodetic Control Monument with a published Rochester "City Datum" value, turn through the new RTS monument set and close to a second RTS or Geodetic Control Monument within specified tolerances.

Published Rochester "City Datum" elevations shall be obtained from the Maps and Surveys Office.

**S626-4.06 Required Data for Vertical Control Survey Monument Certification Submittal via the Project Manager**

Copy of field level peg test and rod calibration performed within 7 days prior to level runs to include date, instrument and serial number.

Complete original field notes or Land Surveyor sealed copies demonstrating adherence to the specified Second Order Class II standards and noting:

- Date
- Crew
- Instrument make, model and serial number
- Published elevations
- Measured elevations
- Closure

Summary of adjustments performed.

Two each 3 inches by 5 inches certification cards as shown in Contract Documents.

**S626-4.07 Vertical Control Survey Monument Certification Cards**

The submittal of two 3 inches by 5 inches certification cards on standard card stock, in the format shown in Contract Documents, are required for each survey monument to be certified.

Provide a minimum of 3 swing ties to substantial, well defined and described permanent points. Ties to nails in trees are not acceptable.

Show measured "City Datum" elevation of the new survey monument set and the elevation of each reference benchmark used with corner description of each.

Maps and Surveys Office will furnish the monument number to be shown on the submitted certification cards.

A NYS Licensed Land Surveyor is to place their seal, sign and date the back of each card.

Certification to read:

> "*I _(printed name)_ NYSPLS # _____ hereby certify to the City of Rochester that the vertical control monument shown above has been established in the City of Rochester datum using proper methods to establish Second Order accuracy. (Class II) 0.033'* _____ " (Certification is to be on front of the card)

**S626-4.08 Monument Ties**

Suggested tie types to include but not limited to:

- Drill hole in concrete walk
- Drill hole in concrete walk as a point on line to adjacent monument
- Drill hole in curbing
- Masonry building corner
- Drill hole in light pole base, sign base, signal box base, et cetera
- Masonry porch corner or step
- Chiseled cross in manhole rim, anchor bolt or metal pole
- Drill hole in water table
- Pk or Mag nail in wooden utility pole
- Set iron pin with cap (on sites void of potential tie objects)
- For RCS angle and distance ties the 0° origin can be adjacent monuments or long definable naturals such as building corners, church steeples, tower apexes, atoll lights or intersection stations

In general:

- Attempt to spread ties through 360° for strength of resection
- Diversify tie types with no more than two ties to a single type
- If ties are taken on a construction job avoid ties to manhole rims, curbing, et cetera, that will be destroyed
- Per City Forestry no ties to points in City trees are acceptable
- Ties are to be taken to substantial, well defined and described, permanent points
- Angle ties shown are to be the average of a minimum of 1 direct and 1 reverse reading

**S626-5 METHOD OF MEASUREMENT**

Quantity to be measured for payment will be number of units installed, adjusted, replaced or removed.

No payment will be made for destroyed monuments and their re-survey as defined under Subsection S626-3 Construction Details.

**S626-6 BASIS OF PAYMENT**

**S626-6.01 General All Items**

Unit price bid for all items includes cost of: related survey work; preparation and submittal of survey data and monument certification cards; excavation; furnishing and installing concrete and select granular backfill; and furnishing all labor, material and equipment necessary to complete work.

Where new monument is being installed to replace existing monument, removal of existing monument, including frame and cover, will be included in unit price bid for new monument.

Excavation that is included in pay item does not include rock excavation. Rock excavation will be paid for under separate bid item.

Payment for new monument installation will be made as follows: Fifty percent (50%) will be paid upon completion of installation and acceptance of new monument. Remaining fifty percent (50%) will be retained until all of required monument certification record information has been submitted to and approved of by Maps and Surveys Office. Failure to correct any erroneous or incomplete monument certification record information, will result in forfeiture of retained fifty percent (50%).

Survey monuments destroyed after date of start work, and responsible party is unclear or undeterminable, are to be replaced at general Contractor expense.

**S626-6.02 Horizontal Control Survey Monument**

Unit price bid also includes cost of: furnishing and installing new granite monument including frame and cover; setting theoretical position; drill hole.

**S626-6.03 Vertical Control Survey Monument**

Unit price bid also includes cost of: furnishing and installing new concrete monument including frame and cover; iron rod; cap with plastic insert; establishing elevation of new monument.

**S626-6.04 Brass Disc Survey Monument**

A. Installation in Sidewalk

Unit price bid also includes cost of: picking up and installing brass disc survey marker; setting theoretical position; punch mark and cross; epoxy.

B. Installation over Subsurface Obstruction

Unit price bid also includes cost of: picking up and installing brass disc survey marker; furnishing and installing frame and cover; setting theoretical position; punch mark and cross; concrete column.

**S626-6.05 Vertical Adjustment of Existing Survey Monument**

Unit price bid also includes cost of: removing, cleaning, and reinstalling existing frame and cover; cutting off top of existing survey monument; re-establishing theoretical position; drill hole.

**S626-6.06 Remove Existing Survey Monument**

Unit price bid also includes cost of: removing, cleaning and storing existing monument, frame and cover; making arrangement for pickup; disposal of damaged or unusable monument, frame and cover.

**S626-6.07 Install New Monument Frame and Cover**

Unit price bid also includes cost of: furnishing and installing new frame and cover; removing and disposing existing frame and cover.

**S626-6.08 Reset Existing Monument Frame and Cover**

Unit price bid also includes cost of: removing, cleaning and resetting existing frame and cover.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S626.02 | Horizontal Control Survey Monument | Each |
| S626.03 | Vertical Control Survey Monument | Each |
| S626.04 | Vertical Adjustment of Existing Survey Monument | Each |
| S626.05 | Remove Existing Survey Monument | Each |

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S626.06 | Install New Monument Frame and Cover | Each |
| S626.07 | Reset Existing Monument Frame and Cover | Each |
| S626.08 | Brass Disc Installation in Sidewalk (Furnished) | Each |
| S626.09 | Brass Disc Installation over Subsurface Obstruction (Furnished) | Each |

REVISED May 1, 2013

# SECTION S637 – FIELD OFFICE

## S637-1 DESCRIPTION

Work consists of furnishing and installing field office as required in Contract Documents and as directed by Project Manager.

## S637-2 MATERIALS

### S637-2.01 General

Field office is to be for sole use of resident engineer, and is to be separate from any other building used by Contractor. Field office is to be within weatherproof building or mobile trailer that is habitable, in good condition, free of any health or safety hazards, readily accessible to public, and located within reasonable short distance of project site. Field office is to be in compliance with New York State Uniform Fire Prevention and Building Code, 19 NYCRR, and all applicable local building, safety and health regulations and laws. If requested, Project Manager is to be provided with copy of Certificate of Occupancy for field office.

Signage is to be placed so as to readily identify and locate field office. Field office sign is to be conspicuously placed or mounted on field office. If necessary, other signage is to be posted that will be capable of directing public to location of field office. Freestanding sign supports are to be breakaway type.

Field office sign board is to be 3 feet by 4 feet, constructed from 3/4 inch thick duraply or A-A exterior grade plywood, painted with two coats of white exterior enamel paint. Lettering is to be done with one color, pms 287C blue, and is to be done by either silk screen process, die cut vinyl letters (permanent adhesive), hand lettering, or stencil.

Field office sign is to have following information denoted, all in capital letters:

- FIELD OFFICE
- NAME OF PROJECT
- CONTRACTOR'S NAME
- CITY AND RESIDENT ENGINEER CONTACT PHONE NUMBERS

FIELD OFFICE and NAME OF PROJECT are to be swiss 721 condensed bold 3 inch letters 1.50 inch line spacing.

CONTRACTOR'S NAME and CITY AND RESIDENT ENGINEER CONTACT PHONE NUMBERS are to be swiss 721 condensed bold 1 inch letters 0.75 inch line spacing.

All information denoted is to be centered horizontally on sign board.

Paved or other hard surfaced (crushed stone or gravel material) parking area is to be located immediately adjacent to field office. Each parking space is to be at least 9 feet wide by 18 feet deep, with minimum of two parking spaces provided immediately adjacent to field office.

### S637-2.02 Field Office – General Requirements

Field office is to have minimum ceiling height of 7 feet. Doors and windows are to be weatherproofed, and each equipped with adequate and operational locking devices. Windows are to be minimum of 8 square feet, screened, and capable of being opened and closed to provide adequate ventilation.

Restroom is to be separately enclosed room, lockable from inside, properly ventilated and in compliance with applicable sanitary codes. Restroom is to be provided with operational flush-type toilet, all lavatory amenities, necessary paper and soap products, and hot and cold running water.

Potable water from local municipal water supply, or bottled with heating/refrigerator unit to provide hot and cold water.

Electrical system capable of providing continuous service to operate all equipment and have adequate amount of receptacles. Dedicated 20 amp electrical service is to be provided for operation of computer equipment.

Electric light is to be provided by non-glare type luminaries capable of providing minimum illumination level of 100 foot candles at desk-height level.

Fire extinguishers, smoke and carbon monoxide detectors are to be located in each room and are to be fully operational and properly installed.

Heating and cooling equipment that is operational and capable of maintaining constant ambient air temperature of 70°F, ±5°F.

**S637-2.03 Field Office – Equipment and Furnishing**

***Computer Connection.*** Dedicated telephone line or high speed internet connection for computer access. Provide separate jack for internet connection in each room. Computer will be supplied by resident engineer.

***Digital Camera.*** Digital camera complete with all necessary hardware, cables, operating manuals, and other pertinent media required for operation of digital camera unit itself, including connecting digital camera to office computer system. Digital camera must be able to download images to computer without any proprietary software having to be installed on computer.

***Facsimile (Fax) Machine.*** Plain paper laser or inkjet fax machine with dedicated telephone line. Fax machine is to be capable of sending and printing maximum paper size of 8-1/2 inches x 14 inches, with minimum 20 page memory storage, 20-sheet document feeder, and 50-sheet paper capacity. Fax machine is to be able to transmit at least 6 pages per minute and have an autodial/redial with minimum of 50 phone number memory capability. Fax machine is to be capable of storing and printing outgoing message confirmation information and printing sender's name, fax number and page number on incoming faxes.

***First Aid Kit.*** Type III first aid kit in accordance with ANSI Z308.1 Minimum Requirements for Workplace First Aid Kits. First aid kit is to be kept properly stocked at all times.

***Paper Supplies.*** Provide total of three packages of multi-purpose white paper (500 sheets, 20 pound, 92 brightness) as initial stock. Provide one package for each paper size required (8-1/2 inches x 11 inches, 8-1/2 inches x 14 inches, and 11 inches x 17 inches).

***Photocopy Machine.*** Heavy duty electric dry-process type photocopy machine, capable of copying paper sizes 8-1/2 inches x 11 inches, 8-1/2 inches x 14 inches, and 11 inches x 17 inches.

***Stove.*** Electric, propane or bottle gas type stove with minimum of two burners adequate for rapid drying of soil samples, including adequate supply of fuel or electrical supply. Stove is required only when Excavation and Embankment or Culverts and Storm Drains are included in project, and separate field laboratory is not included.

***Telephone with Answering Machine.*** Telephone with answering machine capable of recording outgoing message up to 60 seconds in duration, and receiving minimum of 40 incoming messages of 60 seconds in duration. Answering machine must include automated voice marking of time and day of each message received, and provide message mark so that new messages may be played back without erasing old messages. Answering machine is to include remote programming of playback, backspace, and outgoing message re-record and allow for retrieval of messages without remote control unit. Provide extension telephone for each separate room.

***Telephone Lines.*** Separate telephone lines are to be provided for telephone, fax machine and high speed internet connection for computer access. Provide separate jack for telephone and internet connection in each room.

***Thermometer.*** Minimum-maximum thermometer displaying in degrees fahrenheit and mounted with an external probe to give both indoors and outdoors temperature.

***Coat Rack.*** Metal or wood coat rack or closet capable of holding at least 4 coats.

***Drafting Stool.*** Fully assembled adjustable height type drafting stool with backrest.

***Drafting Table.*** Fully assembled adjustable height tilting top drafting table with brackets and legs and approximate dimensions of 3 feet x 6 feet.

***Filing Cabinet.*** Fire resistant, legal size 2-drawer or 4-drawer filing cabinet with locks and two keys each, meeting requirements of ANSI/UL Standard 72 for Insulated Filing Devices, Class 350-1 hour.

***Office Chair.*** Fully assembled adjustable type office chair with arms and 5 legs with casters, 2 office chairs per office desk.

***Office Desk.*** Fully assembled and freestanding office desk, minimum of 5 feet long, 2-1/2 feet wide, 2-1/2 feet high, with at least 2 lockable drawers.

***Pencil Sharpener.*** Manual or electric pencil sharpener, minimum one per room.

***Plan Filing Rack.*** Vertical plan filing rack constructed of metal, capable of hanging up to four sets of plan drawings up to 24 inches x 36 inches in size, with four hanging clamps included.

***Role File Unit.*** Eight compartment role file unit. Each compartment is to be approximately 6 inches x 6 inches capable of housing rolls of cross-sections that are minimum of 22 inches long.

***Storage Locker.*** Metal or wood storage locker with shelve(s), tumbler lock and two keys for storage of survey, GPS and testing equipment. Total locker space footprint is to be minimum of 2-1/2 square feet, and is to be minimum 6 feet high.

***Table.*** Commercial-grade rectangular table with weather/spill resistant top, minimum size of 6 feet long, 2-1/2 feet wide, and 2-1/2 feet high.

***Wastebasket.*** Wastebasket with minimum capacity of 6 gallons. Provide one wastebasket for each desk and table.

**S637-2.04 Field Office – Type A**

Field office Type A is to have minimum of 160 square feet of floor space with one outside door and at least four windows.

**S637-2.05 Field Office – Type B**

Field office Type B is to have minimum of 330 square feet of floor space with two outside doors and at least six windows.

Field office is to be partitioned to provide minimum of two rooms with an adjoining door. Smaller room is not to be less than 96 square feet in floor area and is to contain two windows.

**S637-2.06 Field Office - Minimum Requirements**

| Field Office | | |
|---|---|---|
| **Item Description** | **Type A** | **Type B** |
| Parking spaces | 2 | 3 |
| Area floor space | 160 square feet | 330 square feet |
| Number of rooms (not counting restroom) | 1 | 2 |
| Restroom | 1 | 1 |
| Doors – outside | 1 | 2 |
| Windows | 4 | 6 |

| Field Office Equipment | | |
|---|---|---|
| **Item Description** | **Type A** | **Type B** |
| Fire extinguisher | 1 | 2 |
| Smoke detector | 1 | 2 |
| Carbon monoxide detector | 1 | 2 |
| Computer connection | 1 | 2 |
| Digital camera | 1 | 1 |
| Facsimile (Fax) machine | 1 | 1 |
| First aid kit | 1 | 1 |
| Paper supplies | 3 reams (1 each paper size) | 3 reams (1 each paper size) |
| Photocopy machine | 1 | 1 |
| Telephone w/answering machine | 1 | 1 |
| Telephone w/o answering machine | - | 1 |
| Telephone lines | 3 | 3 (5 connections) |
| Thermometer | 1 | 1 |
| Coat rack | 1 | 1 |
| Drafting stool | 1 | 2 |
| Drafting table | 1 | 2 |
| Filing cabinet | (1) 2 drawer | (1) 4 drawer |
| Office chair | 2 | 4 |
| Office desk | 1 | 2 |
| Pencil sharpener | 1 | 2 |
| Plan filing rack | 1 | 1 |
| Role file unit | 1 | 1 |
| Storage locker | 1 | 1 |
| Stove (if required) | 1 | 1 |
| Table | 1 | 1 |
| Wastebasket | 3 | 5 |

**S637-3 CONSTRUCTION DETAILS**

Field office is to be fully equipped and made available for use and occupancy by City's project representative prior to start of any other work on project. Such use and occupancy is to be made available until City relinquishes its use.

City will retain ownership of any data storage media, data storage containers and consumables.

Contractor is responsible to maintain field office complete with furniture and equipment in safe and operable condition, and have adequate stock of supplies and materials on hand at all times. Equipment provided with field office is to be fully operational prior to resident engineer occupying field office. Contractor is to provide instruction to project engineer regarding proper use and operation of equipment provided with field office.

Furniture and equipment is to be fully assembled, operational and clean. Field office is to be cleaned and rubbish removed as necessary, but not less than at least once per week. Field office is to be kept free of pests, both human and otherwise.

Areas subject to pedestrian access, and vehicular circulation and parking, are to be maintained and kept clear of debris and accumulation of any weather related materials such as leaves and snow.

Contractor is responsible, until use and occupancy of field office is relinquished by City, for any damage, direct or indirect, of whatever nature, occurring to property of City and property of resident engineer which is kept in field office. Such property will be limited to only those items used by resident engineer in performance of project related work activities. Such property is to be replaced within 30 days of reported damages and includes any loss caused by, but not limited to, fire, theft, vandalism or malicious mischief.

Resident engineer is to provide Contractor with detailed list of project related items, with corresponding dollar values, belonging to City and resident engineer which are kept in field office. Resident engineer is to provide Contractor with updates when something on list changes. Contractor will not be responsible for any items kept in field office that are not on this list, or are not project related.

After completion of project, field office is to be disassembled. If mobile trailer was used as field office, it is to be removed from location, and area cleaned and restored to original or better condition within 30 days of removal of mobile trailer.

## S637-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of months to nearest quarter (0.25) of month for which field office has been properly provided.

Measurement will not commence any sooner than date of start work order is effective, and will cease when City relinquishes its use.

## S637-5 BASIS OF PAYMENT

Unit price bid includes cost of: providing and furnishing field office complete with all required fixtures, equipment, paper supplies, furniture, parking; signage; maintenance and repair of fixtures, equipment, furniture; weekly cleaning and upkeep; repair or replacement of City and resident engineer project related property that is damaged or lost due to fire, theft, vandalism or malicious mischief; removal mobile trailer and site restoration; and furnishing all labor, material and equipment necessary to complete work.

Payment will be made for each month of availability for occupancy by resident engineer.

No payment will be made under Field Office for each calendar day during which there are deficiencies in compliance with these requirements. First calendar day commences 24 hours after written notice has been delivered to Contractor of such deficiency. Amount of such calendar day nonpayment will be determined by dividing unit price bid per month by 30.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S637.10 | Field Office - Type A | Month |
| S637.11 | Field Office - Type B | Month |

REVISED May 1, 2013

# SECTION S646 - DELINEATOR

## S646-1 DESCRIPTION

Work consists of furnishing and installing new delineators, relocating, replacing or removing existing delineators, as required in Contract Documents and as directed by Project Manager.

## S646-2 MATERIALS

### S646-2.01 Delineator - General

Delineator is to be two-piece yellow flexible tubular post with self-locking system in accordance with Safe-Hit Type 3 channelizer as manufactured by Safe-Hit, or approved equivalent.

Delineator post is to be manufactured from durable low density non-discoloring polyethylene plastic with ultraviolet inhibitors that is capable of maintaining its structural integrity and being able to rebound back to vertical despite repeated vehicular impacts.

Delineator post is to be round in shape, 2-1/4 inch diameter, and supplied in variable lengths. Delineator post is to be supplied with 1-3/4 inch diameter reinforcement tube installed within lower portion of post.

### S646-2.02 Delineator – Pavement Anchor

Delineator post is to be supplied with open-end tubular galvanized metal anchor that features twist-lock system. Anchor system is to be such that existing delineator post can be manually removed from and new delineator post installed directly into existing anchor without any further construction required.

Anchor is to be supplied in variable lengths.

### S646-2.03 Delineator – Surface Mount

Delineator post is to be supplied with thermoplastic base that features either twist-lock or pin-lock system.

Base is to be secured to pavement area with concressive epoxy for permanent installation, butyl pad or mechanical anchors for non-permanent installation.

### S646-2.04 Delineator – Soil Anchor

Delineator post is to be supplied with drivable tubular galvanized metal anchor that features twist-lock system. Anchor system is to be such that existing delineator post can be manually removed from and new delineator post installed directly into existing anchor without any further construction required.

Anchor is to be supplied in variable lengths.

### S646-2.05 Reflective Sheeting

Reflective sheeting is to be silver high intensity reflective sheeting in accordance with Federal Highway Specification FP-92, Type III, Class 2.

Reflective sheeting is to be 3 inches by 6 inches, and provide 360° visibility by being applied completely around delineator post.

## S646-3 CONSTRUCTION DETAILS

### S646-3.01 Delineator Installation

Delineator including anchoring/mounting system is to be installed in accordance with manufacturer's instructions.

