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PAY ITEMS**

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**DIVISION IX
PAY ITEMS**

1. GENERAL ITEMS

Item No. 101, General Conditions

Description

This item shall include all work described and required by the Plans and Specifications for which no item of work is listed in the Bid Form. This item also includes all miscellaneous and incidental items such as overhead, insurance, permits, dust and noise control, trench maintenance during non-working hours, coordination with others, maintenance of gravel roads, drainage maintenance, all mobilizations and demobilizations, all costs incurred by the Contractor for all "minor" delays in the construction progress due to City's direct actions, and the like.

Coordination with others shall include; City Departments including, but not limited to, Public Services Department-Transportation Division, Utilities Department, and Building Department; and Utility owners having facilities located in the right-of-way, including, but not limited to, City of Ann Arbor, Michigan Consolidated Gas Company, Detroit Edison Company, Michigan Bell Telephone Company, and Columbia Cable.

The Contractor shall be solely responsible for coordination with the Transportation Division for any changes to traffic control devices related to the work.

The Owners of public or private utilities whose facilities are not in conflict with the proposed work, and which do not present a hazard to the public or an extraordinary hazard to the Contractor's operations, will not be required to move their facilities on or from the street right-of-way. When utilities which are, or are not, shown on the Plans must be moved to new locations, no additional compensation will be paid to the Contractor for reasonable delays beyond the control of the City. The Contractor is directed to review **Division I, Section 1N., Existing Utilities, Structures, Features and Site Conditions** for additional information regarding utilities coordination. Stoppages created solely by the operations of the utility companies which delay utility revisions on any portion of the project, may be considered as a basis of claim for an extension of time only, for project completion.

Maintenance of gravel roads shall include the application of calcium chloride (Chloride 38 or equal) at the rate of 2,000 gal/mile of 20' wide roadway, during the work at the direction of the Engineer, and shall include a final application following the final grading of the gravel road at the completion of the work. The calcium chloride shall be available at the beginning of the project and may be applied multiple times. Maintenance of gravel roads shall also include grading of the roads during the work, as directed by the Engineer.

Measurement and Payment

Forty (40) percent of the cost of the General Conditions item shall be paid on the first request for payment. Thirty (30) percent of the cost of the General Conditions item shall be paid when over 50% of the value of the total project is complete. Thirty (30) percent of the cost of the General Conditions shall be paid when over 85% of the value of the total project is complete. The General Conditions shall be paid on a lump sum (LS) basis.

PAY ITEM

PAY UNIT

IX-1

Item No. 102, Audiovisual Tape Coverage*Description*

The Contractor shall furnish to the Owner **THREE (3)** copies of an audiovisual tape record of the construction site for the purpose of establishing, for the record, conditions prior to construction. The audiovisual taping shall be of a professional quality that will clearly log an accurate visual description of existing conditions. The tape shall be in color, on VHS format tape. The audiovisual taping shall clearly show the date and time of taping. The audiovisual taping shall be done within the two (2) week period prior to the preconstruction meeting and under the supervision of the Engineer. Any portion of the tape not acceptable for the determination of the above must be refilmed at no additional charge.

Said tape shall be furnished one week prior to the preconstruction meeting and/or prior to placement of materials or equipment in the construction area.

- a. The tape coverage must include all existing cross streets, driveways, sidewalks, curbs, ditches, shrubbery or other structures located on the construction site. Where construction may necessitate a local detour of traffic, additional panning of the full street right-of-way will be required. It will not be necessary to cover side street detours, only areas within the full street right-of-way of the street along which the construction is being done.
- b. Both sides of the entire construction site must be recorded with the rate of speed in the general direction of travel not to exceed 48 feet per minute. Panning rates and zoom-in/zoom-out rates shall be controlled sufficiently so that playback will produce clarity of the object viewed, and locations must be identified by audio and video means at intervals of not more than 50 lineal feet.
- c. The tape must be recorded during a time of good visibility. Taping should not be made during periods of precipitation, snow, leaves, or other natural debris.
- d. To insure proper perspective, the distance from the ground to the camera lens shall not be less than twelve feet, and the Owner shall have the authority to designate what areas may be omitted or added for audio-video coverage.
- e. The recording must be made on a continuous running tape on which sound and video information can be recorded.

To preclude the possibility of tampering or editing in any manner, all video recordings must be by electronic means and display continuously and simultaneously generated transparent digital information to include the date and time of recording, as well as the corresponding engineering stationing numbers. The date information will contain the month, day and year (e.g., 10/5/73), and be placed directly below the time information. The time information shall consist of hours, minutes, and seconds, separated by colons (e.g., 10:35:18). This transparent information will appear on the extreme upper left hand third of the screen.

The engineering station numbers must be accurate and correspond to the project stationing and must include the standard engineering symbols (e.g., 14 + 84). This transparent information is to appear in the lower half of the viewing screen. If there is no engineering stationing, each street shall be

stationed individually starting at 0 + 00,

Below the engineering stationing, periodic transparent alpha/numeric information is to appear. This information shall consist of the name of the project, name of area covered, direction of travel, viewing side, etc.

- f. For ease of playback, the speed and electronics of the video tape shall be equal to that which is standard to the electronic industry.

Services shall be performed by one of the following organizations, or equal:

ToPo Video, Inc.
Video Media Corp. of America

Measurement and Payment

Payment for audiovisual coverage shall be on the basis of lump sum amount for all labor, materials and equipment necessary to provide the complete service as described above. This item will be included in the first payment for work performed.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 102, Audiovisual Tape Coverage (3 Copies)	LS

Item Nos. 110-116, Traffic Control

Description

This item shall include all labor, equipment, and material for Traffic Control and Traffic Control Devices in accordance with either the Traffic Control Plan and/or Detail located on the detail sheet contained in the Plans, and as directed by the Engineer. Traffic control shall be performed in accordance with these Specifications and the Michigan Manual of Uniform Traffic Control Devices (MMUTCD) 1981 Revised.

Measurement and Payment

The Unit prices for these items of work shall include all labor, material and equipment costs associated with the installation of traffic control devices as necessary to complete the work, as specified herein.

The Contractor shall replace missing or damaged traffic control devices, as directed by the Engineer. When traffic control devices have been damaged by, or due to, the negligence of the Contractor, his subcontractors or material suppliers, the traffic control devices shall be replaced at the Contractor's expense.