### S646-3.03 Relocate Existing Delineator

Existing delineator including anchoring/mounting system is to be removed and reinstalled in such a manner that existing materials are not damaged. Any existing materials that are damaged are to be replaced in kind. Existing anchoring/mounting system is to be cleaned of all extraneous materials before being reinstalled. Area where existing anchoring/mounting system has been removed is to be restored as required, and any excavation backfilled.

### S646-3.04 Replace Existing Delineator

Existing delineator is to be removed and disposed of, and new delineator installed. Existing anchoring/mounting system that is damaged, it is to be replaced in kind.

### S646-3.05 Remove and Dispose Existing Delineator

Existing delineator including anchoring/mounting system is to be removed and disposed of. Area where existing anchoring/mounting system has been removed is to be restored as required, and any excavation backfilled.

## S646-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of delineators installed, relocated, replaced or removed.

## S646-5 BASIS OF PAYMENT

### S646-5.01 General

Unit price bid for all items includes cost of: excavation and backfill; and furnishing all labor, material and equipment necessary to complete work.

### S646-5.02 Delineator

Unit price bid also includes cost of: furnishing and installing delineator, including anchoring/mounting system.

### S646-5.03 Relocate Existing Delineator

Unit price bid also includes cost of: removing and reinstalling existing delineator and anchoring/mounting system; furnishing and installing new anchoring/mounting system if required.

### S646-5.04 Replace Existing Delineator

Unit price bid includes cost of: removing and disposing existing delineator; furnishing and installing new delineator; furnishing and installing new anchoring/mounting system if required.

### S646-5.05 Remove Existing Delineator

Unit price bid also includes cost of: removing and disposing existing delineator and surface mounting system.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S646.0101 | Delineator – Pavement Anchor | Each |
| S646.0102 | Relocate Existing Delineator – Pavement Anchor | Each |
| S646.0103 | Replace Existing Delineator – Pavement Anchor | Each |
| S646.0201 | Delineator – Surface Mount | Each |
| S646.0202 | Relocate Existing Delineator – Surface Mount | Each |
| S646.0203 | Replace Existing Delineator – Surface Mount | Each |
| S646.0301 | Delineator – Soil Anchor | Each |
| S646.0302 | Relocate Existing Delineator – Soil Anchor | Each |
| S646.0303 | Replace Existing Delineator – Soil Anchor | Each |
| S646.04 | Remove and Dispose Existing Delineator | Each |

REVISED May 1, 2013

# SECTION S671 - STREET LIGHTING

## S671-1 DESCRIPTION

Work consists of installing, adjusting, relocating or replacing existing conduit, pullboxes or light poles as required in Contract Documents and as directed by Project Manager.

## S671-2 MATERIALS

### S671-2.01 Conduit

Conduit, couplings, condulets, adaptors and bends are to be Schedule 40, rigid, extra-heavy wall polyvinyl chloride (PVC) as specified by the Underwriters Laboratories Standard UL-651. Conduit, couplings, condulets, adaptors and bends are to meet the specifications included in NEMA Standard Specification TC-2 for electrical plastic conduit EPC-40.

Conduit, couplings, condulets, adaptors and bends used for roadway crossings and wood pole riser connections, are to be Schedule 80, rigid, extra-heavy wall polyvinyl chloride (PVC) conduit as specified by the Underwriters Laboratories Standard UL-651. Conduit, couplings, condulets, adaptors and bends is to meet the specifications included in NEMA Standard Specification TC-2 for electrical plastic conduit EPC-80.

Solvent cement to be used for joining PVC conduit is to meet the requirements of ASTM D2564, or as recommended by the conduit manufacturer.

Galvanized steel conduit, couplings, condulets, adaptors and bends are to conform to the requirements of NYSDOT Section 723-20 Metal Steel Conduit, Zinc Coated.

In cases of conflicting test requirements, the more stringent of the test requirements is to be met.

### S671-2.02 Miscellaneous Hardware

3 inch threaded coupling and threaded nipple are to be 50,000 pounds per square inch galvanized steel conforming to ASTM A449.

2 inch threaded coupling and threaded nipple are to be 36,000 pounds per square inch galvanized steel conforming to ASTM A153.

Ground rod is to be 5/8 inch diameter, 8 foot long, copper bonded or hot dip galvanized steel.

Ground rod clamp is to be 5/8 inch Anderson GC-5, Blackburn J-AB 5/8 H, or approved equivalent.

### S671-2.03 Warning Tape

Warning tape is to be red and marked CAUTION ELECTRICAL CABLE as manufactured by Allen System, Inc., or approved equivalent.

### S671-2.04 Concrete Pullbox

Precast or cast-in-place pullboxes are to be made from Class K concrete, with cable bracket supports attached on the inside of all four walls. Iron castings for frames and covers are to conform to ASTM A48 Class 30 gray iron.

### S671-2.05 Pole Foundation

Pole foundations are to be made of Class K concrete.

Pole foundations for fiberglass and non-davit style light poles are to be precast. Cast-in-place foundations will be allowed only as approved by the Project Manager.

Pole foundations for davit style light poles are to be cast-in-place. Precast foundations will be allowed only as approved by the Project Manager.

**S671-2.06 Materials Supplied by the City**

City will provide the following materials which are to be installed by the Contractor.

- Anchor bolts, nuts and washers
- Fiberglass handhole
- Fiberglass pullbox

For those materials to be supplied by the City, the Contractor is to pick up and sign for the materials during normal business hours. The City's Street Lighting Section requires a minimum of at least 2 working days advance notice to make arrangements for the pick up of any materials, (585) 428-6841.

**S671-2.07 Slurry Bond Coat**

Slurry bond coat is to be Acryl 60 as manufactured by Thoro System Products, or approved equivalent.

**S671-2.08 Grout**

Grout is to be non-shrink type grout in accordance with NYSDOT Section 701-05 Concrete Grouting Material. Grout is to have a minimum compressive strength of 4,000 pounds per square inch at 24 hours.

**S671-2.09 Concrete**

Concrete is to be Class K in accordance with Section S504 Portland Cement Concrete.

**S671-2.10 Crushed Stone**

Crushed stone is to be subbase course Type 2 in accordance with NYSDOT Section 304 Subbase Course.

**S671-2.11 Gravel**

Gravel shall be subbase course Type 1 in accordance with NYSDOT Section 304 Subbase Course.

**S671-2.12 Sand**

Sand shall be a clean washed well graded angular sand with a maximum particle size of about 3/16 inch, without any fine limestone screenings, free of salts and other deleterious materials, and in accordance with the requirements of ASTM C33 Concrete Aggregates.

**S671-2.13 Select Backfill**

Select backfill shall be excavated material free from stones, sod and foreign materials. If suitable or sufficient quantities of excavated materials are not available, the Contractor is to provide select granular fill per Section R203 Excavation and Embankment.

**S671-2.14 Excavation, Backfill and Surface Restoration**

Excavation, backfill and surface restoration is to be in accordance with Section R206 Trench and Culvert Excavation.

**S671-2.15 Materials to be UL Listed**

All material required for the work is to be listed and rated by Underwriter Laboratories (UL) for its designated use. Materials are to be delivered to the job site in the original packaging, clearly labeled and bearing the manufacturer's identification and UL label.

## S671-3 CONSTRUCTION DETAILS

### S671-3.01 General

Manufacturer's shop drawings shall be submitted as required in the General Terms and Conditions Article 6, Section 6.13 Shop Drawings and Samples.

Removal and reinstallation of existing cable, light poles, luminaires and all other related appurtenances will be done by City's Street Lighting Contractor. Where such work is required, Project Manager is to be notified a minimum of 2 working days in advance of Contractor's intent to begin work on street lighting facilities. Contractor is expected to coordinate work with City's Street Lighting Contractor. Contractor will not be held liable or responsible for any delays in performing work that are caused by City's Street Lighting Contractor's lack of responsiveness or failure to proceed expeditiously.

For those materials to be salvaged and returned to City, Contractor is to deliver the salvaged materials during normal business hours. City's Street Lighting Section requires a minimum of at least 2 working days advance notice to make arrangements for the delivery of salvaged materials, (585) 428-6841.

Pole foundation installation, relocation and/or adjustment, shall result in a completed foundation with a smooth level surface, so that light pole is plumb when installed.

Split duct repairs on conduits will not be allowed.

Excavation, backfill and surface restoration shall conform to the requirements of Section R206 Trench and Culvert Excavation.

### S671-3.02 Connection to Service Points

Conduit shall be extended to designated point of service, and shall be connected in accordance with following methods:

A. Underground Supplied Fixture Fed from Underground Distribution Facilities

Conduit shall be extended from City's handhole/pullbox to utility manhole/handhole, but not connected to utility manhole/handhole. Utility company will provide necessary point of entry and will make actual conduit connection to manhole/handhole.

B. Underground Supplied Fixture Fed from Overhead Distribution Facilities - Wood Pole Riser Connection

Conduit shall be extended from City's handhole/pullbox to wood pole. Riser section consisting of grounded galvanized steel or PVC schedule 80 conduit shall be installed on wood pole, and shall be of a length sufficient to extend to fuse point which is located on wood pole.

### S671-3.03 Conduit

Trench shall be excavated to provide a minimum cover between top of conduit and finished grade. Minimum cover is 3 feet in roadway area, 2 feet in all other areas. Trench shall extend between all adjacent pole foundations, pullboxes, handholes and electrical service points.

Conduit installation under driveways, roadways, sidewalks and trees shall be done by boring. Open trenching may be used instead of or in conjunction with boring, but only as approved by Project Manager. Before any tree roots are cut, City Forester shall be notified.

Conduit sections shall be placed within trench, then connected together to form a continuous conduit run. Conduit sections shall be connected together by couplings, condulets, adaptors and bends glued onto each section of conduit. Conduit fittings shall be assembled in accordance with manufacturer's latest instructions and as approved by Project Manager. Warning tape shall be placed in open cut trenches approximately 6 inches above conduit.

Conduit sections installed under roadways shall be installed such that conduit extends to a minimum of 1 foot behind face of curb, or backedge of concrete gutter, on both sides of roadway; or shall extend from handhole/pullbox to exterior of light pole foundation.

PVC conduit in open trench roadway crossings shall be encased within minimum of 3 inches of concrete. No backfilling shall be allowed until concrete has set.

Conduit connected to concrete pullboxes shall be installed flush with inside wall, and shall be a minimum of 3 inches above floor of pullbox.

After installation, conduit shall be tested for clear bore and correct installation by using a mandrel, brush and snake, before installation will be accepted. Mandrel shall be turned approximately 85 percent of internal diameter of conduit to be tested. Two short wire brushes shall be included in mandrel assembly. Snaking of conduits shall be done in presence of Project Manager. Conduit which rejects mandrel shall be cleared. Install 250 pound nylon pull cord in conduit. Cap or plug empty conduit and duct openings.

**S671-3.04 Conduit Replacement**

Section of existing conduit that is to be replaced shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, section of conduit to be replaced shall be removed and disposed of. New conduit shall be installed per Subsection S671-3.03 Conduit.

**S671-3.05 Concrete Pullbox Installation**

Pullbox shall be set on a 2 inch bed of compacted crushed stone, with cable bracket supports, and frame and cover installed as required. Frame and cover shall be set in mortar, placed true to line and grade, make full and even bearing on underlying surface, and non-rocking when in place. Expansion joints shall be used for installation in paved areas.

Pullbox that is being installed over an existing conduit run, section of existing conduit that is to be removed shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, cut section of conduit shall be removed and disposed of. After pullbox is installed, existing conduit shall be connected to pullbox.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

**S671-3.06 Concrete Pullbox Adjustment/Relocation/Replacement**

Before adjusting/relocating/replacing existing pullbox, existing conduit shall be disconnected from pullbox, and pullbox removed in such a manner that pullbox and any conduit contained therein are not damaged. Pullbox shall be reinstalled on a minimum 2 inch thick bed of compacted crushed stone to its proper location and elevation, with frame and cover reinstalled as required. Frame and cover shall be set in mortar, placed true to line and grade, make full and even bearing on underlying surface, and non-rocking when in place. Existing conduit shall be reconnected to pullbox. Expansion joints shall be used for installation in paved areas.

Existing pullbox that is being relocated and installed over an existing conduit run, section of existing conduit that is to be removed shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, cut section of conduit shall be removed and disposed of. After pullbox has been reinstalled, existing conduit shall be connected to pullbox.

Existing pullboxes that are being replaced, shall be removed and disposed of.

Existing pullboxes that do not already have cable bracket supports mounted on walls, new cable bracket supports are to be attached to the inside of each wall.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

**S671-3.07 Concrete Pullbox Frame and Cover Replacement**

Existing pullbox frame and cover shall be removed and disposed of. Top of pullbox shall be cleaned of all debris, new pullbox frame and cover shall be set in mortar, placed true to line and grade, make full and even bearing on underlying surface, and non-rocking when in place. Expansion joints shall be used for installation in paved areas.

**S671-3.08 Fiberglass Handhole/Pullbox Installation**

Handhole/pullbox shall be set on a 3 to 6 inch thick bed of compacted sand or gravel, true to line and grade, with cover installed as required. Cover is to make continuous full and uniform contact with corresponding box, is to be properly seated and secured, and non-rocking when in place. Expansion joints shall be used for installation in paved areas. Minimum of 6 inches of loose gravel shall be placed in bottom of handhole/pullbox.

Handhole/pullbox that is being installed over an existing conduit run, section of existing conduit that is to be removed shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, cut section of conduit shall be removed and disposed of. After handhole/pullbox has been installed, existing conduit shall be connected to handhole/pullbox.

Handhole/pullbox that is located within paved area will be supplied with steel rim and cover.

Where necessary, new conduit shall be installed to fill in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

**S671-3.09 Fiberglass Handhole/Pullbox Adjustment/Relocation/Replacement**

Before adjusting/relocating/replacing existing pullbox, existing conduit shall be disconnected from handhole/pullbox, and handhole/pullbox removed in such a manner that handhole/pullbox and any conduit contained therein are not damaged. Handhole/pullbox shall be set on a minimum 3 to 6 inch thick bed of compacted sand or gravel, true to line and grade, with cover installed as required. Cover is to make continuous full and uniform contact with corresponding box, is to be properly seated and secured, and non-rocking when in place. Existing conduit shall be reconnected to handhole/pullbox. Expansion joints shall be used for installation in paved areas. Minimum of 6 inches of loose gravel shall be placed in bottom of handhole/pullbox.

Handhole/pullbox that is being relocated and installed over an existing conduit run, section of existing conduit that is to be removed shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, cut section of conduit shall be removed and disposed of. After handhole/pullbox has been installed, existing conduit shall be connected to handhole/pullbox.

Existing handhole/pullbox that is being replaced, shall be removed and disposed of.

Handhole/pullbox that is located within paved area will be supplied with steel rim and cover.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

**S671-3.10 Handhole/Pullbox Removal**

Before removing existing handhole/pullbox, existing conduit shall be disconnected from handhole/pullbox, then handhole/pullbox removed and disposed of.

Existing cast iron frames and covers that are broken or otherwise structurally unsound shall be disposed of.

Existing cast iron frames and covers that are in good condition shall be salvaged and delivered to City's Street Lighting storage facility.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

**S671-3.11 Davit Light Pole Foundation**

Foundation shall be cast-in-place and installed complete with required anchor bolts, conduit, ground rod, and any necessary fittings. Foundation shall be cast-in-place against undisturbed soil with anchor bolts, conduit, ground rod and all fittings held in place by a template. Anchor bolts are to extend 3 inches above top of foundation. Conduit is to extend 9 inches above top of foundation. Ground rod is to be bent into and extend 4 inches above top of foundation. Earth anchors may be used for preparation of excavation for casting foundation against undisturbed soil. Use of sonotubes for forming cast-in-place foundations will not be allowed, unless specifically approved for use by Project Manager.

Precast foundation may be used only with approval of Project Manager. Precast foundation shall be installed complete with required anchor bolts, conduit and fittings.

Foundation that is being installed over an existing conduit run, section of existing conduit that is to be removed shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, cut section of conduit shall be removed and disposed of. After foundation has been installed, existing conduit shall be connected to foundation.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

**S671-3.12 Miscellaneous Metal Light Pole Foundation**

Foundation shall be precast and installed complete with required anchor bolts, conduit, ground rod, and any necessary fittings. Anchor bolts are to extend minimum of 2 inches above top of foundation. Conduit is to extend minimum of 6 inches above top of foundation. Ground rod is to extend 4 inches above top of foundation.

Cast-in-place foundation may be used only with approval of the Project Manager. Foundation shall be cast-in-place against undisturbed soil with anchor bolts, conduit, ground rod and all fittings held in place by a template. Earth anchors may be used for preparation of excavation for casting foundation against undisturbed soil. Use of sonotubes for forming cast-in-place foundations will not be allowed, unless specifically approved for use by Project Manager.

Foundation that is being installed over an existing conduit run, section of existing conduit that is to be removed shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, cut section of conduit shall be removed and disposed of. After foundation has been installed, existing conduit shall be connected to foundation.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

**S671-3.13 Fiberglass Light Pole Foundation**

Foundation shall be precast and installed complete with required anchor bolts, conduit, and any necessary fittings. Anchor bolts are to extend minimum of 2 inches above top of foundation. Conduit is to extend minimum of 6 inches above top of foundation.

Cast-in-place foundation may be used only with approval of the Project Manager. Foundation shall be cast-in-place against undisturbed soil with anchor bolts, conduit, ground rod and all fittings held in place by a template. Earth anchors may be used for preparation of excavation for casting foundation against undisturbed soil. Use of sonotubes for forming cast-in-place foundations will not be allowed, unless specifically approved for use by Project Manager.

Foundation that is being installed over an existing conduit run, section of existing conduit that is to be removed shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, cut section of conduit shall be removed and disposed of. After foundation has been installed, existing conduit shall be connected to foundation.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

### S671-3.14 Foundation Adjustment/Relocation

Before removing existing foundation, existing conduit shall be disconnected from existing foundation in such a manner as not to damage the conduit or any cable contained therein. Existing foundation shall be removed in such a manner that foundation is not damaged, then reinstalled true to line and grade. Existing/new conduit shall be connected to foundation.

For foundations that are being relocated and installed over an existing conduit run, a section of existing conduit shall be saw cut such that section of conduit which is to remain shall have squared neat edges. After cutting, section of conduit to be eliminated shall be removed and disposed of. After foundation has been reinstalled, existing conduit shall be connected to the foundation.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

### S671-3.15 Foundation Extension

Top of existing foundation shall be scarified or a portion removed to accommodate new Class K concrete cap. Contractor shall use extra caution so that any exposed cable shall not be damaged or cut. Before pouring new concrete cap, top of existing foundation shall be coated with an approved slurry bond coat. Existing anchor bolts and conduit shall be extended as required with appropriate nipples, extensions and couplings. New concrete cap shall be formed and poured onto top of prepared existing foundation.

### S671-3.16 Foundation Removal

Before removing existing foundation, existing conduit shall be disconnected from foundation, then foundation removed and disposed of.

Existing precast foundations that are in good condition shall be salvaged and delivered to City's Street Lighting storage facility.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

### S671-3.17 Light Pole Removal

Before removing existing light pole, existing conduit shall be disconnected from existing foundation, then light pole and foundation removed and disposed of.

Existing precast foundations that are in good condition shall be salvaged and delivered to City's Street Lighting storage facility.

Where necessary, new conduit shall be installed to fill-in missing sections. New conduit shall be installed per Subsection S671-3.03 Conduit, the cost of which shall be paid for under the appropriate conduit item.

### S671-3.18 Daily Cleanup of Work Site

All streets and sidewalks shall be cleaned of all spoil and debris including removal of old pole base foundations, at the end of each working day. Stockpiling of any material shall be only as approved by the Project Manager.

## S671-4 METHOD OF MEASUREMENT

### S671-4.01 Conduit

Quantity to be measured for payment will be number of linear feet of conduit installed or replaced, as measured from exterior of light pole foundation, to handhole, pullbox, manhole, or riser connection on wood pole.

Conduit that has to cross street, will be paid for under general bid items for Conduit – in Roadway. Quantity to be measured for payment will be number of linear feet of conduit installed or replaced, as measured from exterior of light pole foundation, across street, to handhole, pullbox, manhole, or riser on wood pole.

No separate payment will be made for conduit located within light pole foundation.

**S671-4.02 All Other Items**

Quantity to be measured for payment will be number of units installed, adjusted, relocated, replaced or removed.

## S671-5 BASIS OF PAYMENT

**S671-5.01 General All Items**

Unit price bid for all items includes cost of: coordination with City's Street Lighting Contractor for installation of, or removal and reinstallation of cable, light poles, luminaires and all other related appurtenances; daily cleanup of work site; and furnishing all labor, material and equipment necessary to complete work.

**S671-5.02 Conduit**

Unit price bid also includes cost of: furnishing and installing new conduit, fittings, solvent cement; gluing; warning tape, pull cord, couplings and insulating bushings, concrete encasement; testing for clear bore and correct installation; connecting conduit to handholes, pullboxes, existing conduit, light pole foundations, and other electrical equipment.

For conduit replacement, unit price bid also includes cost of: disconnecting, cutting, removing and disposing of existing conduit.

Excavation including trenching or boring, backfill and surface restoration will be paid for under separate bid items, or included in price bid for each item as indicated in item description.

Excavation that is included in pay item does not include rock excavation. Rock excavation will be paid for under separate bid item.

**S671-5.03 Connection to Wood Pole**

Unit price bid also includes cost of: furnishing and installing riser conduit; grounding; and hardware.

**S671-5.04 Concrete Pullbox**

A. Concrete Pullbox Installation

Unit price bid also includes cost of: furnishing and installing new pullbox, frame and cover; cable support brackets; mortar; expansion joints; crushed stone bedding; cutting, removing and disposing section of existing conduit; connecting existing conduit to pullbox; excavation and backfill.

B. Concrete Pullbox Adjustment

Unit price bid also includes cost of: disconnecting existing conduit; removing and reinstalling existing pullbox, frame and cover; cable support brackets; mortar; expansion joints; crushed stone bedding; reconnecting existing conduit to pullbox; excavation and backfill.

C. Concrete Pullbox Relocation

Unit price bid also includes cost of: disconnecting existing conduit; removing and reinstalling existing pullbox, frame and cover; cable support brackets; mortar; expansion joints; crushed stone bedding; cutting, removing and disposing section of existing conduit; connecting existing conduit to pullbox; excavation and backfill.

D. Concrete Pullbox Replacement

Unit price bid also includes cost of: disconnecting existing conduit; removing and disposing existing pullbox, frame and cover; furnishing and installing new pullbox, frame and cover; cable support brackets; mortar; expansion joints; crushed stone bedding; reconnecting existing conduit to pullbox; excavation and backfill.

**S671-5.05 Concrete Pullbox Frame and Cover Replacement**

Unit price bid also includes cost of: removing and disposing existing frame and cover; providing and installing new frame and cover; or picking up and installing City furnished frame and cover; mortar; expansion joints; excavation and backfill.

**S671-5.06 Fiberglass Handhole/Pullbox**

A. Fiberglass Handhole/Pullbox Installation

Unit price bid also includes cost of: picking up and installing City furnished handhole/pullbox and cover; expansion joints; sand; gravel; cutting, removing and disposing section of existing conduit; connecting existing conduit to handhole/pullbox; excavation and backfill.

B. Fiberglass Handhole/Pullbox Adjustment

Unit price bid also includes cost of: disconnecting existing conduit; removing and reinstalling existing handhole/pullbox and cover; expansion joints; sand; gravel; reconnecting existing conduit to handhole/pullbox; excavation and backfill.

C. Fiberglass Handhole/Pullbox Relocation

Unit price bid also includes cost of: disconnecting existing conduit; removing and reinstalling existing handhole/pullbox and cover; expansion joints; sand; gravel; cutting, removing and disposing section of existing conduit; connecting existing conduit to handhole/pullbox; excavation and backfill.

D. Fiberglass Handhole/Pullbox Replacement

Unit price bid also includes cost of: disconnecting existing conduit; removing and disposing existing handhole/pullbox and cover; picking up and installing City furnished handhole/pullbox and cover; expansion joints; sand; gravel; reconnecting existing conduit to handhole/pullbox; excavation and backfill.

**S671-5.07 Handhole/Pullbox Removal**

Unit price bid also includes cost of: disconnecting existing conduit; removing and disposing existing handhole/pullbox, frame and cover; salvaging and delivering cast iron frame and cover; excavation and backfill.

**S671-5.08 Foundation**

Unit price bid also includes cost of: furnishing and installing foundation; ground rod; interior conduit and fittings; picking up and installing anchor bolts, nuts and washers; leveling shims; crushed stone bedding; cutting, removing and disposing section of existing conduit; connecting existing conduit to foundation; excavation and backfill.

**S671-5.09 Foundation Adjustment**

Unit price bid also includes cost of: disconnecting existing conduit; removing and reinstalling existing foundation; ground rod; crushed stone bedding; reconnecting existing conduit to foundation; excavation and backfill.

**S671-5.10 Foundation Relocation**

Unit price bid also includes cost of: disconnecting existing conduit; removing and reinstalling existing foundation; ground rod; crushed stone bedding; cutting, removing and disposing section of existing conduit; connecting existing/new conduit to foundation; excavation and backfill.

**S671-5.11 Foundation Extension**

Unit price bid also includes cost of: scarifying, removing and preparation of top portion existing foundation; furnishing and installing concrete cap; slurry bond coat; conduit and anchor bolt extensions, couplings, nipples; leveling shims; excavation and backfill.

**S671-5.12 Foundation Removal**

Unit price bid also includes cost of: disconnecting existing conduit; removing and disposing existing foundation; ground rod; salvaging and delivering precast foundation; excavation and backfill.

**S671-5.13 Light Pole Removal**

Unit price bid also includes cost of: removing and disposing existing light pole; excavation and backfill.

Removal of existing foundation will be paid for under separate bid item.

Payment will be made under:

*Note: XX in bid item number and X" in item description represents size of conduit. i.e.: 2 inch conduit would be bid as S671.020102 2" PVC Conduit.*

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S671.0201XX | X" PVC Conduit | Linear Foot |
| S671.0202XX | X" PVC Conduit (Including Excavation and Backfill) | Linear Foot |
| S671.0203XX | X" PVC Conduit (Including Excavation, Backfill and Surface Restoration) | Linear Foot |
| S671.0301XX | X" PVC Conduit - in Roadway | Linear Foot |
| S671.0302XX | X" PVC Conduit - in Roadway (Including Excavation and Backfill) | Linear Foot |
| S671.0303XX | X" PVC Conduit - in Roadway (Including Excavation, Backfill and Surface Restoration) | Linear Foot |
| S671.0401XX | X" Galvanized Steel Conduit - in Roadway | Linear Foot |
| S671.0402XX | X" Galvanized Steel Conduit - in Roadway (Including Excavation and Backfill) | Linear Foot |
| S671.0403XX | X" Galvanized Steel Conduit - in Roadway (Including Excavation, Backfill and Surface Restoration) | Linear Foot |
| S671.0501XX | Replace Existing Conduit with X" PVC Conduit | Linear Foot |
| S671.0502XX | Replace Existing Conduit with X" PVC Conduit (Including Excavation and Backfill) | Linear Foot |
| S671.0503XX | Replace Existing Conduit with X" PVC Conduit (Including Excavation, Backfill and Surface Restoration) | Linear Foot |
| S671.0601XX | Replace Existing Conduit with X" PVC Conduit - in Roadway | Linear Foot |
| S671.0602XX | Replace Existing Conduit with X" PVC Conduit - in Roadway (Including Excavation and Backfill) | Linear Foot |
| S671.0603XX | Replace Existing Conduit with X" PVC Conduit - in Roadway (Including Excavation, Backfill and Surface Restoration) | Linear Foot |
| S671.0701XX | Replace Existing Conduit with X" Galvanized Steel Conduit - in Roadway | Linear Foot |
| S671.0702XX | Replace Existing Conduit with X" Galvanized Steel Conduit - in Roadway (Including Excavation and Backfill) | Linear Foot |
| S671.0703XX | Replace Existing Conduit with X" Galvanized Steel Conduit - in Roadway (Including Excavation, Backfill and Surface Restoration) | Linear Foot |

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S671.0801 | Riser Connection to Wood Pole | Each |
| S671.1024 | Concrete Pullbox (24") | Each |
| S671.1030 | Concrete Pullbox (30") | Each |
| S671.1101 | Adjust Existing Concrete Pullbox | Each |
| S671.1201 | Relocate Existing Concrete Pullbox | Each |
| S671.1301 | Replace Existing Concrete Pullbox | Each |
| S671.1401 | Replace Existing Concrete Pullbox Frame and Cover | Each |
| S671.1402 | Replace Existing Concrete Pullbox Frame and Cover (Furnished) | Each |
| S671.1501 | Remove Existing Concrete Pullbox | Each |
| S671.1601 | Install Fiberglass Handhole/Pullbox (Furnished) | Each |
| S671.1701 | Adjust Existing Fiberglass Handhole/Pullbox | Each |
| S671.1801 | Relocate Existing Fiberglass Handhole/Pullbox | Each |
| S671.1901 | Replace Existing Fiberglass Handhole/Pullbox (Furnished) | Each |
| S671.2001 | Remove Existing Fiberglass Handhole/Pullbox | Each |
| S671.3001 | Davit Light Pole Foundation | Each |
| S671.3101 | Metal Light Pole Foundation | Each |
| S671.3201 | Fiberglass Light Pole Foundation - Precast | Each |
| S671.3202 | Fiberglass Light Pole Foundation - Cast-in-Place | Each |
| S671.3301 | Adjust Existing Light Pole Foundation | Each |
| S671.3401 | Relocate Existing Light Pole Foundation | Each |
| S671.3501 | Extend Existing Light Pole Foundation | Each |
| S671.3601 | Remove Existing Light Pole Foundation | Each |
| S671.40 | Remove Existing Light Pole | Each |

REVISED May 1, 2013

# SECTION S900 - GENERAL WATER PROVISIONS

## S900 GENERAL

These general water provisions apply to all specifications for work on water system, and by reference is part of each section of those specifications.

## S900-2 MATERIALS

Materials and product manufacturer shall be in accordance with the current City of Rochester Water Bureau's Approved Products List or approved equivalent.

### S900-2.01 Hardware

Hardware is to be made of blue fluorocarbon coated, cold formed, high strength, low-alloy steel in accordance with ANSI/AWWA C111/A21.11.

### S900-2.02 Warning Tape

Warning tape is to be 3-inch wide blue colored direct burial detectable metallic-lamination tape designed to locate and warn excavators of existing buried water pipes. Warning tape is to be marked in bold readable lettering "**CAUTION WATER LINE BURIED BELOW**".

### S900-2.03 Material Certification

Manufacturers and suppliers certifications are to be furnished to Project Manager stating that materials furnished have passed acceptance tests listed in appropriate specification.

Water pipe, fittings and appurtenances that come into contact with drinking water are to be certified by an ANSI approved third-party North American certification program or laboratory for conformance with American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 for health effects and also ANSI/NSF Standard 61-Annex G or ANSI/NSF Standard 372 for "lead free" lead content requirements.

### S900-2.04 Thrust Restraint

Concrete for thrust blocks is to be Class K in conformance with requirements of Section S504 Portland Cement Concrete, and can be either central, transit or truck mixed. With prior approval of Project Manager, an on-site mixed concrete can be used in lieu of Class K mix. Use of dry unmixed cement for constructing thrust blocks is prohibited.

Push-on joints and mechanical joints may require restraint by utilizing restraining devices as described in the Materials Section of S901, Water Main Pipe and Fittings. Restraining device is to be installed according to manufacturer's instructions. See Standard Detail for length of water pipe, including all pipe joints within the given length, required to be restrained.

Tie rods and clamps may be used in lieu of restraining device and are subject to approval of Project Manager prior to their use in water work. Tie rods, clamps and hardware are to be in conformance with requirements of Section S900-2.01.

Number and diameter of tie rods to be used for restrained joints shall be as shown in the following table:

| NUMBER OF TIE RODS REQUIRED FOR JOINT RESTRAINT | | | | | | |
|---|---|---|---|---|---|---|
| Water Pipe Size (inches) | Domestic System Rod Diameter | | | Holly System Rod Diameter | | |
| | 5/8 inch | 3/4 inch | 1 inch | 5/8 inch | 3/4 inch | 1 inch |
| 4 | 2 | - | - | 2 | - | - |
| 6 | - | 2 | - | - | 2 | - |
| 8 | - | 2 | - | - | 2 | - |
| 10 | - | 2 | - | - | 2 | - |
| 12 | - | 2 | - | - | 4 | - |
| 16 | - | 4 | 2 | - | 4 | 2 |
| 20 | - | 4 | 2 | - | 6 | 4 |

Prior to backfilling, uncoated tie rods, clamps and any components made of metal used for restrained joints are to receive hand brushed application of an approved bitumastic coating specifically manufactured for underground use or wax tape coating system.

**S900-2.05 Bedding and Backfill Materials**

Sand material is to be used for embedment around water pipe and fittings and is to be in conformance with requirements of Section S203 Excavation and Embankment. Use of select granular backfill (water), locally excavated or pulverized concrete materials for purpose of embedment around water pipe and fittings is prohibited. Only an approved sand material is to be used for purpose of embedding water pipe and fittings.

Select granular backfill (water) material to be used as backfill above sand embedment course is to be in conformance with requirements of Section S203 Excavation and Embankment.

In lieu of select granular backfill (water) material, locally excavated or pulverized concrete material that is determined suitable for use by Project Manager can be used as backfill above sand embedment course.

Suitable locally excavated material consists of hard durable materials and soil that is free of clay, frozen, organic and other extraneous materials, and stones that are dimensionally greater than 3 inch in diameter.

Suitable pulverized concrete material is not to be dimensionally greater than 3 inch in diameter.

**S900-2.06 Controlled Density Fill Material**

Controlled density fill material is to have a compressive strength of 50 to 100 pounds per square inch, and must not contain fly ash or other pozzolan containing materials.

**S900-2.07 Surface Restoration Materials**

Following materials are to be used:

- Subbase material Type 1 and Type 2 in conformance with requirements of NYSDOT Section 304 Subbase Course
- Hot Mix Asphalt 37.5 F9 Base Course HMA, 19 F9 Binder Course HMA and 9.5 F2 Top Course HMA, 80 Series Compaction, in conformance with requirements of NYSDOT Section 402 Hot Mix Asphalt (HMA) Pavements
- Concrete foundation for pavement, Class C or Class F, in conformance with requirements of NYSDOT Section 503 Portland Cement Concrete Foundation for Pavement
- Concrete and asphalt concrete sidewalk and driveway in conformance with requirements of Section S608 Sidewalk and Driveway

- Curb in conformance with requirements of Section S609 Curb
- Seeding in conformance with requirements of Section S610 Landscape
- Topsoil in conformance with requirements of Section S613 Topsoil
- Concrete gutter in conformance with requirements of Section R624 Concrete Gutter

## S900-3 CONSTRUCTION DETAILS

### S900-3.01 General

Work on water system is to be coordinated with Bureau of Water. Location and disposition of water services must be verified before beginning any water system related work.

Where existing water system is required to be shut down as approved by the Project Manager, Bureau of Water will close existing water valves needed to isolate that section of existing water system. Bureau of Water is to be notified minimum of 10 working days in advance of intent to do work that requires section of existing water system to be shut down, and again minimum of 2 working days in advance of when actual work is to begin. Water valves and hydrants are to be operated only by authorized Bureau of Water personnel.

Work is to be scheduled so as to maintain adequate level of water service, with interruptions being of minimum duration. Affected water service customer is to be notified by Contractor minimum of 24 hours in advance of any planned water service disruption. Temporary water service is to be provided to water service customer where water service is to be discontinued for more than 8 hours, or when indicated in Contract Documents. Method of providing temporary water service is to be in conformance with requirements of Section S916 Temporary Bypass.

Businesses and sensitive water service customers that require continuous water service for their basic operation are to receive a written notification by Contractor minimum of 72 hours in advance of planned water service disruption and be provided with temporary water supply when water system is shut down, or water shut shall be coordinated such that it occurs outside normal business operating hours.

Permit is required from Bureau of Water to use water from hydrants. Permit requires use of water meter and backflow preventer being supplied by Bureau of Water.

Bureau of Water dispatcher and Project Manager must be immediately notified when existing hydrant is put out of service. Dispatcher will inform Fire Department of out of service hydrant, and Contractor is to red tag out of service hydrant. Dispatcher must be notified when hydrant is placed back in service.

Contractor is to provide record information of all water service work to Bureau of Water Engineering Section. Record information is to be submitted in form of water service card. Blank water service card can be obtained from Bureau of Water Materials and Equipment Section. Water service card is to be submitted for approval to Bureau of Water Engineering Section with all required information completely filled in. Record information to be provided on each water service card includes street address, coordinate location of water service pipe and curb stop, sizes and type of material installed, and Contractor's and inspector's names.

Excavation is to be in conformance with requirements of Section R206 Trench and Culvert Excavation. Excavation for new water construction is to be only to sufficient length, width and depth needed to perform work in safe manner, to expose existing water pipe, and for proper installation of new water pipe and fittings.

Appropriate measures are to be taken to prevent extraneous material and ground water from contaminating water system. Ground water level is never to be less than 12 inches below invert of water pipe. To prevent contamination, open ends of water pipe that are left unattended are to be plugged with watertight plug, and wrapped in a double layer of polyethylene plastic and tightly taped or tied.

Prior to installation, water valves and hydrants are to be inspected, cleaned, lubricated and tested to insure they are in proper working order and bolts and nuts are torqued to manufacturer's specifications.

Prior to installation of any new water pipe and fittings, open end of existing water pipe is to be cleaned, removing all external dirt, scale and rust for minimum distance of 12 inches beyond end of new water pipe and fittings. Extraneous material that ends up inside water pipe must be removed via scouring by manipulating respective water valve.

Trenches located within existing pavement areas are to be surface finished with temporary pavement before end of work day. Temporary pavement is to be in conformance with requirements of Section S412 Temporary Pavement.

Extra caution is to be taken when working in vicinity of existing water pipe which is to remain in service. No vibratory equipment is to be used within 5 feet horizontally of existing cast iron, steel, asbestos cement and prestressed concrete cylinder water pipe.

Cut and open water pipe ends on abandoned water main and hydrant branch pipes are to be plugged with concrete. Concrete plug is to completely fill and seal end of abandoned water pipe to minimum depth of 12 inches. Abandoned water valves and curb stops are to be permanently closed and are to be left in shut position.

New water service taps may be installed during installation of water pipe as approved by the Project Manager.

**S900-3.02 Installation**

Water pipe and fittings are to be installed to required alignment and depth as required in Contract Documents and as approved by Project Manager. Alignment and depth of water pipe and fittings specified in Contract Documents is approximate only. Actual alignment and depth may be adjusted to meet field conditions at time of installation as approved by Project Engineer. Control points are to be carefully preserved.

Full depth pavement saw cutting is required for trenching in pavement areas that are located outside of full pavement reconstruction. All pavement saw cutting is to be done prior to commencing any water work, and is to be done in conformance with requirements of Section R622 Saw Cutting.

Excavation limits for installation of water pipe and fittings are to be to required alignment and depth to provide for minimum cover over water pipe and fittings, as measured between finished grade and top of water pipe and fittings shall be (unless noted otherwise on plans):

- 4 feet 6 inches for domestic water pipe
- 5 feet for Holly system water pipe

Trench is to be de-watered, and kept free of water at all times.

Where trench bottom is determined to be unstable by Project Manager, unsuitable material is to be removed to width and depth as approved by Project Manager, and excavated area shall be backfilled with select granular backfill or subbase course material.

Rock that is encountered within bounds of required excavation, embedment and backfill limits, is to be removed.

Before installation interior of water pipe and fittings that cannot be normally disinfected shall be swabbed with 1- 5 percent minimum hypochlorite solution.

Where it is required to cut or remove section of existing water pipe, cut is to be made straight, smooth and perpendicular to centerline of existing water pipe. Prior to cutting of water pipe, pipe cutting equipment and methods are to be as approved by Project Manager.

**S900-3.03 Bedding and Backfill**

Water pipe and fittings are to be completely embedded within sand material, as measured from exterior limit of water pipe and fitting to minimum extent of:

- 12 inches on each side
- 6 inches below bottom
- 12 inches above top

Sand embedment material is to be installed and compacted in conformance with requirements of Section S203 Excavation and Embankment. Sand bedding is to provide solid bearing through entire length of water pipe and fittings. Timber blocking is not to be used without prior approval of Project Manager, and is to be removed prior to backfilling of trench.

Warning tape is to be placed in open trench 12 inches above water pipe that is 4 inch and larger. Warning tape is to run continuously above and along centerline of water pipe, with wording facing up.

Backfill under paved areas is to be select granular backfill (water), and is to be installed and compacted in conformance with requirements of Section S203 Excavation and Embankment, with following modifications:

- Lift thickness is not to exceed 12 inches
- Minimum density for all backfill materials is to be 95 percent of Standard Proctor Maximum Density

**S900-3.04 Filling and Flushing**

Water pipe is to be slowly filled with water of potable quality at maximum velocity of 1 foot per second while all air is expelled from water pipe. Precautions are to be taken to prevent entrapping air in water pipe. After filling, water pipe is to be flushed at blow-offs and dead-ends at minimum velocity of 3 feet per second. Minimum of three changes of potable water are to be used in flushing operation.