Minor Traffic Control

Minor traffic control shall include furnishing and operating of miscellaneous signs and warning devices (including flagperson and cones), operating additional signs furnished by the City throughout the life of the Contract, pedestrian traffic control, trench maintenance during all non-working hours, maintaining access to all drives, covering conflicting existing signs and removal of these covers, and the furnishing and installation of meter bags as needed, by the Contractor. Payment for minor traffic control shall be on a lump sum basis. This payment shall be prorated such that payment will be made for the percentage of the Contract unit price equal to

the percentage of the value of the total project which has been completed since the previous payment.

PAY ITEM

PAY UNIT

Item No. 110, Minor Traffic Control

LS

Type II Barricades

Type II Barricades will be the lighted drum type.

There will be a one time payment for Type II Barricades (Drum) Furnished, when delivered to the Project, at the Contract unit price for Type II Barricades (Drum) Furnished. Also, there will be a one time payment for the maximum number of Type II Barricades (Drum), in place at any one time during the project, at the Contract unit price for Type II Barricades (Drum) Operated.

Missing or damaged Type II barricades shall be replaced by the Contractor, as directed by the Engineer. Barricades which are damaged by the Contractor, the Contractor's subcontractor or material suppliers shall be replaced, by the Contractor, at the Contractor's own expense. When barricades are damaged by others, or stolen, and in the opinion of the Engineer, need to be replaced, the Contractor shall replace the damaged or stolen Type II barricades, and shall be paid at the Contract unit price for furnishing Type II barricades. The Contractor will not be paid an additional "Operate" for these barricades.

The Contractor will not be compensated for the costs of transporting Type II barricades or other traffic control devices between streets, or to new locations. The costs associated with this work shall be considered included in furnishing the barricades.

PAY ITEM

PAY UNIT

Item No. 111, Type II Lighted Barricade (Drum), Furnished

Each

Item No. 112, Type II Lighted Barricade (Drum), Operated

Each

Type III Barricades, Arrow Board, Type B Signs

The Contractor shall furnish and operate Type III Lighted Barricades, Type A Lighted Arrow Boards, and Temporary Type B Signs as indicated on the Plans, and as directed by the Engineer, and shall be compensated at each item's respective unit price. Payment shall be for the maximum quantity in place at one time during the work for the entire project.

PAY ITEM

PAY UNIT

Item No. 113, Type III Lighted Barricade, Furnished & Operated

Each

Item No. 114, Type A Lighted Arrow Board, Furnished & Operated

Each

Item No. 115, Temporary Type B Signs

SF

Traffic Delineators

Tubular Traffic Delineators shall be orange in color, a minimum of 36" high, and reflectorized. Reflectorization of tubular markers shall be a minimum of two three inch white bands placed a maximum of 2" from the top with a maximum of 6" between bands.

Tubular Traffic Delineators shall be paid for once when furnished to the project. Regardless of how often

moved, moving of a traffic marker is included in the price to furnish. Payment will be on an "each" basis.

PAY ITEM

PAY UNIT

Item No. 116, Tubular Delineators

Each

Item No. 120, Project Supervision

Description

The Contractor shall designate a full time Project Supervisor to act as his/her agent/representative and to be responsible for all of the subcontractors. The Contractor's Project Supervisor shall not be an active crew member of the Contractor, nor an active member or employee of any subcontractor's work force. The Project Supervisor shall not perform general or specialized labor tasks. The Project Supervisor shall be designated by name prior to the preconstruction meeting. The Project Supervisor shall be available 24 hours-per-day to provide proper supervision, coordination, and scheduling of the project for the duration of the Contract. Failure to provide proper supervision, by the Project Supervisor will be considered a material breach of the Contract.

Prior to the preconstruction meeting the Contractor shall furnish the City with a current, detailed summary of the proposed Project Supervisor's past work history, outlining previous supervisory experience on projects of a similar size and nature. The designated Project Supervisor shall have a thorough understanding and working knowledge of all aspects of the work to be performed, as well as the testing and handling of aggregates and aggregate products, and any other materials to be incorporated in the work.

The proposed Project Supervisor shall also have demonstrated an ability to work harmoniously with the public, subcontractors, and other parties involved with the work. Further, the Contractor shall provide personal references (i.e., names and phone numbers of persons (previous owners or agents)) who can attest to the qualifications and work history of the proposed Project Supervisor.

The Project Supervisor shall be responsible for all of the work, including the performance of the Contractor's and all subcontractor's work forces. He/she shall schedule and coordinate all the parties involved in the project, including utility companies, testing engineers, other governmental agencies and City inspectors. The Project Supervisor shall coordinate and schedule both Testing Inspectors and City Inspectors in a timely manner, to assure proper and timely testing and inspection of all work which requires testing and/or inspection in accordance with these Specifications.

The Project Supervisor shall review the Engineering Inspector's Daily Reports for accuracy and sign the reports on a daily basis as the representative of the Contractor. Items to be reviewed include descriptions of work performed, workforce, equipment, weather and quantities.

The Project Supervisor shall furnish the City with an updated, detailed schedule of the proposed work on a weekly basis, and he/she shall also update the Engineer of all proposed changes on a daily basis.

The Contractor shall provide the City with emergency telephone numbers of the Project Supervisor in order to provide 24 hour-per-day access during business and non-business hours, including weekends and holidays.

The Project Supervisor shall schedule and chair a weekly progress meeting with the Engineer and all subcontractors to discuss the work. Upon the completion of each meeting, the Project Supervisor shall prepare and distribute, to all present, a written summary of the meeting's minutes. Those in attendance shall review the minutes and, if necessary, comment on any deficiencies or errors prior to or at the next scheduled progress

meeting.

The Project Supervisor shall be equipped by the Contractor with both a mobile telephone and a remote paging device (beeper), to allow the City to easily contact him/her during daily construction activities, during transit to and from the construction site, and during non-business hours.

The Project Supervisor shall be equipped with assistants as necessary to provide project supervision as specified herein, and in accordance with the Contract.

Measurement and Payment

This item of work will be paid for on a pro-rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. The unit price for this item shall include all labor, material, and equipment costs to perform the work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 120, Project Supervision	LS

Item No. 130, Protective Fencing

Description

This work shall consist of furnishing, erecting, maintaining and removing protective fence placed around certain specimen trees, construction staging area(s), and other areas, as noted on the Plans, and as directed by the Engineer.

The fencing shall be a bright orange polyethylene, ultra-violet light stabilized material, and shall be at least 4 feet high around trees and 5 feet high around construction staging areas. Installation shall be according to the manufacturer's and the Engineer's recommendations as to staking and securing the fencing.

Measurement and Payment

Measurement and payment will be based on the lineal feet of fencing installed. No additional compensation will be given to replace fencing which has been damaged or stolen and which must be replaced when directed by the Engineer.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 130, Protective Fencing	LF

Item No. 135, Tree Removal (8" and Larger Trees)

Description

This work shall consist of the removal of trees 8" and larger in diameter where indicated on the Plans, and as directed by the Engineer. This work shall include cutting and removing trees, their stumps, and roots from the ground, and disposing of all removed materials. All work shall be performed in accordance with the requirements of Section 2.03.02 of the MDOT Standard Specifications for Construction Manual (1990 edition).

Measurement and Payment

This item shall be measured per tree removed (8" and larger in diameter) and paid for on the basis of unit price each. The tree size will be determined by the average diameter of the tree trunk, measured to the nearest full inch, at a point 4-1/2 feet above the base of the tree at the ground line. Trees having major limbs lower than 4-1/2 feet from the ground shall be measured at the smallest diameter below such limbs. Where more than one tree has grown from a common stump, each tree shall be measured as a separate tree.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 135, Tree Removal (8" and Larger Trees)	Each

Item Nos. 140-144, Exploratory Excavation

Description

This work shall consist of the excavation and backfilling of exploratory test holes for the purpose of locating existing underground facilities which may affect the alignment of the proposed utility construction, where indicated on the Plans, and as directed by the Engineer. This work shall include, but not be limited to; excavation and proper removal off-site of all exhumed material; sheeting; shoring; dewatering; and, placement and compaction of approved backfill material(s) as specified by the indicated Trench Detail. For exploratory excavations within a paved surface area, this item shall also include the placement, compaction and maintenance of temporary bituminous patching maxture ("cold patch") in accordance with the Standard Specifications. The Contractor shall provide adequate time to allow the Engineer to properly, and completely locate all existing utilities.

Measurement and Payment

The item Exploratory Excavation shall be measured per excavation performed and backfilled up to 10 feet in depth, and shall be paid for on the basis of unit price each. Additional depth over 10 feet shall be paid for separately, measured and paid for on the basis of vertical feet excavated and backfilled. Payment for these items shall include all labor, equipment, and materials necessary to perform the work.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 140, Exploratory Excavation (0-10' deep) (Trench Detail as Specified)	Each
Item No. 141, Exploratory Excavation (0-10' deep) (Trench Detail as Specified)	Each
Item No. 142, Exploratory Excavation (0-10' deep) (Trench Detail as Specified)	Each
Item No. 143, Exploratory Excavation (0-10' deep) (Trench Detail as Specified)	Each
Item No. 144, Exploratory Excavation Add'l Depth	VF

2. UTILITY ITEMS

Item Nos. 300-355, Sewer Pipe, Fittings and Leads

Description

This work shall consist of the complete installation of sewer pipe, service tees, risers and leads, per the trench details as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer, including; full depth sawcutting and removal of pavement, curb & gutter and sidewalk and/or bikepath; edge cleaning; excavation and proper removal off-site of all exhumed materials; sheeting and shoring; the installation of watertight plugs to properly complete the work; protection of existing utilities; connections into existing structures; bedding; dewatering; bypass pumping; backfilling to existing grade per the trench details; cleaning; TV inspection; and testing.

Relocating, maintaining and replacing mailboxes, newspaper tubes and signs are also included, and shall be performed in accordance with the details provided.

Measurement and Payment

Sewer Pipe

Sewer pipe as specified shall be measured in place by length in lineal feet (LF) from center of manhole to center of manhole.

Payment will include full depth sawcutting and removal of curb & gutter, pavement and sidewalk and/or bikepath; edge cleaning; excavation; removal of excavated material; sheeting and shoring; the installation of watertight plugs; protection of existing utilities; connections into existing structures; bedding; dewatering; bypass pumping; backfilling per the trench details; cleaning; TV inspection; testing; and relocating, maintaining and replacing mailboxes and signs.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 300-304, C-700 ES VCP (Size and Trench Detail as Spec'd)	LF
Item Nos. 305-309, SDR 35 PVC Pipe (Size and Trench Detail as Spec'd)	LF
Item Nos. 310-314, Cl. 50 DIP (Sewer) (Size and Trench Detail as Spec'd)	LF
Item Nos. 315-319, HDP Pipe (Size and Trench Detail as Spec'd)	LF
Item Nos. 320-329, RCP (Class, Size and Trench Detail as Spec'd)	LF

Service Tees

Service tees shall be paid for based on each tee installed. The payment for the service tee will include the material, equipment and labor costs for the connection of the riser or lead to the tee. Also, the payment for the service tee will include the material, equipment and labor costs for the plug or cap placed on the tee, riser or lead.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 330-334, C-700 ES VCP Tee (Size as Spec'd)	Each
Item Nos. 335-339, SDR 35 PVC Tee (Size as Spec'd)	Each
Item Nos. 340-344, Cl. 50 DIP Tee (Sewer) (Size as Spec'd)	Each
Item Nos. 345-349, HDP Tee (Size as Spec'd)	Each

Risers & Leads

Service risers shall be paid for based on vertical feet (VF) measured as installed, from invert of the sewer main to invert of the bend at the top of the riser.

Service leads shall be paid for based on lineal feet (LF) measured as installed, from the center of the main to the capped end of the lead. If a service riser is installed, this measurement shall be from the center of the bend at the top of the riser to the capped end of the lead. The payment for service leads will include the necessary fittings, labor and equipment to connect the lead to a riser.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 350-352, SDR 35 PVC Riser (Size as Spec'd)	VF
Item Nos. 353-355, SDR 35 PVC Service Lead (Size as Spec'd)	LF

Item Nos. 360-379, Manholes and Structures

Description

This work shall include complete installation of manholes, inlet-junction chambers, single inlets, and double inlets, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer, including; excavation and proper removal of all excavated materials, including existing structures to be removed; concrete base; pipe connections; insertion over existing sewers; precast structure sections or concrete block; backfilling and compaction; flow channels; steps; concrete bricks; mortar; frame; cover; adjustment to finish grade; and structure cleaning.

This work shall also include complete installation of drop connections, end sections and detention pond outlet restrictions, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer, including; excavation and proper removal of all excavated materials; pipe and fittings; concrete; brick or block; and rip-rap.