**S900-3.05 Testing**

A. General

A hydrostatic pressure test is to be conducted on the water main after all required pipe and fittings have been installed including hydrant branches up to the hydrant and water services four (4) inches in diameter and larger. The length of water pipe to be pressure tested will be as approved by the Project Manager. The test shall be conducted using equipment that is capable of accurately measuring the pressure within the pipe and the amount of water added to the pipe during the test. The pressure test is to be witnessed by the Project Manager.

The section of water pipe to be pressure tested shall be filled with water of potable quality and all air expelled. Temporary taps on the water pipe are to be made at high points and other locations along the pipe, as needed, to release air from the pipe or for other testing purposes. All temporary taps shall be permanently plugged after successful completion of the hydrostatic test.

The Contractor shall notify the Project Manager 24 hours in advance of beginning the hydrostatic pressure test. The Contractor shall furnish the pressure testing apparatus. The apparatus shall include a water pressure gauge and water meter that have been properly calibrated for the work. Calibration testing of the gauge and meter shall be performed by an ISO 17025-accredited laboratory. The pressure gauge shall have a maximum range of 0 to 300 pounds per square inch (p.s.i.), a 3-1/2 inch minimum diameter dial with a graduation of 2 p.s.i. or smaller, and a gauge accuracy of at least 0.50 per cent.

The testing apparatus shall be equipped with a second port being a 1/4 inch NPT female quick-connect fitting to accommodate a second pressure gauge by the Water Bureau when ordered by the Project Manager. The ports shall be plumbed so that the gauges are installed in the upright position. The allowable difference between the Contractor's pressure gauge and the Bureau's pressure gauge shall not exceed 10 p.s.i. at the specified test pressure.

B. General - Ductile Iron, Polyvinyl Chloride (PVC), Molecularly Oriented Polyvinyl Chloride (PVCO) Water Pipe

For the hydrostatic pressure test, water pressure is to be raised (based on elevation at lowest point of water pipe under test and corrected to gauge location) to minimum pressure of:

- 150 pounds per square inch gauge for domestic water main
- 250 pounds per square inch gauge for Holly water main

After all visible leaks have been stopped, full test-pressure is to be maintained for minimum of 1 continuous hour with zero (0) gallons allowable leakage for each section of water pipe being tested.

If section of water pipe should fail to pass pressure test, defective section of water pipe is to be uncovered and repaired. Continually repeat pressure test, making repairs as necessary, until entire length of water pipe passes required pressure test.

C. High Density Polyethylene Water Pipe

Pressure test is to be done in accordance with requirements of ASTM F 2164.

For initial expansion phase of pressure test, water pressure is to be raised gradually to minimum test pressure of 240 pounds per square inch (based on elevation at lowest point of water pipe in pressure test and corrected to gauge location) and maintain pressure for up to 4 hours. The test pressure shall not exceed that of lowest pressure rated component. Additional make-up water will be required to be added to maintain test pressure at hourly intervals for initial expansion phase.

Following initial expansion phase, actual test phase begins. For actual test, minimum test pressure shall be reduced 10 psi and monitored continuously for period of 1 hour without additional make-up water. There shall be no visible leakage and pressure loss during test phase shall not be more than 5 per cent different from test phase pressure for section of water pipe being tested.

Under no circumstances should total time water pipe is under continuous test pressure exceed 8 hours. If pressure test is not completed due to leakage, equipment failure or for any other reason within 8 hour time period, water pipe test section should be permitted to "relax" for continuous 8 hour period prior to performing any further pressure testing.

**S900-3.06 Disinfection**

Disinfection of water main/temporary bypass pipe is to be done in accordance with latest requirements of ANSI/AWWA C651. Disinfection is required for domestic and Holly water system mains.

After section of water main/temporary bypass pipe has been successfully pressure tested, section of water main/temporary bypass pipe shall be thoroughly flushed. Method of flushing will be as approved by Project Manager. Minimum flushing velocity is to be 2.5 feet per second.

Flows to produce minimum velocity of 2.5 feet per second shall be as shown in the following table:

| FLOWS TO PRODUCE MINIMUM VELOCITY OF 2.5 FEET PER SECOND | | |
|---|---|---|
| **Water Pipe Size (inches)** | **Flow in Gallons per Minute (gpm)** | **Hydrant Openings at 40 Pounds per Square Inch (psi) Residual Pressure** |
| 4 | 100 | one 2-1/2 inches |
| 6 | 200 | one 2-1/2 inches |
| 8 | 400 | one 2-1/2 inches |
| 10 | 600 | one 2-1/2 inches |
| 12 | 900 | two 2-1/2 inches |
| 16 | 1,600 | two 2-1/2 inches |
| 20 | 2,500 | one 4-1/2 inches |

See Table 3 AWWA C651 for number and size of blow-off taps, if blow-off taps are required.

Upon completion of flushing operations, water main/temporary bypass pipe is to be disinfected with chlorine solution using continuous feed method. Strength of chlorine solution is to be such that a residual of at least 25 milligrams per liter of chlorine is to be retained in water main/temporary bypass pipe after 24 hour period. For HDPE water pipe, chlorine solution is not to exceed 12 percent active chlorine due to chemical attack and degradation of polyethylene. Disinfection is to be in accordance with requirements of New York State Department of Health and of ANSI/AWWA C651, except that tablet method will not be allowed.

Water pipe, fittings, valves, exterior pipe surfaces on existing water main (such as for tapping sleeves, cutting-in valves, insertion sleeves, connections to existing water main and service saddles) in addition to tools and equipment that are to be in contact with encapsulated system water which will be installed without standard 24 hour disinfection detention period are to be spray disinfected or swabbed with minimum 1 to 5 per cent solution of chlorine no more than 30 minutes prior to installation. Following disinfection, water main/temporary bypass pipe is to be flushed until chlorine concentration in water leaving water main/temporary bypass pipe is no more than that generally prevailing in existing water system.

Samples of water will be collected from water main/temporary bypass pipe by Monroe County Department of Public Health. Monroe County Department of Public Health requires minimum of 2 working days advance notification requesting such sampling services. Contractor is to call (585) 753-5057 to arrange for sampling service.

Monroe County Department of Public Health may refuse to collect samples of water if location of disinfection/sampling tap is determined to be improper. Hydrants are not acceptable sampling points. Monroe County Department of Health will not perform sampling until it is in receipt of certification from New York State licensed or registered design professional certifying that water improvements, testing and disinfection were completed in accordance with approved plans, reports, specifications and any amendments. Such design professional may be either an engineer, architect, or land surveyor with special exemption under Section 7208(n) of Education Law.

Prior to collecting samples of water, sampling points must be decontaminated by flaming. Monroe County Department of Public Health will collect samples of water for free chlorine residual, total coliform, Escherichia coli (E. coli) and turbidity. Water main/temporary bypass pipe must not be placed in service until so authorized by Monroe County Department of Health.

REVISED February 13, 2014

# SECTION S901 - WATER MAIN PIPE AND FITTINGS

## S901-1 DESCRIPTION

Work consists of installation of water main pipe and fittings as required in Contract Documents and as directed by Project Manager.

Work is to be in conformance with requirements of Section S900 General Water Provisions.

## S901-2 MATERIALS

### S901-2.01 Ductile Iron Pipe and Fittings

Ductile iron pipe shall be Class 52 or Class 56, as indicated in Contract Documents, in conformance with requirements of ANSI/AWWA C151/A21.51

Fittings shall be ductile iron in conformance with requirements of ANSI/AWWA C110/A21.10 for full body fittings, and ANSI/AWWA C153/A21.53 for compact fittings. Fittings for ductile iron pipe that is 4 inches through 24 inches in diameter shall have rated working pressure of 350 pounds per square inch. Fittings for ductile iron pipe that is 30 inches through 48 inches in diameter shall have rated working pressure of 250 pounds per square inch.

Ductile iron pipe and fittings shall be of good quality, strength, of even grain, and soft enough to permit drilling and cutting. Each section of ductile iron pipe shall be free from any defects which would make it unfit for intended use. Ductile iron pipe shall be straight, and true circle in section with concentric inner and outer surfaces. Ductile iron pipe section to be cut during installation shall be fully gauged for field cutting. Ductile iron pipe metal shall be made without any admixture of cinder iron or other inferior material.

Interior of ductile iron pipe and fittings shall be cement mortar lined or epoxy coated. Cement mortar lined ductile iron pipe and fittings shall have interior lined with double thickness of cement mortar in conformance with requirements of ANSI/AWWA C104/A21.4, and have an asphalt coating on interior lining and exterior of pipe and fittings. Epoxy coated fittings shall have interior and exterior coated with 6 mil to 8 mil nominal thickness of fusion bonded epoxy in conformance with requirements of ANSI/AWWA C550 and C116/A21.16. Chips or breaks in the epoxy coating shall be repaired in the field by petrolatum wax tape coating system.

Joints shall be rubber gasketed Tyton Joint® push-on, mechanical joint, or mechanical joint anchoring type. Gaskets shall be made of SBR rubber. For ductile iron water main and fittings located within petroleum hydrocarbon and/or chlorinated solvent contaminated soils, gaskets shall be made of oil resistant Buna-N (Nitrile) rubber. When contaminated soil is encountered unexpectedly in the field, Contractor shall immediately notify Project Manager. All joints shall be in conformance with requirements of ANSI/AWWA C111/A21.11.

Joint restraint devices or anchor pipe shall be required in conjunction with concrete thrust blocking at points of change in direction of flow and at new hydrant branches. Restraining device is to be installed according to manufacturer's instructions. Restraining device is to have epoxy coating or approved equivalent. Hardware shall be coated with blue fluorocarbon coating, 304 stainless steel or approved equivalent.

Follower gland for mechanical joint ductile iron pipe shall be in conformance with requirements of ANSI/AWWA C151/A21.51.

### S901-2.02 Polyethylene Tube Encasement for Ductile Iron Pipe

Polyethylene tube encasement for direct bury of ductile iron pipe 4 inches and larger in size shall consist of linear low-density polyethylene film 8 mil minimum thickness and polyethylene adhesive tape. Material and installation procedures shall be in conformance with requirements of ANSI/AWWA C105/A21.5.

**S901-2.03 C900 Polyvinyl Chloride (PVC) Pipe and Fittings**

PVC pipe shall be designation DR 14 pressure class 305 pipe in sizes 4 inch through 12 inch in diameter, blue in color, and in conformance with requirements of AWWA C900 Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch for Water Distribution.

PVC pipe and fittings shall be of good quality and strength and be homogenous throughout, with inside and outside surfaces being free of sticky or tacky material. PVC pipe and fittings shall be free of blisters, cracks, cuts, foreign inclusions, holes, nicks, significant scratches, voids, and other defects that may affect overall integrity of PVC pipe and fittings. PVC pipe or fittings having any indication of cracking or crazing inside or outside shall be rejected. PVC pipe shall be straight and true circle in section with concentric inner and outer surfaces. Joining surfaces of PVC pipe spigots and integral-bell and sleeve-reinforced bell sockets shall be free of imperfections that might cause leakage at joints. PVC pipe shall be manufactured to cast iron pipe equivalent outside diameters to allow direct connection into cast iron and ductile iron pipe and fittings.

Fittings for PVC pipe sizes 4 inches through 12 inches in diameter shall be PVC injection molded fittings in conformance with requirements ANSI/AWWA C907.

Joints shall be SBR rubber gasket push-on type. For PVC water main and fittings located within petroleum hydrocarbon and/or chlorinated solvent contaminated soils, gaskets shall be made of oil resistant Buna-N (Nitrile) rubber. When contaminated soil is encountered unexpectedly in the field, Contractor shall immediately notify Project Manager.

Mechanical joint restraint mechanism shall be required in conjunction with concrete thrust blocking at points of change in direction of flow and at new hydrant branches. Mechanical harness restraint shall be used for push-on joints.. Mechanical joint restraint mechanism shall have epoxy coating or approved equivalent. Hardware shall be coated with blue fluorocarbon coating, 304 stainless steel or approved equivalent. All mechanical joints on ductile iron fittings for PVC water main shall require mechanical restraint.

Ductile iron or cast iron fittings for all PVC pipe sizes will be allowed for connecting PVC water pipe to existing metallic water pipe And when PVC fittings are not readily available. Non-epoxy coated ductile and cast iron fittings on PVC water main are to be covered with protective wax tape coating.

**S901-2.04 C906 High Density Polyethylene (HDPE) Pipe and Fittings**

HDPE pipe and fittings shall be designation DR 9 pressure class 200 pipe in sizes 4 inches through 20 inches in diameter, color striped blue, and in conformance with requirements of AWWA C906 Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 inch and larger for Water Distribution. HDPE pipe and fittings shall be made from resin meeting requirements of Plastic Pipe Institute (PPI) as PE3408. Resin material shall be in conformance with requirements of ASTM D3350 cell classification of 345464C.

HDPE pipe and fittings shall be of good quality and strength and be homogenous throughout, with inside and outside surfaces being semi-matte to glossy in appearance and free of sticky or tacky material. HDPE pipe and fittings shall be free of blisters, cracks, cuts, foreign inclusions, holes, nicks, significant scratches, voids, and other defects that may affect overall integrity of HDPE pipe and fittings. HDPE pipe or fittings having any indication of cracking or crazing inside or outside shall be rejected. HDPE pipe shall be straight and true circle in section with concentric inner and outer surfaces. Joining surfaces of HDPE pipe spigots and integral-bell and sleeve-reinforced bell sockets shall be free of imperfections that might cause leakage at joints. HDPE pipe shall be manufactured to cast iron pipe equivalent outside diameters to allow direct connection into cast iron and ductile iron pipe and fittings when necessary.

Fittings for HDPE pipe sizes 4 inches through 8 inches in diameter shall be thermal butt fusion molded fittings designation DR 11 with pressure rating of 160 pounds per square inch; except that 22½ degree bends may be fabricated fittings made of designation DR 9 HDPE pipe. Fittings for HDPE pipe 10 inches through 20 inches in diameter shall be thermal butt fusion fabricated fittings made of designation DR 9 HDPE pipe.

Electro fusion couplings, adapters and fittings shall be designation DR 11 or better and shall be installed according to the manufacturer's instructions.

Mechanical joint adapters shall be required for installation of mechanical joint valves, hydrants and metallic fittings. Mechanical joint adapters shall have same rating, material designation and standards equivalent to HDPE pipe. Mechanical joint adapters shall be equipped with stainless steel pipe stiffener insert, ductile iron gland ring, gasket and attachment bolts and nuts. Mechanical joint adapters shall be installed according to manufacturer's instructions.

Mechanical joints shall require SBR rubber gaskets.

Where joints cannot be made by thermal butt fusion or by mechanical joint adapter, mechanical joint restraint mechanism shall be required in conjunction with concrete thrust blocking at points of change in direction of flow. See Approved Products List for mechanical joint restraint mechanism 4 inch through 12 inch diameter pipe. Mechanical joint restraint mechanism shall have epoxy coating or approved equivalent. Hardware shall be coated with blue fluorocarbon coating, 304 stainless steel or approved equivalent.

Mechanical joint restraint mechanism shall require pipe stiffener of sufficient length to support full bearing length of restrainer and prevent toe-in of pipe end. Pipe stiffener shall be made of T-304 stainless steel, 8 inches long, with reinforcing wedge. Pipe stiffener shall match DR designation of pipe on which it is to be used, and shall be installed according to manufacturer's instructions.

Small taps 3/4 inch through 3 inch in diameter on HDPE pipe shall be accomplished by Electro fusion transition tapping saddles equipped with internal AWWA brass threads.

For connecting HDPE pipe to ductile iron pipe or PVC pipe, connection shall be made by an adapter kit which includes HDPE bell mechanical joint fitting with stainless steel reinforcing collar, C-110 heavy body ductile iron gland ring, gasket and extra length T-bolts. Installation shall be made with mechanical joint restraining mechanism for ductile iron or PVC pipe. Adapter kit shall be installed according to manufacturer's instructions.

Use of ductile iron and cast iron fittings in lieu of HDPE fittings requires prior approval from Project Manager.

**S901-2.05 C909 Molecularly Oriented Polyvinyl Chloride (PVCO) Pipe and Fittings**

PVCO pipe shall be designation pressure class 235 CIOD pipe in sizes 4 inches through 12 inches in diameter, blue in color. PVCO pipe is to be in conformance with requirements of AWWA C909 Standard for Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe, for Water Distribution.

PVCO pipe shall be of good quality and strength and be homogenous throughout, with inside and outside surfaces being free of sticky or tacky material. PVCO pipe shall be free of blisters, cracks, cuts, foreign inclusions, holes, nicks, significant scratches, voids, and other defects that may affect overall integrity of PVCO pipe. PVCO pipe having any indication of cracking or crazing inside or outside shall be rejected. PVCO pipe shall be straight and true circle in section with concentric inner and outer surfaces. Joining surfaces of PVCO pipe spigots and integral-bell and sleeve-reinforced bell sockets shall be free of imperfections that might cause leakage at joints. PVCO pipe shall be manufactured to cast iron pipe equivalent outside diameters to allow direct connection into cast iron and ductile iron pipe and fittings.

Fittings for PVCO pipe sizes 4 inches through 12 inches in diameter shall be PVC injection molded fittings in conformance with requirements ANSI/AWWA C907.

Joints shall be SBR rubber gasket push-on type. When petroleum hydrocarbon or chlorinated solvent contaminated soils are encountered unexpectedly in the field, ductile iron pipe with nitrile gaskets or PVC pipe with nitrile gaskets shall be used in place of PVCO pipe.

Mechanical joint restraint mechanism shall be required in conjunction with concrete thrust blocking at points of change in direction of flow and at new hydrant branches.. Mechanical harness restraint shall be for push-on joints. Mechanical joint restraint mechanism shall have epoxy coating or approved equivalent. Hardware shall be coated with blue fluorocarbon coating, 304 stainless steel or approved equivalent. All mechanical joints on ductile iron fittings for PVCO water main shall require mechanical restraint.

Ductile iron or cast iron fittings will be allowed for connecting all PVCO water pipe sizes to existing metallic water pipe and when PVC fittings are not readily available. Non-epoxy coated ductile and cast iron fittings on PVCO water main are to be covered with protective wax tape coating.

**S901-2.06 Petrolatum Wax Tape Coating System for Metallic Fittings to be used with Polyvinyl Chloride (PVC) Pipe, Molecularly Oriented Polyvinyl Chloride (PVCO) Pipe and High Density Polyethylene (HDPE) Pipe**

The primer and wax tape coating shall be in accordance with ANSI/AWWA C217. Wax tape coating system shall be composed of synthetic fabric, saturated with blend of petroleum wax, plasticizers and corrosion inhibitors. Wax tape coating system shall consist of primer paste and petrolatum tape.

**S901-2.07 Tracer Wire for Polyvinyl Chloride (PVC) Pipe, Molecularly Oriented Polyvinyl Chloride (PVCO) Pipe and High Density Polyethylene ( HDPE) Pipe**

Tracer wire shall be designed specifically for detecting buried utilities. Tracer wire for open cut installation shall be minimum of 12 AWG copper wire, solid, coated with a blue colored minimum 30 mil high molecular weight polyethylene insulation (HDPE or HMWPE). Tracer wire for trenchless water main shall consist of minimum (2) wires or as shown on plans and shall be minimum 12 AWG copper clad steel core wire, solid, with a blue 45 mil HDPE insulation.

**S901-2.08 Tracer Wire Termination Box**

Termination box shall be cathode protection test box. Termination box shall be 4 feet long, have shaft size of 4 inches inside diameter, body made of ABS plastic flared at bottom, with cast iron rim and flush fit drop-turn locking lid with words "WATER TEST" cast on top of lid. Non-conductive terminal board designed for minimum of two stainless steel terminal connections shall be attached to inside of lid.

If termination box is to be installed in paved area, termination box shall be installed within 7 inch diameter valve box. Valve box shall be minimum 4 feet long cast iron, screw type with arched base, with word "WATER" cast on top of lid.

**S901-2.09 Impervious Clay Trench Plug**

Impervious clay trench plug shall consist of a mixture of silt and clay soils free of rocks, stones and vegetation. All material shall pass through a 0.25 inch sieve and at least 95% by weight of the material shall pass through a #200 sieve. The hydraulic coefficient (coefficient of permeability) of the material shall be less than $1 \times 10^{-6}$ cm/sec as measured using ASTM D5084.

## S901-3 CONSTRUCTION DETAILS

**S901-3.01 General**

Water main pipe shall be installed in straight line horizontally and vertically. Deflection of water main pipe shall be achieved at pipe joints within manufacturer's allowable limits and with bend fittings. Water main pipe and fittings shall be handled in such manner that water main pipe and fittings, coatings and linings are not damaged. Nylon fabric choker sling capable of handling weight of water main pipe and fittings shall be used to lift, place and move water main pipe and fittings. Water main pipe and joints shall be uniformly supported and secured in place within required embedment material. Temporary support under water main pipe shall be removed upon securing water main pipe with permanent embedment material.

Refer to Section S900-3.02 for minimum cover over water main pipe and fittings, as measured between finished grade and top of water main pipe and fittings.

Minimum vertical separation between crossing water main and sewer pipe lines is to be 18 inches when water main pipe passes under sewer pipe, or 6 inches when water main pipe crosses over sewer pipe, as measured from outside of respective pipes at point of crossing. One full standard laying length of water main pipe is to be centered under or over sewer pipe so that both joints of water main pipe will be as far from sewer pipe as possible. In addition, when water main pipe passes under sewer pipe, adequate structural support in form of compacted crushed stone bedding or class K concrete is to be provided for sewer pipe to prevent excessive deflection of sewer pipe joints and any settling of sewer pipe onto water main pipe.

Optimum minimum horizontal separation between parallel water main and sewer pipes, including manholes, vaults and junction chambers, is 10 feet as measured from outside of respective pipes, manholes, vaults and junction chambers. In no case is water main pipe to be installed less than 3 feet horizontally from parallel sewer pipe, including manholes, vaults and junction chambers.

Where water main pipe has less than minimum separation requirements either horizontally or vertically, all of joints of water main pipe located within 10 feet of sewer pipe are to be encased with controlled density fill material. Controlled density fill encasement is to be placed to minimum thickness of 6 inches around water main pipe for minimum length of 2 feet as centered on joint of water main pipe.

In all cases, where water main pipe crosses another utility, vertical separation shall not be less than 6 inches.

Tees, bends, offsets, reducers, caps, plugs and hydrants on water pipe shall be mechanically restrained and solidly braced to prevent any movement due to thrust pressure. Bracing shall be accomplished with use of cast-in-place concrete between fittings/hydrant and undisturbed soil. Water valves shall be mechanically restrained at both ends.

Disinfection/sampling taps are to be installed no more than 1,000 feet apart and at ends of all new water main installations.

Contractor is responsible for making sure that inside of pipe is clean and free of foreign material before pipe installation.

**S901-3.02 Ductile Iron Pipe and Fittings**

Ductile iron pipe and fittings shall be installed in conformance with requirements of ANSI/AWWA C600, according to manufacturer's latest instructions, and as approved by Project Manager.

Polyethylene tube encasement shall be installed on all ductile iron water mains, water services and hydrant branch pipe in conformance with ANSI/AWWA C105/A21.5.

Plugging, filing, burning-in or welding will not be allowed to repair any ductile iron pipe or fittings that have been damaged.

For ductile iron pipe, sizes 4-inch through 24-inch in diameter, 75-90 ft/lbs is recommended torque on nuts and 'T' bolts used for mechanical joints.

Install magnesium anodes as shown on drawings and as approved by Project Manager.

The maximum allowable angular joint deflection for push-on Tyton Joint® ductile iron pipe shall be 4 degrees for 4 inch through 36 inch diameter. The maximum allowable angular joint deflection for mechanical joint ductile iron pipe and fittings shall be 6 degrees for 4 inch and 6 inch diameter, 4 degrees for 8 inch through 12 inch diameter, 3 degrees for 16 inch diameter and 2 degrees for 20 inch and 24 inch diameter.

Impervious clay trench plugs shall be installed around ductile iron pipe water mains and services where shown on the plans or as directed by the Project Manager to stop the flow of contaminated groundwater through porous water main bedding and backfill material.

**S901-3.03 Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pipe and Fittings**

PVC/PVCO pipe and fittings shall be installed in conformance with requirements of ANSI/AWWA C605, according to manufacturer's instructions, and as approved by Project Manager.

Field cutting of PVC/PVCO pipe shall be made with square ends. Cut spigot end shall be re-beveled at same angle provided by factory-finished PVC/PVCO pipe. On cut PVC/PVCO pipe an insertion line shall be marked on cut spigot end using factory marked spigot as guide. For connecting spigot end to shallow depth bell, such as mechanical joint valve and iron fitting, spigot end shall be cut so as to leave only slight bevel of 1/4 inch. Spigot end shall be inserted to full limit of shallow depth bell. For PVC (C900) pipe, sizes 4-inch through 24-inch in diameter, 75-90 ft/lbs is recommended torque on nuts and 'T' bolts used for mechanical joints. For PVCO (C909) pipe, 55 ft/lbs is recommended torque on nuts and 'T' bolts for mechanical joints.

In assembling PVC/PVCO pipe, gaskets and pipe ends shall be wiped clean and spigot end lubricated from beveled end to approximately mid-way from insertion line. If recommended by manufacturer, lubricant shall be applied inside bell, using lubricant that is supplied by manufacturer. Joining is complete when spigot end is inserted to insertion line. Care shall be taken not to over-insert spigot end into bell end. It is recommended newly laid pipe be partially backfilled before adding more pipe to minimize over-insertion of pipe joints on previously laid lengths of pipe. Joining shall not be made by use of heavy machinery.

The maximum allowable angular joint deflection for PVC/PVCO pipe and PVC fittings shall not exceed the manufacturer's published limits, which may be 1 degree or less.

Taps 2 inches in diameter and smaller on PVC/PVCO pipe shall require wide strap, all brass tapping saddles manufactured for C900 PVC pipe. Refer to Section S912, Corporation Stop and Connection, Taps larger than 2 inches in diameter on PVC/PVCO pipe shall require tapping sleeve. Taps shall be made using equipment designed specifically for making taps on PVC/PVCO pipe. Tap shall be no closer than 2 feet from back end of bell or spigot insertion line. Multiple taps shall be staggered at least 18 inches apart lengthwise.

Asphalt coated metallic fittings installed on PVC/PVCO water main including tapping assemblies and hardware, shall be coated with petrolatum wax tape coating system applied in conformance with manufacturer instructions.

One nine pound anode shall be attached to all ductile and cast iron fittings on PVC/PVCO water pipe.

Precast concrete cement blocks or any hard objects shall not be used for thrust blocking or directly supporting PVC/PVCO water pipe.

**S901-3.04 High Density Polyethylene (HDPE) Pipe and Fittings**

HDPE pipe and fittings shall be installed in conformance with manufacturer's instructions.

Field cutting of HDPE pipe shall be made with square ends.

Individual sections of HDPE water main pipe and fittings shall be joined together by thermal butt fusion method. Mechanical joining shall be used in locations where thermal butt fusion method cannot be used. Socket fusion, hot gas fusion, threading, solvent cements and adhesives such as epoxies shall not be used to join HDPE pipe.

Thermal butt fusion procedures shall be in conformance with manufacturer's instructions and Plastic Pipe Institute (PPI). Fusion equipment operator shall be trained and certified in recommended procedure. Contractor shall be responsible to verify that fusion equipment is in good operating condition and that operator has been properly trained. Thermal butt fusion equipment shall be capable of meeting all conditions recommended by manufacturer, including, but not limited to, temperature requirements of 400°F, alignment and an interfacial fusion pressure of 75 pounds per square inch. Butt fusion joining shall produce joint weld strength equal to or greater than tensile strength of HDPE pipe itself. Welds shall be

made using Data Logger to record temperature and fusion pressure with graphic representation of fusion cycle and shall be part of Quality Control records. Thermal butt fusion and Electro fusion joining methods shall be done in dry environment. Individual sections of HDPE pipe should be joined into continuous lengths on job site above ground. Fusion beads shall not be removed from HDPE pipe.

For installation of mechanical joint adapters, bolts shall be tightened and torqued in conformance with manufacturer instructions.

Asphalt coated metallic fittings installed on HDPE water main including tapping assemblies and hardware, shall be coated with petrolatum wax tape coating system applied in conformance with manufacturer instructions. Hardware for epoxy coated fittings not having blue fluorocarbon coating will require petrolatum wax tape coating system.

Directional drilling method of pipe installation shall require the Contractor to record with survey grade accuracy and provide As Built map of the horizontal location and depth of pipe in reference to project stationing.

Thermite weld 9 pound magnesium anode to each metallic fitting.

**S901-3.05 Tracer Wire Installation with Polyvinyl Chloride (PVC) Pipe, Molecularly Oriented Polyvinyl Chloride (PVCO) Pipe and High Density Polyethylene (HDPE) Pipe**

Tracer wire shall be installed along and above all PVC/PVCO/HDPE water pipe that is 4 inches in diameter and larger. Tracer wire shall be installed in such manner as to enable its detection with electronic locating equipment. Tracer wire shall be installed on top of PVC/PVCO/HDPE water pipe and shall be secured to water pipe with tape or plastic straps at 8 feet maximum intervals and at pipe bends. Tracer wire shall not be spiraled or otherwise wrapped around water pipe. At water service saddles, tracer wire shall be placed over and across water service saddle and water pipe. At valves, tracer wire shall be placed along the side of the water pipe so that the installation of a valve box will not damage the wire.

Tracer wire shall begin and terminate at all connections to existing metallic water pipes wherever possible. Tracer wire connections to existing metallic pipes shall be made with thermite weld. Thermite weld shall be completely sealed with a brush applied coats of an approved bitumastic coating specifically manufactured for underground use.

Route of tracer wire shall extend continuously along PVC/PVCO/HDPE water pipe, and shall be terminated at tracer wire termination box located near hydrant. Termination box shall be installed flush with finished grade and approximately 3 feet away from any given hydrant. Tracer wire shall extend up termination box and be connected to terminal board. Length of tracer wire extending up termination box shall be such that minimum of 3 feet of tracer wire can be coiled up and left tucked inside termination box.

Number of splices made on tracer wire shall be kept to minimum. Splices shall be made using an approved waterproof connector. Where polyethylene (PE) water services are installed with PVC/PVCO/HDPE water pipe, tracer wire for PE water service shall be spliced to tracer wire for PVC/PVCO/HDPE water main pipe, using an approved splice connector that slips over the main tracer wire without cutting it.

For directional drilling method of installing water main, Contractor shall attach tracer wire securely at beginning of pipe making sure wire will not become detached from pipe during drilling operation.

After installation of tracer wire on mains and services has been completed, the Contractor shall test the tracer wire for electrical continuity. Upon successful completion of system test and submission of certification form to the City, tracer wire system shall be checked for functionality by a representative of the Bureau of Water. Deficiencies in the tracer wire system shall be repaired by Contractor at no additional cost to the City, and the tracer wire system shall be retested by Contractor.

**S901-3.06 Additional Fittings**

If required, additional fittings shall be installed on new water main pipe that are not already shown in Contract Documents.

### S901-3.07 Additional Concrete Thrust Blocks

If required, additional concrete thrust blocks shall be constructed that are not already shown to be constructed in Contract Documents.

## S901-4 METHOD OF MEASUREMENT

### S901-4.01 Water Main Pipe

Quantity to be measured for payment shall be number of linear feet of water main pipe installed as measured along centerline of water main pipe, beginning with face of hub forming commencement of new work and extending to face of hub or spigot constituting end of that particular line of water main pipe.

Hydrant branch water pipe and water service pipe 4 inches and larger will be measured and included for payment as water main pipe. Quantity to be measured for payment shall be number of linear feet of hydrant branch water pipe and water service pipe installed as measured from centerline of water main pipe to which hydrant branch water pipe and water service pipe is connected, along centerline of hydrant branch water pipe and water service pipe to face of hub or spigot constituting end of that particular hydrant branch water pipe and water service pipe line.

### S901-4.02 Additional Fittings

Quantity to be measured for payment shall be number of pounds of additional fittings installed that were not originally required in Contract Documents. Weight of fittings shall be determined from listed weight in manufacturer catalogue.

### S901-4.03 Additional Concrete Thrust Blocks

Quantity to be measured for payment shall be number of cubic yards of additional concrete thrust blocks installed that were not originally required in Contract Documents.

## S901-5 BASIS OF PAYMENT

### S901-5.01 General all Items

Unit price bid for all items shall include cost of: water pipe; water pipe fittings; water pipe specials; shop-drawings; hardware; warning tape; approved on site backfill; concrete thrust blocks; encasement; controlled density fill; joint materials; making water pipe joints; joint restraining devices; furnishing, installing and removing disinfection/sampling taps; blow-off taps; tapping saddles for disinfection/sampling taps and blow-off taps; pressure testing; disinfection, flushing and health sample testing and fees; pavement saw cutting; additional excavation and backfill required for testing and disinfection purposes; preparation and distribution of service interruption notices; preparation and submittal of water service information and cards; pipe installation records; and furnishing all labor, material and equipment necessary to complete work.

Unless provided for under separate payment items in Contract Documents, cost of furnishing, installing, maintaining, and removing temporary water pipes, valves, plugs, taps, corporation stops, curb stops and boxes, blow-off water pipes, and other fittings necessary for construction of new water main, or for providing continuous water service, shall be included in unit price bid for water main pipe.

Unless otherwise noted on plans or ordered by Project Manager, furnishing and installing magnesium anodes will be paid for under Section S966 Magnesium Anode.

Partial payment of eighty (80) percent of unit price bid will be made for installed water main pipe that has not satisfactorily passed pressure and health tests. Remaining twenty (20) percent will not be paid until water main installation has passed both pressure and health tests and has been accepted by Monroe County Health Department and City of Rochester

**S901-5.02 Ductile Iron Pipe and Fittings**

Unit price bid shall also include cost of: furnishing and installing ductile iron pipe, anchor pipe and fittings, polyethylene tube encasement, including adhesive tape and impervious clay trench plugs

**S901-5.03 Polyvinyl Chloride (PVC), Molecularly Oriented Polyvinyl Chloride (PVCO) and High Density Polyethylene (HDPE) Pipe and Fittings**

Unit price bid shall also include cost of: furnishing and installing PVC/PVCO pipe and fittings; ductile iron and cast iron fittings; tracer wire; tracer wire termination box; splices and connections; tracer wire testing and certification; and petrolatum wax tape coating of asphalt coated metallic fittings.

**S901-5.04 Additional Fittings**

Unit price bid shall also include cost of furnishing and installing additional pipe fittings, joint restraining devices and hardware.

**S901-5.05 Additional Concrete Thrust Blocks**

Unit price bid shall also include cost of furnishing and installing additional concrete thrust blocks.

Payment shall be unit price indicated in Contingent Item list contained in Contract Documents.

No payment will be made for additional concrete that is necessary for constructing thrust blocks due to unnecessary over excavation of trenches beyond established payment limit lines.

**S901-5.06 Excavation, Backfill and Surface Restoration**

Excavation, rock excavation, furnishing and placing of bedding and select granular backfill (water), and surface restoration will be paid for under separate bid items. All hand or tunnel excavation in and around utility lines, tree roots, pipe joints and curbs shall be included in unit price bid for excavation.

No separate payment shall be made for placement of approved on site backfill material excavated from trench

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S901.0401XX | X" Ductile Iron Pipe Water Main Class 52 | Linear Foot |
| S901.0503XX | X" Ductile Iron Pipe Class 52 for Hydrant Branch | Linear Foot |
| S901.0601XX | X" Ductile Iron Pipe Water Main Class 56 | Linear Foot |
| S901.0603XX | X" Ductile Iron Pipe Class 56 for Hydrant Branch | Linear Foot |
| S901.07 | Additional Ductile Iron Pipe Fittings | Pound |
| S901.0801XX | X" Polyvinyl Chloride Pipe Water Main | Linear Foot |
| S901.0802XX | X" Polyvinyl Chloride Pipe for Hydrant Branch | Linear Foot |
| S901.09 | Additional Polyvinyl Chloride Pipe Injection Molded Fittings | Pound |
| S901.11XX | X" High Density Polyethylene Pipe Water Main | Linear Foot |
| S901.12 | Additional High Density Polyethylene Pipe Fittings | Pound |
| S901.1301XX | X" Molecularly Oriented Polyvinyl Chloride Pipe Water Main | Linear Foot |
| S901.1302XX | X" Molecularly Oriented Polyvinyl Chloride Pipe for Hydrant Branch | Linear Foot |
| S901.15 | Additional Concrete Thrust Blocks | Cubic Yard |

REVISED February 13, 2014

# SECTION S912 - CORPORATION STOP AND CONNECTION; ABANDON EXISTING WATER SERVICE AT TAP (2 INCH AND SMALLER)

## S912-1 DESCRIPTION

Work consists of the installation of a new corporation stop or the abandonment of an existing water service as required in the Contract Documents and as directed by the Project Manager.

Work is to be in conformance with the requirements of Section S900 General Water Provisions.

## S912-2 MATERIALS

For new service taps: size of tap, corporation stop and service saddle for new water services shall be the same nominal size as the new water service tubing, unless otherwise noted.

### S912-2.01 Corporation Stop

For copper water service tubing - corporation stop is to be cast brass ball valve type with inlet being AWWA taper threads and outlet fitted for flared couplings.

For polyethylene water service tubing - corporation stop is to be cast brass ball valve type with inlet being AWWA taper threads and outlet fitted for quick joint compression couplings.

### S912-2.02 Water Service Saddle

For water service connecting to iron water main, water service saddle is to be double strap all brass tapping saddle with Buna-N (Nitrile) or EPDM rubber gaskets and AWWA tapered threads.

For water service connecting to PVC/PVCO water main, water service saddle is to be wide strap all brass tapping saddle with Buna-N (Nitrile) or EPDM rubber gaskets and AWWA tapered threads

Taps for HDPE water main shall require the Contractor to submit proposed methods and materials to Bureau of Water for approval.

### S912-2.03 Drilling/Tapping Machine and Tools

Tap is to be made with drilling/tapping machine specially designed for the intended work and must be in good working condition. Hand-held drills are not to be used for making taps.

Tapping machine is to be capable of attaching to and cutting through corporation stop, and is to be designed to operate with drilling/cutting tools required for the specific pipe material being tapped. When tapping PVC/PVCO water main pipe, cutting tool is to be a core cutter with minimum of two exit slots, which retains coupon after penetration of water pipe, and also has sufficient throat depth to cut heavy walled water pipe. For PVC/PVCO mains, core cutter sizes shall be as follows:

| Tap Size on PVC/PVCO Water Main | Minimum Diameter of Core Cutter |
|---|---|
| 1-inch | 7/8-inch |
| 1-1/2-inch | 1-3/8-inch |
| 2-inch | 1-3/4-inch |

## S912-3 CONSTRUCTION DETAILS

### S912-3.01 General

Tap shall be made with a tapping machine and in accordance with the requirements of ANSI/AWWA C600 for ductile iron pipe and ANSI/AWWA C605 for polyvinyl pipe.

Only equipment specially designed for this purpose and that is in good working condition shall be used.

In no case shall a hand-held drill be used for making taps.

Tap shall be made on the customer's side of the water main at an angle between 5 and 15 degrees up from the horizontal centerline of the main. Tap shall be no closer than 2 feet from back end of bell or spigot insertion line. Multiple taps shall be staggered at least 18 inches apart lengthwise.

Do not tap curved PVC/PVCO water pipe.

When drilling, care shall be taken to completely cut through the water pipe wall. Thoroughly clean all tapped threads, making sure to remove any remnants of water pipe materials.

Threaded end of corporation stop shall be wrapped with Teflon tape and corporation stop threaded into tapped hole and tightened so as to be watertight. For leaking corporation stops, repeat process as necessary until a successful installation is made.

Backfilling of the trench shall be done in a manner so as to avoid damage to the corporation stop.

For water main pipe that is wrapped in polyethylene, method of making direct tap shall consist of applying two or three wraps of polyethylene adhesive tape completely around the water main pipe to cover the area where the tapping machine and chain will be mounted to minimize possible damage to the polyethylene during the direct tapping procedure. After the tapping machine is mounted, install corporation stop directly through the tape and polyethylene. After direct tap is completed, entire circumferential area of the polyethylene should be closely inspected for damage, making any repairs as needed.

Contractor is prohibited from tapping either the backside or top of the water main pipe.