Measurement and Payment

Manholes & Inlets

Manholes, inlet-junction chambers, single and double inlets of the detail and depth specified will be paid for at the Contract unit price each. Payment includes furnishing the labor, equipment and materials for all necessary excavation, disposing of surplus excavated material, backfilling, and constructing the structure complete, including pipe connections and structure cleaning.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 360, Type I Manhole (0-10' deep)	Each
Item No. 361, Type I Manhole Add'l Depth	VF
Item No. 362, Type II Manhole (Dia. as Spec'd) (0-10' deep)	Each
Item No. 363, Type II Manhole (Dia. as Spec'd) Add'l Depth	VF
Item No. 364, Type III Manhole (Dia. as Spec'd)	Each
Item No. 365, Type IV (Sampling) Manhole	Each
Item No. 366, Inlet-Junction Chamber	Each
Item No. 367, Single Inlet	Each
Item No. 368, Double Inlet	Each

Drop Connections, End Sections, Restrictions

Payment for drop connections shall be based on vertical feet (VF) installed. Payment includes furnishing all labor, equipment and materials for all necessary excavation, pipe, fittings, concrete, backfilling and compaction, and connections to complete this item of work. Vertical footage will be measured from the bottom invert of the drop connection to the top invert of the drop connection.

Payment for end sections of the size specified shall be based on each end section installed. Payment includes furnishing all labor, equipment and materials for excavation, fittings, backfilling and compaction, and rip-rap as specified on the Plans.

Payment for detention pond outlet restrictions shall be based on each restriction installed. Payment includes furnishing all labor, equipment and materials for the carrier pipe as specified and brick or block bulkhead.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 370-373, Drop Connection (Dia. as Spec'd)	VF
Item Nos. 374-376, End Section (Dia. as Spec'd)	Each
Item Nos. 377-379, Detention Pond Outlet Restriction (Dia. as Spec'd)	Each

Item No. 380, Sewer Boring & Jacking

Description

This work shall include the complete installation and construction of sanitary sewer pipe by the method of "Boring and Jacking" with casing pipe as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer, including; casing pipe; sewer pipe; sheeting and shoring; excavation of bore and

receiving pits; proper removal off-site of all exhumed materials; dewatering as required to properly complete the work; backfilling with approved materials; connections to manholes; cleaning; all testing; and grouting.

Measurement and Payment

Boring and jacking shall be paid for on a lineal foot (LF) basis measured along the axis of the pipe in place. Payment shall include the cost of the sewer pipe; casing pipe; placement of sewer pipe within casing pipe; any wooden shims necessary to maintain the proper horizontal and vertical alignment; sheeting and shoring; excavation of the boring and receiving pits and proper removal off-site of all exhumed materials; dewatering; proper backfilling of all pits; connections to manholes; complete cleaning and testing; and grouting of casing pipe with material approved by the Engineer.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 380, Sewer Boring & Jacking	LF

Item Nos. 385-386, Sewer Abandonment

Description

This work shall consist of the abandonment of sewer pipes and sewer structures as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer, including; excavation; pipe and/or structure removal; disconnection of pipe from structures; grouting; removal and salvaging of structure frames and covers; removal of the top 4' of structures; breaking of structure bases; backfill and compaction.

Measurement and Payment

Sewer pipe abandonment shall be measured by length abandoned in lineal feet (LF) from center of manhole to center of manhole. Payment shall include the labor, material and equipment necessary for the excavation, pipe removal, disconnection of pipe from structures, grouting, backfill and compaction.

Sewer structure abandonment shall be measured on a per each basis. Payment will include the labor, material and equipment necessary for excavation, removal and salvaging of structure frames and covers, structure removal (partial or complete as specified), breaking of the structure base, backfill and compaction.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 385, Sewer Pipe Abandonment	LF
Item No. 386, Sewer Structure Abandonment	Each

Item Nos. 391-392, Pipe Undercut & Refill

Description

In locations where, in the opinion of the Engineer, the soil at the bottom of the trench is unsuitable for pipe support, the trench bottom shall be undercut and refilled with either Class II granular material, or compacted 6A (modified) crushed limestone, as directed by the Engineer.

Measurement and Payment

The Contractor shall note that undercut quantities shown on the Bid Form are estimates only. The quantities of undercut may vary significantly more or less depending on field conditions at the time of construction. Any variation from the bid amount shall not be a basis of claim for an extra.

Measurement for refill width will be the outside diameter of the pipe barrel plus two feet. Measurement for depth will be from the bottom of the excavation to the bottom of the pipe barrel.

Payment will be based on cubic yards (CY) as measured compacted in place, as described above. Payment will include the additional excavation, placement of refill material compacted in place, and all related work.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 391, Pipe Undercut & Refill (Class II)	CY
Item No. 392, Pipe Undercut & Refill (6A)	CY

Item Nos. 400-449, Water Main, Fittings, Fire Hydrants and Valves

Description

This work shall consist of the complete installation of all pipe, valves, fittings, and blow-off assemblies, per the trench details, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. It shall also consist of the complete installation of pre-cast concrete gate wells including, but not limited to; concrete base, pre-cast concrete manhole and transition sections, mortar, frame and cover, adjustment to grade and cleaning of gate well. It shall also consist of the complete installation of a hydrant with gate valve and box assembly including concrete thrust blocks and barrel adjustment pieces as required. The Contractor shall furnish all labor, materials, tools and equipment required to lay, disinfect, and test all water mains including all appurtenances unless specifically listed as separate pay items. The work shall also include, but not be limited to; all excavation and proper removal off-site of all exhumed materials; full-depth saw cutting and removal of pavement; dewatering; connections to new and existing water mains; polyethelene encasement; the furnishing and installation of solid sleeves and mechanical joint caps where needed; the placement and removal of sheeting and/or shoring if required; the furnishing, placement and compaction of approved backfill material (in accordance with the trench details); thrust blocks; blow-offs; cleaning, disinfecting, flushing, and hydrostatic testing of water mains; and any other items required to complete the work.

Measurement and Payment

Water Main Pipe

Water main shall be measured along the axis of the pipe actually in place. Payment will be made on the basis of unit price per lineal foot (LF). Fittings other than those specifically listed as separate pay items, blow-off assemblies, concrete thrust blocks, solid sleeves and mechanical plugs, which are required to complete the work, shall be included in the price of the water main.