**S912-3.02 Water Service Saddle**

On ductile or cast iron water main pipe, saddle shall be used in conjunction with a tap when the tap size exceeds the following:

| Water Pipe Size | Maximum Tap Size allowed without Service Saddle |
|---|---|
| 4 to 6 inch | all taps require saddle |
| 8 to 10 inch | 3/4 inch |
| 12 inch | 1 inch |
| 16 inch or larger | 1-1/2 inch |

All taps on PVC/PVCO water main shall require service saddles. Saddle tap and corporation stop sizes for PE services on PVC/PVCO water mains shall conform to the following:

| PE Water Service Size | Saddle Tap Size | Corporation Stop Size |
|---|---|---|
| 1 inch | 1 inch | 1 inch |
| 1-1/2 inch | 1-1/2 inch | 1-1/2 inch |
| 2 inch | 2 inch | 2 inch |

### S912-3.03 Abandon Existing Water Service at Tap

Existing corporation stop shall be completely closed before the water service line is disconnected at the existing corporation stop. After removal of the service line from the corporation stop, a bronze cap or plug shall be installed on the outlet side of the corporation stop. If the water service line cannot be removed without damaging the existing corporation stop and/or creating a leak, the water service line shall be sawed off at the existing corporation stop. Nut on the bottom of the existing corporation stop, if present, shall be completely tightened. If the existing corporation stop leaks when fully closed or after being tightened, the existing corporation stop shall be completely plugged as approved by the Project Manager.

Existing curb boxes on abandoned services shall be removed. Payment for curb box removal shall be made under Section S914 Curb Stop and Box.

## S912-4 METHOD OF MEASUREMENT

The quantity to be measured for payment shall be the number of water service taps and installations made or number of water services abandoned at tap.

## S912-5 BASIS OF PAYMENT

### S912-5.01 General all Items

The unit price bid for all items shall include the cost of: preparation and submittal of service record information and cards; pavement saw cutting; and furnishing all labor, material and equipment necessary to complete the work.

### S912-5.02 Water Service Tap at Water Main

The unit price bid shall also include the cost of: making the tap at the main; furnishing and installing the corporation stop; saddle; connection of the water service to the corporation stop; polyethylene adhesive tape; and repairing damaged polyethylene pipe wrap.

### S912-5.03 Abandon Existing Water Service at Tap

The unit price bid shall also include the cost of: closing the corporation stop; disconnecting the water service tubing from the corporation stop; plugging the corporation stop; and removal of the curb box.

No payment will be made for disconnecting water services on abandoned water mains, or for closing corporation stops and disconnecting water services that are to be extended to new or existing water mains, unless a separate excavation is required.

### S912-5.04 Water Service Tap at Water Main with Abandonment of Existing Water Service Tap

The unit price bid shall also include the cost of: making new tap at the water main; furnishing and installing new corporation stop; saddle; connection of new water service pipe to new corporation stop; closing and plugging existing corporation stop; and disconnecting existing water service tubing from existing corporation stop.

### S912-5.05 Excavation, Backfill and Surface Restoration

Excavation, furnishing and placing of bedding and select granular backfill, surface restoration will be paid for under separate bid items or included in the price bid for each item as indicated in the item description.

Excavation that is included in the pay item does not include rock excavation. Rock excavation will be paid for under separate bid item.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S912.01XXXX | New X" Water Service Tap at Water Main, Corporation Stop and Connection | Each |
| S912.02XXXX | New X" Water Service Tap at Water Main, Corporation Stop and Connection (Including Excavation and Backfill) | Each |
| S912.03XXXX | New X" Water Service Tap at Water Main, Corporation Stop and Connection (Including Excavation, Backfill and Surface Restoration) | Each |
| S912.04 | Abandon Existing Water Service at Tap | Each |
| S912.05 | Abandon Existing Water Service at Tap (Including Excavation and Backfill) | Each |
| S912.06 | Abandon Existing Water Service at Tap (Including, Excavation, Backfill and Surface Restoration) | Each |
| S912.07XXXX | New X" Water Service Tap at Water Main, Corporation Stop and Connection (Including Abandonment of Existing Tap) | Each |
| S912.08XXXX | New X" Water Service Tap at Water Main, Corporation Stop and Connection (Including Abandonment of Existing Tap) (Including Excavation and Backfill) | Each |
| S912.09XXXX | New X" Water Service Tap at Water Main, Corporation Stop and Connection (Including Abandonment of Existing Tap) (Including Excavation, Backfill and Surface Restoration) | Each |

REVISED February 13, 2014

# SECTION S913 - WATER SERVICE (2 INCH AND SMALLER)

## S913-1 DESCRIPTION

Work consists of the installation of new water service tubing as required in the Contract Documents and as directed by the Project Manager.

Work is to be in conformance with the requirements of Section S900 General Water Provisions.

## S913-2 MATERIALS

### S913-2.01 Copper Water Service

Copper water service tubing is to be Type K in conformance with requirements of ASTM B88, in sizes 3/4 inch, 1 inch, 1-1/2 inch and 2 inch.

Joints are to be of flared type.

Couplings used for connecting copper water service tubing to corporation stop are to be of flared type.

### S913-2.02 Polyethylene (PE) Water Service

PE water service tubing shall be high density, blue or black with blue stripes, copper tube size (CTS), DR 9 (outside diameter-based dimension ratio), PE 3408/3608 - pressure class 200 psi or PE 4710 - pressure class 250 psi, in conformance with the requirements of ANSI/AWWA C901 and ASTM D2737 Standard Specification for Polyethylene (PE) Plastic Tubing, in sizes 1 inch, 1-1/2 inch and 2 inches.

PE water service tubing shall bear permanent identification markings that will remain legible during normal handling, storage, installation and service life and that will not reduce strength or otherwise damage tubing. Markings shall be applied at intervals not more than 5 feet and shall include: nominal size, standard PE code designation, dimension ratio, AWWA pressure class, AWWA designation number C901, manufacturer's name or trademark and production record code, seal or mark of testing agency that certified suitability of tubing material for potable water products.

Joint couplings for PE tubing shall be Quick Joint compression type with solid stainless steel internal stiffeners inside ends of PE tubing.

Where soils are contaminated with solvents or petroleum products, copper tubing shall be used instead of polyethylene tubing.

### S913-2.03 Tracer Wire for Polyethylene (PE) Water Service

Tracer wire for PE water service tubing shall be in conformance with the requirements of Section S901 Water Main Pipe and Fittings for tracer wire.

## S913-3 CONSTRUCTION DETAILS

### S913-3.01 General

Minimum cover over water service tubing and fittings, as measured between finished grade and top of exterior limit of water service tubing and fittings is to be 4 feet 6 inches, unless otherwise shown on plans or as ordered by Project Manager.

Contractor shall have the option to install water service tubing by means of open trenching or tunneling, or a combination thereof, except for those water services where tunneling is required to be used as shown in the Contract Documents.

Water service tubing shall be installed in a single piece without joints between corporation stop and curb stop. Water service tubing may be curved around obstructions in the trench. Water service tubing shall be laid at a right angle to the water main and in a straight path from the corporation stop to the curb stop. There shall be no kinks, joints, gouges or crimps in the water service tubing, and Contractor shall avoid any unnecessary flexing and bending of the water service tubing. Bending radius for PE tubing shall not be less than 30 times pipe diameter. PE tubing should be laid with moderate slack or snaking to accommodate any contraction. PE tubing should be allowed to cool in trench before cutting to required length between fittings to reduce stress from thermal contraction. Distance between bends and fittings in PE tubing should not be less than 10 pipe diameters to minimize bending stresses at connection point.

Water service tubing shall be connected to corporation stop, curb stop and existing water service tubing by using approved and appropriate gaskets, joint and connection materials, or fittings required to make the connections. Extend installation of water service tubing to include removal of the existing curb stop and box. Water service connections and appurtenances shall be made watertight. Prior to flaring copper tubing, Contractor shall verify that the end of the tube is round and cut at a right angle to the axis of the tubing. For PE water service connection, internal stiffener shall be required at ends of PE tubing and stiffener shall not extend beyond end of connection fitting. For connecting PE water service to existing non-copper inside water service (service pipe on customer's side of curb stop), PE water service shall extend minimum 1 foot beyond curb stop, eliminating need for dielectric insulator. Prior to connecting new water service to existing service, new service line shall be flushed with clean water making sure all debris is removed from the line.

For connections of water service tubing to new or existing corporation stops, a horizontal expansion curve (goose neck) shall be formed into the water service tubing. Expansion curve shall start at the outlet end of the corporation stop and extend 3 feet along the water service tubing with a horizontal dimension of from 6 inches to 12 inches.

Copper tubing connected to new or existing ductile iron or cast iron water main pipe shall be coated with bitumastic coating or petrolatum wax tape coating system (primer and tape) from tap, including corporation stop and portion of water main immediately surrounding tap, to minimum distance of 3 feet from tap.

Service saddles are required for connecting all water service tubing to PVC/PVCO water main pipe. Service saddles shall be used as specified in Section S912 Corporation Stop and Connection; Abandon Existing Water Service Tap (2 Inch and Smaller) for connecting PE or copper water service tubing to ductile iron or cast iron water main pipe.

Copper water services that are connected to PVC/PVCO water main shall require one-five pound magnesium anode be connected to copper tubing using copper tube nut (sizes 1 inch or less) or bronze ground clamp (sizes greater than 1 inch). Anode shall be located 2 feet away from water main and at least 6 inches below the bottom of the main and shall be surrounded with native backfill.

Upon completion of the work and testing of the water service, the excavation shall be backfilled and the disturbed surface area restored. Backfilling of the trench shall be done in a manner so as to avoid damage to the water service.

All hazardous waste, including lead water service materials, removed from the excavation shall be disposed of in accordance with all applicable New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA) solid and/or hazardous waste management regulations. Solid hazardous waste must be disposed of at waste management or recycling facilities permitted to receive specific waste. Proposed disposal or recycling facilities must be approved by the City of Rochester prior to shipment by the Contractor. Disposal or recycling receipts must be provided to the City by the Contractor.

**S913-3.02 Water Service Tubing Sizing**

For sizing of new water service tubing, use the following:

| Existing Water Service (outside diameter) | Copper Water Service Tubing (outside diameter) | PE Water Service Tubing (outside diameter) |
|---|---|---|
| 5/8 and 3/4 inch | 3/4 inch | 1 inch |
| 1 inch | 1 inch | 1-1/2 inch |
| 1-1/2 inch | 1-1/2 inch | 2 inch |
| 2 inch | 2 inch | - |

**S913-3.03 Tunneling**

Where the Contractor opts to install water service tubing by means of tunneling, approval shall be obtained from the Project Manager before commencing work.

At locations where tunneling is to be performed, Contractor shall open cut and excavate both boring and receiving pits. Pit excavations shall be kept as small as practical, but large enough so as not to jeopardize safe tunneling operations. Excavations and tunneling operation shall be to a depth to ensure that the water service tubing will be installed at required minimum depth. Contractor has the option of tunneling-in the water service tubing by either boring, drilling or missiling. "Washing-in" of water service tubing is not allowed under any circumstances.

Contractor shall open cut and excavate a sight pit at any location where an existing underground utility line is in the direct path of the tunneling operation. Sight pit shall be large enough and deep enough to be able to ensure that no damage occurs to the existing underground utility line during the tunneling operation.

In most cases, the boring and receiving pits will generally be located at the water main or curb line, and at the curb stop. In some instances the pits may be located in other areas as shown in the Contract Documents or as directed by the Project Manager.

**S913-3.04 Installation of New Water Service Tubing at Existing Appurtenances**

For connection of new water service tubing to existing corporation stop that is to remain, existing corporation stop must not be leaking or damaged, and must be at least 5/8 inch diameter for connecting copper water service tubing or PE water service tubing. Water service shall be shut down at the existing corporation stop. Existing water service tubing is to be disconnected and removed, new water service tubing connected to the existing corporation stop.

For connection of new water service tubing to existing curb stop that is to remain, existing curb stop must not be leaking or damaged and fully operational. Water service shall be shut down at the existing curb stop. Existing water service tubing is to be disconnected and removed, new water service tubing connected to the existing curb stop, and existing curb stop returned to full open position.

For replacement of an existing water service, installation of the new water service tubing shall be extended to include removal of the existing curb stop and box.

For existing corporation stop that is found to be broken, leaking, undersized, or otherwise determined unsatisfactory by the Project Manager, existing corporation stop shall be abandoned (closed and plugged) and a new corporation stop installed. Cost of abandoning an existing corporation stop under this work shall be included in the unit price bid for a new corporation stop under Section S912 Corporation Stop and Connection; Abandon Existing Water Service at Tap (2 inch and smaller).

Tighten existing corporation stop that is found to be leaking at the threaded tap. If leak cannot be stopped by tightening and existing corporation stop made watertight, existing corporation stop shall be replaced by installing a new tapping saddle and corporation stop.

### S913-3.05 Tracer Wire Installation with Polyethylene (PE) Water Service

Tracer wire shall be installed along and wrapped around PE water service tubing. Tracer wire shall be installed in such a manner as to enable its detection with electronic locating equipment.

Tracer wire shall be from corporation stop extended continuously along polyethylene (PE) water service tubing to the curb stop and up to top of curb stop box. Where PE water service is installed on ductile iron water mains, tracer wire shall be secured at the corporation stop. Where PE water service is installed on PVC water mains, tracer wire for PE water service tubing shall be spliced to the tracer wire for the PVC water main. For curb boxes located in grassy areas, tracer wire shall travel up the outside of curb box and wrap 3 times around underside of box lip. For curb boxes located in concrete or asphalt areas, tracer wire shall travel up inside curb box shaft and extend 1 foot longer than top of box with wire tucked inside box.

Number of splices made on the tracer wire shall be kept to a minimum. Splices shall be made using an approved connector and shall be water tight and corrosion resistant. Wire nuts shall not be used. The use of split bolt style connectors shall require the installation of three successive layers each of rubber splicing and vinyl tapes.

After installation of tracer wire on mains and services has been completed, the Contractor shall test the tracer wire for electrical continuity. Upon successful completion of system test and submission of certification form to the City, tracer wire system shall be checked for functionality by a representative of the Bureau of Water. Deficiencies in the tracer wire system shall be repaired by the Contractor at no additional cost to the City and the tracer wire system shall be retested.

### S913-3.06 Testing Water Services

Prior to backfilling the trench, water service work, including but not limited to connections, joints and unions, shall be testeded for leaks under line pressure in the presence of the Project Manager. Any defective work shall be repaired and retested until installation is accepted.

## S913-4 METHOD OF MEASUREMENT

### S913-4.01 Water Service

The quantity to be measured for payment shall be the number of linear feet of water service tubing installed.

## S913-5 BASIS OF PAYMENT

### S913-5.01 General all Items

The unit price bid for all items shall include the cost of: furnishing and installing all water service tubing; pipe specials; flared connections; compression connections; gasket fittings; joint and connection materials; connection to new corporation stops and curb stops; flushing; connection to existing service; bitumastic or wax tape coating system for copper service; disposal of existing service pipe when removed, removal and disposal of existing curb stop and box where required; verifying location and disposition of water services; preparation and submittal of water service record information and cards; pavement saw cutting; pressure testing; placement of select backfill excavated from the trench; and furnishing all labor, material and equipment necessary to complete the work.

In those cases where tunneling is used in lieu of, or in combination with open trenching, payment for the tunneled portion only is to included in the unit price bid for water service. Excavation, backfill and surface restoration for boring, receiving and sight pits will be paid for as outlined under Subsection S913-5.05 Excavation, Backfill and Surface Restoration.

Payment for furnishing and installing magnesium anode will be made under separate bid item.

**S913-5.02 Polyethylene (PE) Water Service**

The unit price bid shall also include the cost of: furnishing and installing all tracer wire; splices and connections. Twenty five (25) percent of the unit price bid will be held in retainage until satisfactory completion of testing and certification of tracer wire continuity.

**S913-5.03 Connection to Existing Appurtenances**

The unit price bid shall also include the cost of: shutting down the existing water service; and connection to existing corporation stops, curb stops, or water service lines.

**S913-5.04 Excavation, Backfill, and Surface Restoration**

Excavation, furnishing and placing of sand embedment and select granular backfill, temporary pavement, and permanent surface restoration will be paid for under separate bid items or included in the price bid for the item as indicated in the item description.

Excavation that is included in the pay item does not include rock excavation, except for water services installed by tunneling. Rock excavation will be paid for under separate bid item. For tunneling operation, excavation that is included in the pay item includes rock excavation.

Where excavation, backfill and/or surface restoration is called for to be included in the pay item, it is meant to be inclusive of the tunnel operation, any open trench, and all boring, receiving and sight pits.

Surface restoration that is included in the pay item shall include temporary pavement.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S913.01XXXX | New X" Copper Water Service | Linear Foot |
| S913.02XXXX | New X" Copper Water Service (Including Excavation and Backfill) | Linear Foot |
| S913.03XXXX | New X" Copper Water Service (Including Excavation, Backfill and Surface Restoration) | Linear Foot |
| S913.04XXXX | New X" Copper Water Service at Existing Appurtenances | Linear Foot |
| S913.05XXXX | New X" Copper Water Service at Existing Appurtenances (Including Excavation and Backfill) | Linear Foot |
| S913.06XXXX | New X" Copper Water Service at Existing Appurtenances (Including Excavation, Backfill and Surface Restoration) | Linear Foot |
| S913.11XXXX | New X" Polyethylene Water Service | Linear Foot |
| S913.12XXXX | New X" Polyethylene Water Service (Including Excavation and Backfill) | Linear Foot |
| S913.13XXXX | New X" Polyethylene Water Service (Including Excavation, Backfill and Surface Restoration) | Linear Foot |
| S913.14XXXX | New X" Polyethylene Water Service at Existing Appurtenances | Linear Foot |
| S913.15XXXX | New X" Polyethylene Water Service at Existing Appurtenances (Including Excavation and Backfill) | Linear Foot |
| S913.16XXXX | New X" Polyethylene Water Service at Existing Appurtenances (Including Excavation, Backfill and Surface Restoration) | Linear Foot |

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# SECTION S914 - CURB STOP AND BOX

## S914-1 DESCRIPTION

Work consists of the installation of new curb stops and curb boxes, adjusting existing curb boxes, removal of existing curb boxes, removal of existing water meter pits, or adjusting existing water meter pits as required in the Contract Documents and as directed by the Project Manager.

Work is to be in conformance with requirements of Section S900 General Water Provisions.

## S914-2 MATERIALS

### S914-2.01 Curb Stop

For copper water service tubing, curb stop is to be open left ball valve type with cast brass body, "O" ring seals fitted with flared couplings for copper water service tubing connections, and is to include water service line insulator which is to be located on customer's (downstream) side of curb stop.

For polyethylene water service tubing, curb stop is to be open left ball valve type with cast brass body, "O" ring seals fitted with quick joint compression couplings for polyethylene water service tubing connections.

### S914-2.02 Water Service Line Insulator

Water service line insulator is to be installed for purpose of providing protection against electrical shock and water service line electrolysis by stray electric current, and is to be made and supplied by manufacturer of curb stop. Water service line insulator is to be made from nylon, with high dielectric, compressive and impact strength characteristics. Nylon is to be inert and recommended for water service applications. Water service line insulator is to be supplied with necessary fittings that permit connection between curb stop and existing water service tubing. Insulator will not be necessary if connecting to a non-metallic inside water service. Insulator is required only where new copper water services are installed.

### S914-2.03 Curb Box

Curb box is to be two piece 2-1/2 inch new style screw extension type curb box capable of extending to at least 5 feet 4 inches. Service box screw extension may be required for greater depths. Curb box is to consist of cast or ductile iron screw top section and cast iron, ductile iron or white injection molded plastic screw bottom section, new style, heavy duty, cast or ductile iron flush fit cover, stationary rod, centering ring and pin. For 1-1/2 inch and 2 inch curb stop, curb box is to be supplied with enlarged base. All metallic components are to be heavily coated with asphalt base paint.

Curb box cover is to be cast, with word "WATER" cast into top of cover. Curb box cover is to be supplied with brass pentagon shaped head bolt.

## S914-3 CONSTRUCTION DETAILS

### S914-3.01 General

Existing curb box that is found to be defective shall be replaced as directed by the Project Manager

Upon completion of the work, excavation shall be backfilled and disturbed surface area restored.

### S914-3.02 Installation

New curb stop shall be placed in the trench on a precast solid concrete block support at an elevation to provide a minimum cover of 4 feet 6 inches.

Curb stop shall be installed complete with water service pipe insulator positioned on customer's (downstream) side of curb stop. Water service line insulator shall be installed in conformance with manufacturer's and AWWA recommendations.

Overall installation shall be tested for leaks under line pressure in the presence of the Project Manager prior to backfilling, and all connections made watertight and free from leakage.

Curb box shall be carefully set and braced to insure that it remains in a vertical position centered on the curb stop during and after backfilling. Proper alignment and height of curb box shall be maintained, until completion of the Project. Top of curb box shall be flush with the finished grade. Backfilling of the trench shall be done in a manner so as to avoid damage to water service pipe and curb stop and box.