If concrete encasement of the water main is needed, in the opinion of the Engineer, when crossing existing utilities or when realigning the water main to avoid conflicts with existing utilities, structures and/or features, the furnishing and placement of concrete encasement; including rods to install the water main as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer, shall be included in these items of work and will not be paid for separately.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 400-409, Class 50 DIP w/Polyethylene Wrap (Size and Trench Detail as Spec'd)	LF

Fittings

Fittings and other similar appurtenant structures specified shall be measured per unit constructed and paid for on the basis of unit price each. Payment shall include the cost of thrust blocks.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 410-429, Bends & Reducers	Each
Item Nos. 430-439, Tees & Crosses	Each

Fire Hydrants

Fire hydrant assemblies shall be measured per unit constructed and paid for on the basis of unit price each. The unit price for fire hydrant assemblies shall include a 6-inch gate valve in box, 3 lineal feet of 6 inch pipe, an approved hydrant with traffic flange, and a thrust block. Any required extension will be paid for separately, on a per each installed basis.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 440, Fire Hydrant Assembly	Each
Item No. 441, Fire Hydrant Extension (Any Height)	Each

Valves

In-line valves shall be measured per unit constructed and paid for on the basis of unit price each. The unit price for gate valve-in-box shall include the specified valve, bonnet, box with cover, and adjustment to finish grade. The unit price for valve-in-well shall include the specified valve and complete well assembly including excavation, proper disposal off-site of excavated material, pre-cast concrete gate well sections, bricks, mortar, frame, cover, adjustment to grade, backfill and compaction; and coordination with and payment to, the Utilities Department for the installation of testing corporations in the well.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 442-445, Gate Valve-in-Box	Each
Item Nos. 446-449, Gate/Butterfly Valve-in-Well	Each

Item Nos. 450-455, Tapping Sleeve and Valve

Description

This work shall consist of the wet tapping of an existing water main with a branch water main as specified in the Plans. The work shall include all labor, materials, and equipment necessary to complete the work as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer, including; full-depth saw cutting, excavation and proper disposal off-site of all excavated materials; sheeting and/or shoring; dewatering; cleaning of existing main; disinfection and hydrostatic testing; tapping of existing main; construction of complete gate well assembly; backfilling and compaction.

Measurement and Payment

Tapping sleeves and valves shall be measured per unit constructed and paid for on the basis of unit price each. The unit price shall include all labor, materials and equipment necessary to complete the work, and shall include adjustment to finish grade of the valve box or gate well casting.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 450-452, Tapping Sleeve & Valve-in-Box	Each
Item Nos. 453-455, Tapping Sleeve & Valve-in-Well	Each

Item No. 460, Excavate & Backfill for Water Service Tap and Lead

Description

This work shall consist of all excavation and backfill of a trench from the proposed water main to the property line, as directed by the Engineer, in order to install water services or transfer existing water services to newly installed water mains. The trench is to be excavated to City Utilities Department standards for their use in transferring water services, installing water service taps, leads and curbstops/boxes. Labor and materials for taps, leads and curbstops/boxes will be furnished by the City. The Contractor will not be entitled to extra compensation due to delays caused by Utilities Department performing work on the project. The Contractor is responsible to coordinate with the Utilities Department for scheduling of their work.

Measurement and Payment

The Contractor shall be aware that the quantities of excavation are estimates only. The number of lineal feet of excavation may be significantly more or less in the field. Any variations from the bid amount shall not be a basis of claim for an extra.

Payment shall be by the lineal foot (LF) of trench. The unit price shall include excavation, disposal of excavated material, 3" of Class II granular material bedding and Class II granular material backfill compacted to 95% maximum unit weight as measured by AASHTO T-180 test placed in lifts not to exceed 12 inches.

The unit price for this item of work shall include all labor, material and equipment costs associated with the

installation of water services or their transfer to newly constructed mains. The unit price shall also include, but not be limited to, the excavation of trenches to City of Ann Arbor Utilities Department Standards, the removal off-site and proper disposal by the Contractor of surplus excavated material and the placement and compaction of Class II granular bedding and backfill material.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 460, Excavate & Backfill for Water Service Tap and Lead	LF

Item No. 470, Water Main Boring & Jacking

Description

This work shall include the complete installation and construction of water main pipe by the method of "Boring and Jacking" with casing pipe as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer, including; casing pipe; water main pipe; sheeting and shoring; excavation of bore and receiving pits; proper removal off-site of all exhumed materials; dewatering as required to properly complete the work; proper backfilling of all pits; pipe connections at each end; disinfection; testing; and bulkheading of the casing pipe.

Measurement and Payment

Boring and jacking shall be paid for on a lineal foot (LF) basis measured along the axis of the pipe in place. Payment shall include; water main pipe; casing pipe; placement of water main pipe within casing pipe; sheeting and shoring; excavation of the boring and receiving pits and proper removal off-site of all exhumed materials; dewatering; proper backfilling of all pits; pipe connections at each end; disinfection and testing; and bulkheading of the casing pipe.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 470, Water Main Boring & Jacking	LF

Item Nos. 481-483, Water Main Abandonment

Description

This work shall consist of the abandonment of water main pipes, valves and gate wells as required by the Plans, as detailed in the Specifications, and as directed by the Engineer, including; excavation; pipe cutting; mechanical joint plugs and thrust blocks; brick and mortar bulkheads; removal and salvaging of valves, rings and covers; removal of the top 4' of gate wells and breaking of the base; backfill and compaction.

Measurement and Payment

Water main pipe abandonment shall be measured by length abandoned in lineal feet (LF). Valve abandonment shall be measured on a per each basis.

Payment shall include the labor, material and equipment necessary for abandonment as specified.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
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Item No. 481, Water Main Pipe Abandonment	LF
Item No. 482, Gate Valve-in-Box Abandonment	Each
Item No. 483, Gate/Butterfly Valve-in-Well Abandonment	Each

Item Nos. 490-491, Air-Relief Assembly

Description

This work shall consist of the complete installation of air-relief assemblies, including but not limited to; excavation and proper removal off-site of all exhumed materials; installation of a Type "K" copper, brass or galvanized 90° bend, galvanized riser and cap, and thrust blocks; and, backfill and compaction of the excavation in accordance with the trench detail specified for that location of main; all as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. The Contractor shall furnish all labor, materials, tools and equipment required to perform the work. It shall also include coordination with, and payment to, the Utilities Department for the tapping of the main, and installation of the corporation, pipe and fittings between the corporation and curb stop, and the curb stop and box, required for the air-relief assembly. Labor and materials for the installation of the tap, pipe and fittings between the corporation and curb stop, curb stop, and curb stop box for the air-relief assembly will be furnished by the City. The Contractor will not be entitled to extra compensation due to delays caused by the Utilities Department performing work on the project.