**S914-3.03 New Curb Stop and Box at New Water Service**

New curb stop and box shall be connected to the new water service pipe as required, and existing curb stop and box removed. Cost of removing existing curb stop and box shall be included in Section S913 Water Service Pipe (2 inch and Smaller).

**S914-3.04 New Curb Stop and Box at Existing Water Service**

Existing water service shall be shut off at corporation stop. Existing curb stop and box disconnected and removed, and new curb stop and box connected to the existing water service.

**S914-3.05 Replace Existing Curb Box Assembly**

Existing curb box assembly shall be replaced with a new curb box assembly. Prior to installation, curb stop shall be checked for proper operation.

**S914-3.06 Adjust Existing Curb Box/Water Meter Pit Assembly**

Existing curb box shall be adjusted to finished grade. Prior to adjusting existing curb box, Bureau of Water will check existing curb box to insure that it is functioning properly, and check existing curb stop that shut off rod is properly attached.

**S914-3.07 Remove Existing Curb Box/Water Meter Pit Assembly**

Existing curb box/water meter pit assembly on abandoned water service shall be removed and disposed of.

## S914-4 METHOD OF MEASUREMENT

The quantity to be measured for payment shall be the number of curb stops and boxes, or water meter pits actually installed, adjusted, or removed.

## S914-5 BASIS OF PAYMENT

**S914-5.01 General all Items**

The unit price bid for all items shall include the cost of: verifying the location and disposition of water service; preparation and submittal of water service record information and card; pavement saw cutting; and furnishing all labor, material and equipment necessary to complete the work.

Seventy-five (75) percent of the unit price bid will be paid upon completion of the installation and acceptance of the water service work. The remaining twenty-five (25) percent will not be paid until all water service record information and cards have been prepared, submitted and approved. Failure to correct any erroneous or incomplete information will result in holding twenty-five (25) percent of payment in retainage until work is satisfactorily completed.

**S914-5.02 New Curb Stop and Box at New Water Service**

The unit price bid shall also include the cost of: furnishing and installing curb stop with water service line insulator including all necessary fittings; curb box assembly; concrete block; connecting to water service pipe; pressure testing curb stop; final adjustment of curb box to finished grade and alignment; fittings and materials necessary to connect curb stop; removal of existing curb stop and box; and removal of water meter pit where required.

**S914-5.03 New Curb Stop and Box at Existing Water Service**

The unit price bid shall also include the cost of: furnishing and installing curb stop with water service line insulator including all necessary fittings; curb box assembly; concrete block; connecting to water service pipe; pressure testing curb stop; final adjustment of curb box to finished grade and alignment; fittings and materials necessary to connect curb stop; shut down water service at corporation stop; shut down water main; removal of existing curb stop and box; and removal of water meter pit where required.

**S914-5.04 Install New Curb Stop**

The unit price bid shall include the items in Subsection S914-5.02 New Curb Stop and Box at New Water Service, except that a new curb box assembly will not be included.

**S914-5.05 Replace Existing Curb Box Assembly**

The unit price bid shall also include the cost of: removing existing curb box assembly; furnishing and installing new curb box assembly; checking existing curb stop; final adjustment of curb box to finished grade and alignment.

**S914-5.06 Adjust Existing Curb Box**

The unit price bid shall also include the cost of: checking existing curb stop and box assembly for defects; final adjustment of curb box to finished grade and alignment.

**S914-5.07 Remove Existing Curb Box Assembly**

The unit price bid shall also include the cost of removal and disposal of existing curb box assembly.

Existing curb box assembly removal in conjunction with other water service related work such as abandonment of existing water service at tap, installation of new curb stop and box, or replacement of existing curb box assembly, will be included in the unit price bid for those items as indicated in the Basis of Payment.

Existing curb box assembly removal in areas of pavement reconstruction, sidewalk/driveway replacement, or trench and culvert excavation, will be considered as part of the general excavation, and cost of removal will be included in the unit price bid for those items under Sections 203 Excavation and Embankment, R206 Trench and Culvert Excavation and S608 Sidewalk and Driveway.

**S914-5.08 Adjust Existing Water Meter Pit**

The unit price bid shall also include the cost of final adjustment of water meter pit to finished grade and alignment.

**S914-5.09 Remove Existing Water Meter Pit**

The unit price bid shall also include the cost of removal and disposal of existing water meter pit.

**S914-5.10 Excavation, Backfill and Surface Restoration**

Excavation, furnishing and placing of bedding and select granular backfill, and surface restoration will be paid for under separate bid items or included in the unit price bid for the item as indicated in the item

description. No separate payment shall be made for placement of select backfill excavated from the trench

Excavation that is included in the pay item does not include rock excavation. Rock excavation will be paid for under separate bid item.

Payment will be under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S914.01XXXX | Furnish and Install New X" Curb Stop and Box at New Water Service | Each |
| S914.02XXXX | Furnish and Install New X" Curb Stop and Box at New Water Service (Including Excavation and Backfill) | Each |
| S914.03XXXX | Furnish and Install New X" Curb Stop and Box at New Water Service (Including Excavation, Backfill and Surface Restoration) | Each |
| S914.04XXXX | Furnish and Install New X" Curb Stop and Box at Existing Water Service | Each |
| S914.05XXXX | Furnish and Install New X" Curb Stop and Box at Existing Water Service (Including Excavation and Backfill) | Each |
| S914.06XXXX | Furnish and Install New X" Curb Stop and Box at Existing Water Service (Including Excavation, Backfill and Surface Restoration) | Each |
| S914.07XXXX | Furnish and Install New X" Curb Stop | Each |
| S914.08XXXX | Furnish and Install New X" Curb Stop (Including Excavation and Backfill) | Each |
| S914.09XXXX | Furnish and Install New X" Curb Stop (Including Excavation, Backfill and Surface Restoration) | Each |
| S914.1001 | Replace Existing Curb Box Assembly (3/4" to 1-1/2") | Each |
| S914.1002 | Replace Existing Curb Box Assembly (2") | Each |
| S914.1101 | Replace Existing Curb Box Assembly (3/4" to 1-1/2") (Including Excavation and Backfill) | Each |
| S914.1102 | Replace Existing Curb Box Assembly (2") (Including Excavation and Backfill) | Each |
| S914.1201 | Replace Existing Curb Box Assembly (3/4" to 1-1/2") (Including Excavation, Backfill and Surface Restoration) | Each |
| S914.1202 | Replace Existing Curb Box Assembly (2") (Including Excavation, Backfill and Surface Restoration) | Each |
| S914.13 | Adjust Existing Curb Box | Each |
| S914.14 | Adjust Existing Curb Box (Including Excavation and Backfill) | Each |
| S914.15 | Adjust Existing Curb Box (Including Excavation, Backfill and Surface Restoration) | Each |
| S914.19 | Remove Existing Curb Box Assembly | Each |
| S914.20 | Remove Existing Curb Box Assembly (Including Excavation and Backfill) | Each |
| S914.21 | Remove Existing Curb Box Assembly (Including Excavation, Backfill and Surface Restoration) | Each |
| S914.22 | Adjust Existing Water Meter Pit | Each |
| S914.23 | Adjust Existing Water Meter Pit (Including Excavation and Backfill) | Each |
| S914.24 | Adjust Existing Water Meter Pit (Including Excavation, Backfill and Surface Restoration) | Each |
| S914.25 | Remove Existing Water Meter Pit | Each |
| S914.26 | Remove Existing Water Meter Pit (Including Excavation and Backfill) | Each |
| S914.27 | Remove Existing Water Meter Pit (Including Excavation, Backfill and Surface Restoration) | Each |

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# SECTION S917 - HYDRANT

## S917-1 DESCRIPTION

Work consists of installation of new hydrants, relocation or removal of existing hydrants as required in Contract Documents and as directed by Project Manager.

Work is to be in conformance with requirements of Section S900 General Water Provisions.

## S917-2 MATERIALS

### S917-2.01 Hydrant

Hydrant is to be in conformance with requirements of ANSI/AWWA C502, and as approved by City of Rochester.

Hydrant is to be 5-1/4 inch, dry-barrel, break-away hydrant, manufactured for 5 feet 6 inches bury where hydrant branch pipe cover depth is 4 feet 6 inches, and 6 feet bury where hydrant branch pipe cover depth is 5 feet. Hydrant is to be open-left with one 1-1/2 inch pentagon operating nut, two 2-1/2 inch National Standard hose connections, and one 4-1/2 inch National Standard pumper connection. Inlet connection is to be 6 inch mechanical joint.

External bolting on hydrant is to be manufactured of 304 stainless steel. Furnish with corrosion resistant steel nozzle cap chains.

### S917-2.02 Extension Kit

Extension kit for height adjustment of hydrant is to be available in 6 inch increments with maximum of 24 inches allowed, and is to be manufactured by same company that manufactures hydrant. Extension kit is to include rod and barrel units, with non-breakable rod and barrel couplings complete with gaskets and fasteners.

### S917-2.03 Hydrant Marker - Furnished

Hydrant marker is to be supplied by and obtained from the City's Bureau of Water Materials and Equipment Section.

### S917-2.04 Miscellaneous

Paint for hydrant is to be fusion bonded yellow epoxy or Insl-x Silathane Gloss Enamel Yellow No.520-35, or approved equivalent.

Paint for dome on Holly hydrant is to be fusion bonded white epoxy or Insl-x Silathane Gloss Enamel White No.520-00, or approved equivalent.

Interior coatings are to be in conformance with requirements of ANSI/AWWA C550.

Hydrant drain material is to be No. 2 crushed stone in conformance with requirements of NYSDOT Section 703-02 Coarse Aggregate.

Plastic barrier material is to be 6 mil polyethylene.

## S917-3 CONSTRUCTION DETAILS

### S917-3.01 General

Existing hydrants are property of City of Rochester, and upon removal are to be delivered to Bureau of Water Materials and Equipment Section. Upon delivery, Contractor is to obtain written receipt from Bureau of Water stating number of hydrants returned and who received them. Contractor is to provide Project Manager with copy of receipt.

### S917-3.02 Installation

Excavation is to be in conformance with requirements of Section R206 Trench and Culvert Excavation, and to appropriate depth to permit proper connection of hydrant to hydrant branch pipe.

Minimum cover over hydrant branch pipe and fittings, as measured between finished grade and top of exterior limit of hydrant branch pipe and fittings, is to be, unless otherwise shown in plans or ordered by Project Manager:

- 4 feet 6 inches for domestic water pipe
- 5 feet for Holly system water pipe

After installation of hydrant, there is to be resultant clearance of minimum of 2 inches and maximum of 6 inches between finished ground elevation and bottom of the breakaway flange coupling on hydrant.

Adjustment for proper height of hydrant may be accomplished by use of mechanical joint offset or hydrant extension kit. Hydrant extension kit is to be installed in accordance with manufacturer's recommendation and Bureau of Water standards and specifications. The installation of more than one extension kit on a hydrant must be approved by the Project Manager and will require replacement of the lower stem with a longer one that reaches the breakaway flange.

Generally, hydrant is to be located such that centerline of hydrant is at least:

- 2 feet behind face of curb
- 2 feet behind back edge of concrete gutter
- 10 feet away from point of curvature of radius at street intersection
- 10 feet away from outer edge of driveway
- 10 feet away from outer edge of pole
- 15 feet away from outer edge of tree

Minimum distance of 4 feet is to be maintained between hydrant and hydrant branch valve, and if necessary, use horizontal bend to achieve required minimum distance.

Hydrant is to be oriented with pumper connection nozzle at right angles to and facing pavement.

Hydrant is to be installed in vertically plumbed position on solid concrete block support. Proper alignment of hydrant is to be maintained until completion of Project.

For new hydrant installation, hydrant branch pipe material will be as required and with restrained joints.

For hydrant being replaced or relocated on existing hydrant branch pipe that is ductile iron anchor pipe, any extension of existing hydrant branch pipe is to be done using ductile iron anchor pipe.

For hydrant being replaced or relocated on existing hydrant branch pipe that is not ductile iron anchor pipe, solid concrete blocks are to be used for temporary thrust blocking to allow hydrant to be immediately pressurized. Temporary thrust blocking is to be incorporated in permanent poured concrete thrust blocks.

Embed hydrant within crushed stone material from bottom of excavation to point 12 inches above hydrant weep holes (drains), cover crushed stone material with plastic polyethylene sheet barrier, then backfill remaining portion of excavation.

Should ground water be encountered within 7 feet of finished grade, hydrant weep holes (drains) are to be plugged and Bureau of Water notified in writing that weep holes (drains) have been plugged.

Hydrant is to be brush painted with approved yellow paint. All scrapes and other bare patches on hydrants are to be repaired by repainting, then one overall coat of paint applied to hydrant. Dome on Holly hydrants is to be painted with approved white enamel paint.

Hydrant installation is to be pressure tested and made watertight. Hydrant installation is to be red tagged until hydrant is put into active service. Red tag will be supplied by and obtained from Bureau of Water, and is to be installed on hydrant by Contractor.

If one or more bollards are installed to protect the hydrant, bollards must be located at least 3 feet from the hydrant and must not be on the same alignment as any of the nozzles.

Upon completion of work, excavation is to be backfilled and disturbed surface area restored.

**S917-3.03 Relocate Existing Hydrant**

Existing hydrant and hydrant marker or hydrant marker post are to be removed and hydrant reinstalled at new location. Reinstallation of hydrant is to be in conformance with requirements of Subsection S917-3.02 Installation. Operating stem, main valve, valve seat, drain and drainage passages are to be cleaned and inspected. Prior to installation and after reassembly, hydrant is to be checked for proper operation.

Contractor is to notify Project Manager if existing hydrant is unsuitable to be relocated. Project Manager will determine whether or not existing hydrant can be relocated, or new hydrant should be installed.

Existing hydrant marker post is to be disposed of and a new hydrant marker is to be installed on relocated hydrant.

**S917-3.04 Remove Existing Hydrant**

Existing hydrant branch valve box and hydrant marker post are to be removed and disposed of. The branch valve box shall remain only if the branch valve is to remain in use and the valve box is properly aligned over the valve and not damaged.

Expose existing water main and hydrant branch pipe, disconnect and remove existing hydrant. Hydrant is to be delivered to Bureau of Water Materials and Equipment Section. On existing water main to be abandoned, open end of hydrant branch pipe is to be completely plugged with concrete to depth of 12 inches. On existing water main to remain in service, hydrant branch pipe is to be either cut and plugged at tee in conformance with requirements of Section S908 Cut and Plug Existing Water Main, or tee removed and replaced with new section of water main pipe in conformance with requirements of Section S906 Insertion Sleeve, as indicated in Contract Documents.

**S917-3.06 Hydrant Marker - Furnished**

The City will supply hydrant markers. The Contractor will obtain hydrant markers from the Bureau of Water Materials and Equipment Section and install them on the hydrant, only as indicated in Contract Documents. Hydrant markers are not required to be installed within general limits of Central Business District.

The color of the hydrant marker to be installed on each hydrant shall be determined by the Bureau of Water based on the anticipated maximum flow rate available at the hydrant. Blue markers are to be installed where available flows are 1,500 gallons per minute (gpm) or greater; green markers where flows are between 1,000 gpm and 1,500 gpm; orange or yellow markers where flows are between 500 gpm and 1,000 gpm and red markers where flows are less than 500 gpm.

Hydrant marker is to be installed in accordance with manufacturer's instructions.

## S917-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of hydrants, hydrant markers, and hydrant extension kits installed, relocated, replaced, or removed.

## S917-5 BASIS OF PAYMENT

### S917-5.01 General all Items

Unit price bid for all items includes cost of: furnishing all labor, material and equipment necessary to complete work.

Excavation, rock excavation, furnishing and placing of bedding and select granular backfill, and surface restoration will be paid for under separate bid items.

Extension kits used for height adjustment of hydrant will be paid for under respective pay item for extension kits.

New hydrant branch pipe will be paid for under Section S901 Water Main Pipe and Fittings. New branch valve and valve box will be paid for under Section S903 Resilient Seat Gate Valve with Valve Box.

### S917-5.02 New Hydrant

Unit price bid also includes cost of: furnishing and installing hydrant; concrete block support; concrete thrust block; crushed stone; plastic sheet barrier; plugging weep holes (drains) if required; painting hydrant; pressure testing; and connecting hydrant branch pipe to hydrant.

### S917-5.03 New Hydrant (Including Removal of Existing Hydrant)

In addition to requirements of Subsection S917-5.02 New Hydrant, unit price bid also includes cost of: removing and delivering existing hydrant to Bureau of Water Materials and Equipment Section; and connecting new hydrant branch pipe to existing hydrant branch pipe.

New hydrant (including removal of existing hydrant) item will only be paid where existing hydrant is being replaced by new hydrant on same hydrant branch pipe.

### S917-5.04 Relocate Existing Hydrant

Unit price bid also includes cost of: removing, cleaning, inspecting, reinstalling and repainting hydrant; removing and disposing existing hydrant marker post; concrete block support; concrete thrust block; crushed stone; plastic sheet barrier; pressure testing; connecting hydrant branch pipe to hydrant; and connecting new hydrant branch pipe to existing hydrant branch pipe.

### S917-5.05 Remove Existing Hydrant

Unit price bid also includes cost of: disconnecting and delivering existing hydrant to Bureau of Water Materials and Equipment Section; removing and disposing of existing branch valve box and hydrant marker post; and plugging open end of hydrant branch pipe with concrete.

Remove existing hydrant item will only be paid when existing hydrant is removed and new hydrant is not set on same hydrant branch pipe.

Plugging or removing existing tee and installation of insertion sleeve will be paid for under separate bid items.

**S917-5.06 Hydrant Marker - Furnished**

Unit price bid also includes cost of: obtaining hydrant marker from Bureau of Water Materials and Equipment Section and installing hydrant marker on hydrant.

**S917-5.07 Extension Kit**

Unit price bid also includes cost of: furnishing and installing extension kit; removing and reinstalling existing hydrant and replacing lower stem, where required.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S917.01 | New Hydrant | Each |
| S917.02 | New Hydrant (Including Removal of Existing Hydrant) | Each |
| S917.04 | Relocate Existing Hydrant | Each |
| S917.05 | Remove Existing Hydrant | Each |
| S917.0601 | Hydrant Marker (Furnished) | Each |
| S917.07 | 6" Hydrant Extension Kit | Each |
| S917.08 | 12" Hydrant Extension Kit | Each |
| S917.09 | 18" Hydrant Extension Kit | Each |
| S917.10 | 24" Hydrant Extension Kit | Each |

REVISED December 26, 2013

# SECTION S923 - BELL JOINT LEAK CLAMP

## S923-1 DESCRIPTION

Work consists of the installation of new bell joint leak clamps on existing cast iron water main bell and spigot joints as required in the Contract Documents and as directed by the Project Manager.

Work is to be in conformance with the requirements of Section S900 General Water Provisions.

## S923-2 MATERIALS

### S923-2.01 Bell Joint Leak Clamp

Bell joint leak clamp bell and spigot rings shall be ductile iron in conformance with the requirements of ASTM 536, with fusion bonded epoxy coating.

Gaskets are to be SBR or Nitrile (Buna N) rubber or other rubber compound suitable for use with potable water.

Bolts and nuts shall be fluorocarbon coated, cold formed, high strength, low alloy steel in accordance with ANSI/AWWA C111/A21.11.

## S923-3 CONSTRUCTION DETAILS

Prior to ordering the bell joint leak clamp, the Contractor shall be responsible for measuring the outside diameter of the existing water pipe for proper sizing of the clamp. Excavation is normally required to obtain this measurement. Extended lead time may be required for delivery of clamp from the manufacturer.

Contractor shall locate the existing water pipe joint, and carefully excavate to expose the water pipe joint enough to install the new bell joint leak clamp. Existing water pipe shall be braced and supported as directed by the Project Manager to maintain the structural integrity of the existing water pipe. Clean pipe joint thoroughly on back of bell, on bell face and on spigot where gasket will seat. Dirt, loose rust and scale must be removed from the gasket seating area. On caulked lead joints, if the caulking material extends beyond the face of the bell, excess caulking should be carefully removed. If the caulking is recessed more than 1/8-inch, it should be faced up to the bell with a suitable material.

New bell joint leak clamps shall be installed according to the manufacturer's instructions and as directed by the Project Manager. All bolts and nuts on each bell joint leak clamp shall be evenly tightened with the proper torque, with no evidence of leakage occurring at the joint.

Placement of the pipe bedding material and backfilling of the trench shall be done in a manner so as to avoid damage to the water pipe and bell joint leak clamp, and in accordance with Section S901 Water Main Pipe and Fittings.

## S923-4 METHOD OF MEASUREMENT

The quantity to be measured for payment shall be the number of bell joint leak clamps installed.

## S923-5 BASIS OF PAYMENT

The unit price bid shall include the cost of: furnishing and installing bell joint leak clamp; pavement saw cutting; excavation including additional excavation necessary to measure outside diameter of existing water pipe; locating existing pipe joint; cleaning and repairing existing water pipe and joint; bedding and backfill materials; bracing and support of existing water pipe; and furnishing all labor, material and equipment necessary to complete the work.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S923.01XX | X" Bell Joint Leak Clamp | Each |

REVISED February 13, 2014

# SECTION S962 - JOINT BOND

## S962-1 DESCRIPTION

Work consists of electrically bonding metallic pipe and fitting joints as required in the Contract Documents and as directed by the Project Manager.

Work is to be in conformance with the requirements of Section S900 General Water Provisions.

## S962-2 MATERIALS

### S962-2.01 Thermite Weld Equipment

Electrical connection of copper wire to metallic pipe or fittings shall be by the thermite weld method. Thermite weld materials shall consist of weld molds and weld cartridges according to the weld manufacturer's recommendations for each wire and pipe sizes and materials. Weld materials from different manufacturers shall not be interchanged. Weld molds shall be graphite molds. Ceramic "one -shot" molds will not be acceptable.

### S962-2.02 Wire

Wire for bonded joints shall be single conductor stranded copper with 0.110 minimum thickness black high molecular weight polyethylene (HMWPE) insulation. Use #8 AWG wire on pipe sizes 12 inch diameter and smaller and #4 AWG on pipe sizes larger than 12 inch diameter.

## S962-3 CONSTRUCTION DETAILS

Thermite welding shall be performed in accordance with the manufacturer's specifications. Joint bonds shall be applied only to pipe or fitting joints designated in the Contract Documents or by the Project Manager.

Each joint designated to be bonded shall be provided with two insulated copper cable joint bonds for push-on joint and three wires for mechanical joint.

Using a mechanical grinder, remove the minimum area of coating from pipe or fitting surface required for placement of weld mold on the pipe, creating a bright, shiny surface.

For new pipe installations, joint bonds should be completed before polyethylene tubing installation is completed at the joint. To attach joint bond wires to water mains that are already encased in a polyethylene tube, the Contractor shall first cut back the polyethylene to expose the pipe. The Contractor shall make an "X" shaped cut in the polyethylene and temporarily fold back the polyethylene at the point where the joint bond will be attached to the pipe. After the joint bond wires are attached to the pipe, the Contractor shall repair the polyethylene tubing. The Contractor shall use polyethylene compatible adhesive tape to repair the tubing. The polyethylene shall be folded back against the pipe and the repair tape shall be applied on all four sides of the joint bond. The repair tape shall completely cover the area of the polyethylene tube that was cut and shall completely cover all exposed metallic pipe or fitting material.

Prepare joint bond wire for thermite welding by assuring that cable is absolutely dry. Cable shall be free of dirt, grease and other foreign products. Cut cable in such a way as to avoid flattening or forcing out of round. To prevent deformation of cable, cut cable with cable cutters. Remove insulation in a manner that will avoid damage to strands. Hold cable at an approximate 30 degree angle to pipe or fitting surface when welding.

When weld has cooled, remove weld slag and test weld for strength by striking a sharp blow to the weld with a hammer while pulling firmly on the wire. Reweld unsound welds and retest weld. Thoroughly clean mold and mold covers after completion of each weld to assure that no slag will penetrate into next weld. After soundness of weld has been verified, thoroughly clean with a stiff wire brush and brush coat entire weld area with an approved bitumastic coating. Lift wire away from pipe or fitting and apply bitumastic coating completely around, on top and underneath the wire. Push wire back down on the pipe.

The wire for the joint bond connected between each pipe or fitting shall be cut and fabricated to a length that will fit each bond location in the field. The wire shall have sufficient slack to allow for pipe movement at the joint and protect against undue stress during backfilling.

Joint bonds are not required at mechanical joints where mechanical joint restraint glands have been installed.

Cushion sand shall be backfilled around the water main so that the sand covers the pipe to a minimum depth of 12 inches on top, and along both sides of the pipe. The excavation shall be backfilled in stages using select granular backfill (water) material which is free from stone, rocks, roots, organic material, trash or other debris, and carefully tamped to ensure that no voids exist around the bond wire and the bond wires are not damaged.

## S962-4 METHOD OF MEASUREMENT

The quantity to be measured for payment shall be by the number of pipe joints electrically bonded .

## S962-5 BASIS OF PAYMENT

The unit price bid shall include the cost of: surface preparation; furnishing and installing all thermite weld equipment and materials; wire; bitumastic coating; repairing polyethylene tubing; wire and furnishing all labor, material and equipment necessary to complete the work.

Excavation, rock excavation, furnishing and placing of bedding and select granular backfill, temporary pavement, and surface restoration will be paid for under separate items.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S962.01 | Joint Bond | Each |

REVISED February 13, 2014

# SECTION S966 - MAGNESIUM ANODE

## S966-1 DESCRIPTION

Work consists of installing prepackaged magnesium anodes, to cathodically protect a portion of new or existing cast or ductile iron water main, service or hydrant branch pipe and new ductile iron fittings and copper water services on new or existing PVC, PVCO and HDPE water main pipe, as required in the Contract Documents and as directed by the Project Manager.

Work is to be in conformance with the requirements of Section S900 General Water Provisions.

## S966-2 MATERIALS

### S966-2.01 Magnesium Anode

Anodes shall be high potential magnesium anode ingots with packaged backfill. Anode ingot shall meet or exceed ASTM B843, GRADE M1C for high-potential magnesium anodes, with the following chemical composition:

| ELEMENT | PERCENT BY WEIGHT |
|---|---|
| Aluminum | 0.01 maximum |
| Manganese | 0.5 – 1.3 |
| Zinc | 0.05 maximum |
| Copper | 0.02 maximum |
| Silicon | 0.05 maximum |
| Iron | 0.03 maximum |
| Nickel | 0.001 maximum |
| Other metallic elements | 0.05 maximum or 0.3 total |
| Magnesium | Remainder |

Laboratory tests of magnesium anodes shall be conducted by a third party, in accordance to ASTM G97 (Laboratory Evaluation of Magnesium Anode Test Specimens for Underground Application) requirements. Test results shall demonstrate a minimum open circuit potential of -1.70 volts with respect to a saturated Calomel electrode (-1.774 volts with respect to a copper/copper sulfate electrode) and a minimum current efficiency of 50% or 500 amp-hours per pound.

Anode shall come furnished with minimum 10 feet of coiled #12 AWG solid copper lead wire with TW, THHN or THWN insulation, firmly attached to the galvanized steel core of the anode. The core cavity shall be filled with electrical sealing compound to assure a fully insulated and protected connection. Magnesium anode and backfill shall be pre-packaged into a single unit in a permeable cloth bag.

Each magnesium anode shall meet or exceed the nominal bare weight as shown in the following table (length, height and width dimensions and packaged weights may vary slightly by manufacturer):

| Length | Width | Height | Bare Weight | Packaged Weight |
|---|---|---|---|---|
| 8 inch | 3-1/2 inch | 3-3/4 inch | 5 pound | 17 pound |
| 13-3/4 inch | 3-1/2 inch | 3-3/4 inch | 9 pound | 24 pound |
| 25-1/4 inch | 3-1/2 inch | 3-3/4 inch | 17 pound | 45 pound |
| 19-7/8 inch | 5-1/2 inch | 5-3/4 inch | 32 pound | 70 pound |
| 30-1/4 inch | 5-1/2 inch | 5-3/4 inch | 48 pound | 96 pound |

### S966-2.02 Backfill Packaging

Each anode shall be packaged in a permeable cloth bag containing backfill having the following composition, in percent by weight:

- 75 percent Hydrated Gypsum
- 20 percent Bentonite
- 5 percent Sodium Sulfate

### S966-2.03 Thermite Weld Equipment

Connection of anode lead wire to cast iron or ductile iron pipe or fittings shall be made by the thermite weld method. Thermite weld materials shall consist of wire sleeves, weld mold and weld cartridges according to the weld manufacturer's recommendations for the specific wire and pipe sizes and materials. Weld materials from different manufacturers shall not be interchanged. Weld molds shall be graphite molds. Ceramic "one -shot" molds will not be acceptable.

## S966-3 CONSTRUCTION DETAILS

### S966-3.01 General

Spacing and size of magnesium anodes will be as specified in Contract Documents. Each anode shall be placed in a horizontal position parallel with the pipe, with centerline axis of the anode at least 6 inches below the bottom of the water pipe. The centerline axis of the anode shall also be placed at least 2 feet from the exterior wall of the water pipe. Care shall be taken to ensure that the cloth bag is not damaged and no backfill lost during installation. Each anode shall be centered in the cloth bag. It may be necessary to re-center the anode in the cloth bag by rolling it on the ground prior to installation. Each prepackaged anode shall be lowered into the trench using a sling or rope. The anode shall not be lowered, transported, handled or lifted by the lead wire. The anode lead wire shall be long enough to reach from the pipe to the anode without a splice. The anode lead wire shall be attached to the pipe using the thermite weld process.

Anodes that are installed at cathodic protection test stations are not to be directly connected to the water pipe or fitting. When the anode lead wire is not long enough to reach the test station terminal board with sufficient slack, the lead wire may be lengthened by splicing on an additional length of lead wire. Splice shall be made using an approved splice connector suitable for buried applications.

To connect anode lead wire to ductile iron pipes that are encased in a polyethylene tube, the Contractor shall first cut back the polyethylene tubing to expose the pipe. The Contractor shall make an "X" shaped cut in the polyethylene and temporarily fold back the polyethylene at the point where the anode lead wire will be connected to the pipe.

Using a mechanical grinder, remove the minimum area of coating from pipe or fitting surface required for placement of weld mold, creating a bright, shiny surface. Prepare the anode lead wire and pipe surface for thermite welding by assuring that they are dry. Wire and pipe surface shall be free of dirt, grease and other foreign products. Remove insulation at end to be welded in a manner that will avoid damage to wire. Install adapter sleeves for anode lead wire as recommended by thermite weld manufacturer prior to welding. Hold wire at an approximate 30 degree angle to pipe surface when welding.

When weld has cooled, remove weld slag and test weld for strength by striking a sharp blow to the weld with a hammer while pulling firmly on the wire. Re-weld unsound welds and retest weld. Thoroughly clean mold and mold covers after completion of each weld to remove all excess slag. After soundness of weld has been verified, thoroughly clean with a stiff wire brush and brush with an approved bitumastic coating over entire weld area. Lift wire away from pipe and apply bitumastic coating completely around and underneath the wire. Push wire back down on the pipe. Apply a protective bitumastic coating where any original pipe coatings have been disturbed.

After the anode lead wire is connected to the pipe, the Contractor shall repair the polyethylene tubing using polyethylene compatible adhesive tape. The polyethylene tubing shall be folded back against the pipe and the repair tape shall be applied on anode lead wire. The repair tape shall completely cover the area of the polyethylene tubing that was cut and shall completely cover all exposed ductile iron pipe.

Extra anode lead wire for each anode shall be coiled. The wire shall have sufficient slack to allow for pipe and anode movement and to protect against undue stress during backfilling. Prior to backfilling the anode, water shall be applied to the anode to moisten its pre-packed backfill.

The area immediately surrounding the anode shall be backfilled with native soil. Cushion sand shall be backfilled around the water pipe or fitting so that the sand covers the pipe or fitting to a minimum depth of 12 inches on top, and along both sides of the pipe or fitting. The excavation shall be backfilled in stages using select granular backfill (water) material free from stone, rocks, roots, organic material, trash or other debris, and carefully tamped to ensure that no voids exist around the bag and that the bag and wire are not damaged.

**S966-3.02 Anodes on Copper Water Services on PVC, PVCO and HDPE Water Mains**

One 5 pound anode shall be connected to new copper water services on PVC, PVCO and HDPE water mains, For copper services 1 inch diameter and less, anode lead wire shall be attached to thaw wire type copper tube nut at outlet end of corporation stop. For copper services larger than 1 inch diameter, anode lead wire is to be attached to copper service using bronze ground clamp.

**S966-3.03 Anodes on Existing Ductile and Cast Iron Water Mains**

Magnesium anodes shall be installed at every pipe joint or every other pipe joint, as designated in the Contract Documents or directed by the Project Manager, on existing cast and ductile iron water main pipe to cathodically protect both pipes on either side of the joint. Two or more anodes will be installed at pipe joint locations, with one or more anodes connected to each pipe on either side of the joint. Pipe joints shall be located by the Contractor utilizing field notes from the original pipe installation records. These notes may be obtained from the Rochester Water Bureau Maps & Records office located at 10 Felix Street, Rochester, New York 14608. A test pit shall be excavated to verify the location of the first pipe joint. The Contractor shall layout the location of remaining joints to be excavated using the record field notes. At each excavated joint, an area shall be excavated that is large enough to expose top and one or both sides of existing water main pipe and safely install both anodes in one operation. Basic general size of the area to be excavated will be as noted in Contract Documents and will be dependent on the depth and location of the water main.

Magnesium anodes are not required to be installed on existing water main fittings or valves encountered in an excavation, unless otherwise required in the Contract Documents or directed by the Project Manager.

**S966-3.04 Anodes on Existing Ductile and Cast Iron Hydrant Branches and Water Services**

Hydrant branches shall be excavated along the branch pipe with the branch gate valve centered in the trench. One 17 pound anode shall be attached to the branch pipe between the water main and the gate valve and one 17 pound anode on the branch pipe between the gate valve and the hydrant.

Water services 4 inch diameter and larger shall be excavated along the service pipe with the curb shut off valve centered in the excavation. One anode shall be connected to the service pipe between the water main and the curb valve and a second anode shall be connected to the service pipe between the curb valve and the customer's property. For services with no curb valve, one anode shall be connected to the service pipe in the vicinity of the curb. Anode sizes shall be based on the service diameter, with 17 pound anodes installed on 4 and 6 inch diameter services; 32 pound anodes installed on 8 and 10 inch diameter services and 48 pound anodes installed on services 12 inch diameter and larger.

## S966-4 METHOD OF MEASUREMENT

The quantity to be measured for payment shall be by the number of prepackaged magnesium anodes installed. Size of magnesium anode is as described by bare weight.

## S966-5 BASIS OF PAYMENT

The unit price bid shall include the cost of: furnishing and installing the prepackaged magnesium anode; all thermite weld equipment and materials; attaching the anode lead wire to the pipe or fitting; splicing the lead wire at test stations, bitumastic coating; repairing the polyethylene tubing; locating joints on existing pipe and furnishing all labor, material and equipment necessary to complete the work.

Excavation, rock excavation, furnishing and placing of bedding and select granular backfill, temporary pavement, and final paving and surface restoration will be paid for under separate items.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S966.0305 | 5 Pound Magnesium Anode | Each |
| S966.0309 | 9 Pound Magnesium Anode | Each |
| S966.0317 | 17 Pound Magnesium Anode | Each |
| S966.0332 | 32 Pound Magnesium Anode | Each |
| S966.0348 | 48 Pound Magnesium Anode | Each |

REVISED December 9, 2010

# SECTION S999 - PROJECT SIGN

## S999 GENERAL

It is responsibility of Contractor to provide project signs for duration of Project. Project signs are to be installed prior to any construction work being performed by Contractor on behalf of City of Rochester.

## S999-1 DESCRIPTION

Work consists of furnishing and installing project signs as required in Contract Documents and as directed by Project Manager.

Project signs must be installed at all main access points to project site. Project signs are not required to be installed at other minor access points, unless otherwise specifically required in Contract Documents. Actual number of signs to be installed on project will as indicated in Contract Documents.

## S999-2 MATERIALS

### S999-2.01 Project Sign (6' x 4' and 3' x 2')

Sign board is to be constructed from 3/4 inch thick duraply or A-A exterior grade plywood. Sign board is to be painted with two coats of white exterior enamel paint. Lettering and City mark are to be done with one color, pms 287C blue.

Lettering and City mark are to be done by either silk screen process, die cut vinyl letters (permanent adhesive), hand lettering, or stencil.

### S999-2.02 Project Sign (11" x 17")

Sign board is to be constructed of white poster board or other cardboard material suitable for minimum life span of 14 days. Lettering and City mark are to be done with one color, pms 287C blue.

Lettering and City mark are to be done by either silk screen process, die cut vinyl letters (permanent adhesive), hand lettering, or stencil.

### S999-2.03 Project Sign - Inter-governmental

Sign board is to be 6 feet by 1 foot 3 inches, and constructed from 3/4 inch thick duraply or A-A exterior grade plywood. Sign board is to be painted with two coats of white exterior enamel paint. Lettering and logos will be as required by appropriate governmental agency.

Lettering and logos are to be done by either silk screen process, die cut vinyl letters (permanent adhesive), hand lettering, or stencil.

## S999-3 CONSTRUCTION DETAILS

### S999-3.01 Project Sign Information and Approval

Prior to fabrication of actual project sign, mock-up of proposed project sign must be submitted to City for approval.

Project Manager will supply Contractor with any updates to information that is required to be displayed on project sign for preparation of mock-up of proposed project sign.

Mock-up of proposed project sign must be submitted to City's Graphic Design Section for solicitation of comments, and any required revisions must be made before approval of proposed project sign layout will be given. Contractor is to contact City's Graphic Design Section, Monday through Friday, between hours of 9:00AM and 5:00PM, (585) 428-6068.

Contractor must obtain written confirmation from City's Graphic Design Section that proposed project sign layout has been approved, and provide copy of such written approval to Project Manager, prior to fabrication and installation of project sign.

**S999-3.02 General**

Project signs must be in place minimum of 2 days before Contractor commences any form of work on project site, and are to remain in place for minimum of 5 days after completion of project. Contractor is to maintain project signs in good condition for duration of project.

Under no circumstances are project signs from one project to be altered for re-use on another project. Project signs are property of City of Rochester, and after completion of project, project signs are to be removed and destroyed, or delivered to City storage facility, as directed Project Manager.

On occasion, project signs may be required to be relocated from one area of project site, to another area of project site. When project sign is relocated, it is to be re-installed using installation requirements as outlined under this specification.

For those projects that are spread out over several different streets and require generic project signs, number of actual project signs required may be less than total number of individual locations. Examples of such type of project would be: *Water Main Cleaning and Lining Project*, *Milling and Resurfacing Project*, or *Sidewalk Curb Ramp Improvement Project*. As work is completed and progresses from one location to another, project signs will be required to be relocated from original installation site to new work site.

For project signs made out of plywood, two coats of white exterior enamel paint are to be applied evenly to both sides and on all edges of sign board. Fastening devices that appear on face of project sign are to be painted to match background color. No fastening devices are to enter into or cover any area of lettering or artwork.

Project signs are to be soundly constructed and securely mounted on their own posts or barricades. Generally, project signs are not to be mounted on buildings, walls, fences, utility poles, traffic sign posts, or trees. Only 11 inch by 17 inch size project signs may be mounted on utility poles and trees. Project signs are to be located such as to be easily noticed, but are not to impair in any way or manner visual sight distance of both vehicular and pedestrian traffic.

Where required to be installed, inter-governmental project sign is to be placed directly above City's standard project sign.

Bottom of sign board is to be posted minimum of 5 feet above grade.

**S999-3.03 Artwork**

Sample layout of project sign has been included in Contract Documents. Layout shows position of City mark and type of information that is to be on project sign, and how project sign is to look once it has been manufactured.

If screen printing, Contractor is to supply all screens.

If required by Contractor, City's Graphic Design Section will provide camera-ready artwork for City mark only. Camera-ready artwork for City mark will be provided in high resolution digital file format which can be e-mailed to Contractor, or Contractor's representative. No camera-ready artwork will be provided for any other information that is to be on project sign.

For camera-ready artwork and for any additional information regarding City mark, Contractor is to contact City's Graphic Design Section, Monday through Friday, between hours of 9:00AM and 5:00PM, (585) 428-6068.

## S999-4 METHOD OF MEASUREMENT

Quantity to be measured for payment will be number of project signs furnished and installed.

## S999-5 BASIS OF PAYMENT

Unit price bid includes cost of: preparing mock-up; obtaining approvals; constructing, furnishing, installing, relocating, maintaining, and removing project signs and posts/barricades; destroying or delivering project signs to City storage facility after completion of work; and furnishing all labor, material and equipment necessary to complete work.

Payment will be made under:

| ITEM NO. | ITEM | PAY UNIT |
|---|---|---|
| S999.0101 | Project Sign - 6' x 4' | Each |
| S999.0201 | Project Sign - 3' x 2' | Each |
| S999.0301 | Project Sign - 11" x 17" | Each |
| S999.04 | Project Sign - Inter-governmental | Each |

REVISED May 1, 2013