Measurement and Payment

Air relief assemblies shall be measured per unit constructed and paid for on the basis of unit price each. The unit price shall include all labor, materials, tools and equipment required to perform the work; and, coordination with, and payment to, the Utilities Department for the tap required for the air relief assembly. The payment to the Utilities Department will be the same amount charged for a standard water service tap of the same size.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 490, 1" Air-Relief Assembly	Each
Item No. 491, 2" Air-Relief Assembly	Each

3. ROAD ITEMS

Item Nos. 500-503, Removals

Description

This work shall consist of removing and properly disposing off-site bituminous pavement, concrete pavement, concrete curb and gutter, concrete drive approaches, concrete sidewalk and ramps as indicated in the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

The areas to be removed shall be marked and measured prior to the removal of any material. Measurement shall take place with both the Engineer and the Contractor (or the Contractor's agent), present. Both parties shall come to an agreement regarding removal quantities prior to the actual removal. Each item of removal shall be field measured and paid for separately at the Contract unit price for the corresponding item of work.

The bituminous pavement to be removed shall be removed full depth or to a depth of 3", whichever is greater. Removal of any material located within the 3" minimum thickness is included in the item of work. The unit price for "Remove Bituminous Pavement" includes all labor, material and equipment costs associated with the removal of bituminous pavement, as specified herein, including, but not limited to, the removal and proper disposal off-site of bituminous pavement and excavated material by the Contractor, the removal and salvaging of brick, including the transporting of brick to the City's yard by the Contractor, constructing and trimming butt joints and the general items of the work as specified herein.

Each item of concrete removal shall be removed full depth, regardless of type and thickness. The unit prices for these items of work shall include all labor, material, and equipment costs associated with the removal of concrete curb, curb and gutter, integral curb and curb of any type, pavement, sidewalk, ramps, drive openings and drives, as specified herein, including, but not limited to, the removal of excavated materials, full-depth saw cutting, the removal of bituminous pavement overlays, the proper disposal off-site by the Contractor of removed materials, and the general items of work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 500, Remove Bituminous Pavement	SY
Item No. 501, Remove Concrete Pavement-Any Thickness	SY
Item No. 502, Remove Concrete Curb & Gutter-Any Type	LF
Item No. 503, Remove Concrete Sidewalk, Ramp & Drives-Any Thickness	SF

Item Nos. 510-511, Cold-Milling Bituminous Pavement

Description

This work shall consist of removing bituminous and/or aggregate material(s) from a road bed by use of cold milling equipment, and the grading, shaping, compacting and proof-rolling of the remaining base material, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

If the Engineer directs the addition of materials to the jobsite to properly complete the work, they shall be paid

at the corresponding unit price for "Aggregate Base Course 22-A C.I.P." Where materials are to be removed, their removal shall be included in the pay item "Cold-Milling Bituminous Pavement", and/or "Repeated Cold-Milling of Bituminous Pavement".

If the Engineer chooses to have additional bituminous milling performed by the Contractor to achieve satisfactory results, it will be paid for at the Contract unit price for "Repeated Cold-Milling of Bituminous Pavement".

The number of intersections and areas which are to be milled may be increased or decreased by the City, as necessary to complete the work, with no adjustment to unit prices for changes to the quantities of these items of work.

Hand work required to remove bituminous surface around manholes, drainage structures, utility covers, bituminous curbing, and miscellaneous unremoved areas within the milling limits, including bituminous driveway wedging will not be paid for separately, but shall be included in the item of work "Cold-Milling Bituminous Pavement".

The Contractor is responsible for final grading, compaction and proof-rolling of the remaining base material, and payment for this work is included in the item of work "Cold-Milling Bituminous Pavement".

Prior to placing asphalt overlay, the entire milled areas, including joints and cracks, shall be cleaned of all loose material with a "Vac-All" type vacuum equipment or similarly approved equipment. This work is included in the item of work "Bituminous Pavement".

Removing and salvaging loose bricks, if present, and their delivery to the City Yard, by the Contractor, shall be included in "Cold-Milling Bituminous Pavement" and "Repeated Cold Milling of Bituminous Pavement".

The completed work as measured for "Cold-Milling Bituminous Pavement" and "Repeated Cold-Milling Bituminous Pavement" will be paid for at the Contract unit price of tons milled. The completed quantities for these items of work will be measured by weighing the milled material at a location approved by the Engineer. The Contractor will provide the Engineer with computerized weight tickets for the milled material. Each ticket shall include; truck number, gross weight, tare weight and net weight for each load. The Contractor shall also provide the Engineer with daily tabulations of tare weights for those trucks used in hauling the milled material. The tare weights which are provided on each ticket, will be checked against the tare weights provided on the daily tabulation, and their compliance will also represent basis for payment. All trucks used in the milling operation shall have their tare weight checked daily.

The unit prices for these items shall include the labor, material and equipment costs associated with the milling and repeated milling of bituminous pavements, as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 510, Cold-Milling Bituminous Pavement	Ton
Item No. 511, Repeated Cold-Milling Bituminous Pavement	Ton
Item No. 512, Pulverizing Bituminous Pavement	

Description

This work shall consist of uniformly pulverizing bituminous pavement and the grading, shaping, compacting, and proof-rolling of the material, as detailed in the Specifications, to the depth indicated on the Plans, and as

directed by the Engineer.

Measurement and Payment

The area or the number of streets to be pulverized, and the area or the number of intersections adjacent to the pulverizing operation may be increased or decreased at the City's option with no change in the Contract unit price for this item of work.

Hand work required to remove and pulverize bituminous pavement around manholes, drainage structures, utility covers and areas inaccessible to pulverizing equipment which are located within the pulverizing limits will not be paid for separately, but shall be included in this item of work.

The Contractor is responsible for final grading, compaction and proof-rolling of the pulverized material, and payment for this work is included in this item of work.

Removing and salvaging whole, loose bricks if present, and their delivery to the City Yard by the Contractor, is included in this item of work.

The completed work as measured for "Pulverizing Bituminous Pavement" will be paid for at the Contract unit price for the following contract item. Completed quantities will be measured as the area of the pulverization in square yards multiplied by the depth of pulverization in inches which is equal to the pay unit Square Yard-Inch (SY-In).

The unit price for "Pulverizing Bituminous Pavement" includes all labor, material and equipment costs associated with the pulverizing of bituminous pavement, as specified herein, including, but not limited to, pulverizing the bituminous pavement, grading, shaping and compaction of the pulverized material, removal and proper disposal off-site, by the Contractor, of excess material which is not to be used in the finished work, proof rolling by the Contractor, and the general items of the work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 512, Pulverizing Bituminous Pavement	SY-In

Item No. 516, 6" Wrapped Edge Drain

Description

This work shall consist of excavating a trench, furnishing and installing a six inch geotextile-wrapped perforated or slotted drain pipe in the trench, using Fine Aggregate 2NS (C.I.P.) for all backfill material all as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

The edge drains will be measured in place by length in lineal feet, and this measurement shall represent basis of payment.

The unit price for "6" Wrapped Edge Drain" includes all labor, material and equipment costs associated with the installation of 6" wrapped edge drain as specified herein, including but not limited to, the sawcutting and removal of bituminous pavement as required by the Engineer, excavation, the installation of 6" perforated or slotted pipe, all geotextile wrap, pipe fittings, connections to new and existing structures, and the furnishing, placement and compaction of 2NS granular bedding and backfill. The removal and proper disposal off-site, by the Contractor, of all excavated materials, including construction debris, is also included in this item, as are all other items of the work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 516, 6" Wrapped Edge Drain	LF

Item No. 520, Machine Grading

Description

This work shall consist of constructing earth grades by excavating and disposing of existing bituminous asphalt pavement, concrete pavement, bricks, soil and rock; the full-depth saw cutting of pavement at the removal limits; furnishing, importing, placing and compacting approved fill and embankment materials; removal and proper disposal off-site of surplus and/or unsuitable materials; removal of trees and stumps (less than 8" in diameter), brush, roots and other vegetation as necessary to properly construct the project; trimming of earth grades; the grading of sideslopes; and maintaining the work in a finished condition until such time that it is accepted by the Engineer. This work shall be done as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

Machine Grading shall be measured in 100 foot long stations, to the nearest 0.1 station, as measured along the centerline of the right-of-way.

Payment for the work of other methods as directed by the Engineer to obtain or attain compaction, are included in the item of work of "Machine Grading" unless specifically listed as a pay item in these Documents.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 520, Machine Grading	Station

Item Nos. 521-522, Subgrade Undercutting

Description

This work includes removal of unsuitable granular base, subbase or clay material(s) as detailed in the Specifications, to depths as specified by the Engineer.

Measurement and Payment

The completed quantities for these items of work shall be determined by calculating the volume, in cubic yards (CY), of the undercut excavation prior to the placement of backfill.

The unit prices for these items of work shall include all labor, material and equipment costs associated with

subgrade undercutting, including, but not limited to, the removal and proper disposal off-site, by the Contractor, of excavated materials, salvaging and transporting bricks to the City Yard, trimming, shaping and recompacting of the earth subgrade and the general items of the work as specified herein.

The unit price for Subgrade Undercutting - Type I shall include the cost associated with importing, furnishing, placing and compacting selected clay or other approved material(s).

The fill material(s) for Subgrade Undercutting-Type II shall be paid at the Contract unit price for the corresponding items of work as used which are (22-A Aggregate - C.I.P., Cl II Sand - C.I.P., and 21-AA Limestone - C.I.P.).

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 521, Subgrade Undercutting - Type I	CY
Item No. 522, Subgrade Undercutting - Type II	CY

Item Nos. 523-529 Aggregate Bases

Description

This work shall consist of constructing an aggregate subbase or base course on an existing aggregate surface, or prepared subgrade as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

Where aggregate materials are to be used as base, subbase, or fill for undercuts in Machine Grading areas, items 526, 527, 528, and 529 will be paid accordingly.

Where aggregate materials are to be used as fill for undercuts at all other locations, (small areas) items 523, 524 or 525 shall be used and paid for the completed work accordingly.

The unit prices for these items of work shall include all labor, material and equipment costs associated with the placement of sand subbase, aggregate base, and where either 22-A Aggregate-C.I.P., Class II Sand-C.I.P. or 21-AA limestone-C.I.P. are to be placed, as backfill material, in conjunction with the Contract Item "Subgrade Undercutting-Type II". The work covered by the unit prices for these items shall also include, but not be limited to, the placement, trimming and compaction of the aggregate materials, and general items of the work as specified herein. The completed quantities for these items of work shall be determined by calculating the volume, in cubic yards (CY), of the material placed, compacted in place. For sand subbase and aggregate base construction, this volume will be calculated using the nominal thickness for the pavement section indicated on the Plans.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 523, 22A Aggregate-C.I.P.	CY
Item No. 524, Class II-C.I.P.	CY
Item No. 525, 21AA Limestone-C.I.P.	CY
Item No. 526, Aggregate Base Course-22A-C.I.P.	CY
Item No. 527, Aggregate Base Course-21AA-C.I.P.	CY
Item No. 528, Sand Subbase Course-Class II-C.I.P.	CY
Item No. 529, Sand Subbase Course-2NS-C.I.P.	CY

Item Nos. 530-538, Bituminous Pavement

Description

This work shall consist of constructing bituminous pavement surfaces and leveling courses as indicated on the Plans, as detailed in these Specifications, and as directed by the Engineer.

Measurement and Payment

Measurement of these bituminous paving items shall be by the ton, in place. Unused portions of material loads shall be returned to the plant and re-weighed, and the corrected weight slip shall be provided to the Engineer. All weight slips must include type of mixtures delivered to the site (**codes are not acceptable**), as well as vehicle number, gross weight, tare weight and net weight.

Price adjustments shall be enforced as described at Section 4.00.19 MDOT Standard Specification for Construction (1990 edition) and will be based on testing reports provided by the City's testing representative.

The unit prices for these items of work shall include all labor, material and equipment costs associated with the placement and compaction of bituminous base, leveling and wearing mixtures, as specified herein, including, but not limited to, cleaning pavement, the application of weed killer, the application of MDOT SS-1h bond coat, and the general items of the work as specified herein. Feathering of the leveling and/or wearing course(s) at drainage structures, in drive approaches, and at intersection joints, as directed by the Engineer, is included in these items of work, and will not be paid for separately.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 530, Bituminous Pavement Base-No. 700 (20C)	Ton
Item No. 531, Bituminous Pavement Leveling-No. 1100L (20A or 20AA)	Ton
Item No. 532, Bituminous Pavement Leveling-No. 1300L (20AAA)	Ton
Item No. 533, Bituminous Pavement Leveling-No. 1300L (36A)	Ton
Item No. 534, Bituminous Pavement Leveling-No. 1500L (20AAA)	Ton
Item No. 535, Bituminous Pavement Wearing-No. 1100T (20AAA)	Ton
Item No. 536, Bituminous Pavement Wearing-No. 1300T (20AAA)	Ton
Item No. 537, Bituminous Pavement Wearing-No. 1500T (20AAA)	Ton
Item No. 538, Bituminous Pavement Wearing-No. 1800T (20AAA)	Ton
Item No. 539, Bituminous Finish Wedging	

Description

This work shall consist of constructing bituminous finish wedges at drive approaches and wedging over the completed wearing surface, as detailed in these Specifications, and as directed by the Engineer.

Measurement and Payment

Measurement of Bituminous Finish Wedging shall be by the ton, in place. Unused portion of material loads shall be returned to the plant and re-weighted and the corrected weight slip shall be provided to the Engineer. All weight slips must include type of mixture delivered to the site (**codes are not acceptable**), as well as vehicle number, gross weight, tare weight and net weight.

Price adjustments shall be enforced as described at Section 4.00.19 MDOT Standard Specification for Construction (1990 edition) and will be based on testing reports provided by the City's testing representatives.

The unit price for "Bituminous Finish Wedging-No. 1300T (36A Modified)" includes all labor, material and equipment costs associated with the installation of bituminous wedging, as specified herein, including, but not limited to, the placement and compaction of bituminous wedging material, cleaning pavement, the application of MDOT SS-1h bond coat, construction of feather joints, and the general items of the work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
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Item No. 539, Bituminous Finish Wedging-No. 1300T (36A-Modified) Ton

Item No. 540, Non-Reinforced Concrete Pavement

Description

The work under these items shall include furnishing all labor, equipment and materials required to place, finish, protect and cure non-reinforced (plain), jointed, concrete pavement with or without integral curb and gutter of the thickness and to the limits indicated on the Plans, as detailed in these Specifications, and as directed by the Engineer.

Measurement and Payment

Payment for concrete pavement shall be on the basis of the unit price per square yard actually placed. Measurement shall include the surface area to the back of the integral curb. The cost of all forming, placing, curing, texturing, construction and repair of joints and spalls, and all other miscellaneous items as required to complete the work as indicated on the Plans and as specified herein, is also included. Also the cost of sawing joints, joint materials, and their installation shall be included in the unit price for concrete pavement.

Price adjustments shall be enforced as described in Section 4.50.25 MDOT Standard Specifications for Construction (1990 edition) and per testing reports provided by the City's testing representative. The unit price for these items of work shall include all labor, material and equipment costs associated with the construction of non-reinforced (plain), jointed, Portland cement, concrete pavement, as specified herein. It shall also include, but not limited to, the furnishing and placement of construction and bulkhead joints as indicated on the Plans or as directed by the Engineer.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 540, Non-Reinforced Concrete Pavement (Thickness as Spec'd)	SY

Item No. 545, Hot Joint Sealing

Description

This work shall consist of cleaning, plowing, and hot sealing Portland cement concrete pavement joints and cracks at the locations specified by the Engineer, as detailed in these Specifications, and as directed by the Engineer.

Measurement and Payment

The Contractor shall be paid only once for sealing joints and cracks. Additional resealing, which is specified by the Engineer, shall be performed by the Contractor at the Contractor's expense.

Completed work as measured for "Hot Joint Sealing" will be by lineal feet (LF), in place.

The unit price for "Hot Joint Sealing" includes all labor, material and equipment costs associated with the hot joint sealing of Portland cement concrete pavement joints, and cracks as specified herein, including, but not limited to, the plowing or air cleaning of joints and cracks, and the other items of the work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 545, Hot Joint Sealing	LF

Item Nos. 550-556, Concrete Curb & Gutter, Sidewalks, Ramps, and Drives

Description

This work shall consist of constructing miscellaneous concrete items including barrier curb and gutter, mountable curb and gutter, sidewalks, ramps, and Type M and/or Type L drive openings and approaches, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

The trimming, filling, and compacting of aggregate base material as needed to bring the respective concrete items to the required elevations shall be included in the respective items of work and shall not be paid separately. The furnishing and placing of the aggregate base material shall be included in the unit price for the Sidewalk, Ramp and Drive Approach pay items.

Concrete drive approaches will be measured and paid for on the basis of areas computed as shown on drive approach detail drawings, included elsewhere in these Specifications.

Concrete curb and gutter will be paid for at the Contract unit price, measured in place, with a deduction in length for catch basins and inlet castings. Continuous gutter in front of drive approaches, as shown on the above mentioned drawings, shall be included in the unit price of the specified Drive Opening pay item.

The unit prices for these items of work shall include all labor, material and equipment costs associated with the installation of each respective concrete item, as specified herein, including, but not limited to, excavation, placement and compaction of granular base, forming, the placement of concrete and reinforcing steel bars in curb, finishing, placement of curing compound, lawn and lawn extension restoration, and the general items of the work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 550, Concrete Barrier Curb & Gutter	LF
Item No. 551, Concrete Mountable Curb & Gutter	LF
Item No. 552, 4" Concrete Sidewalk	SF
Item No. 553, 6" Concrete Sidewalk, Ramp, Drive Approach	SF
Item No. 554, 8" Concrete Sidewalk, Ramp, Drive Approach	SF
Item No. 555, Concrete Type M Drive Opening	LF
Item No. 556, Concrete Type L Drive Opening	LF

Item Nos. 560-569, Adjustment, Lowering, Repair, Reconstructing Structures and Boxes

Description

This work shall consist of constructing, repairing, adjusting and lowering drainage structures (manholes and inlets), or gate wells of Portland cement concrete and concrete block masonry; and replacing existing metal covers and/or castings including; excavation, backfill and patching in accordance with these Specifications.

Measurement and Payment

The unit prices for these items of work shall include all labor, material and equipment cost associated with their construction, as specified herein, including, but not limited to, the transporting of salvaged castings to the City's yard, the proper removal and disposal off-site, by the Contractor, of all construction debris caused as a result of the Contractor's work, and the general items of the work as specified herein.

The Contractor shall replace worn covers and/or castings, as directed by the Engineer. Castings and/or covers for sewer, water and inlets will be paid for at the Contract unit price for Contract pay item "Structure Covers".

The transporting of salvaged castings to the City of Ann Arbor Utilities Yard at 2000 South Industrial Highway

shall be considered included in the items of work "Adjusting Structure Covers", and "Adjusting Monument Box/Cover or Gate Valve Box". All salvaged covers and castings (of any type) shall be returned by the Contractor, at the Contractor's expense, to the City's Yard at South Industrial within two days from the date of their removal.

There is a possibility that the Contractor may find hidden utility structures during the work. It is the Contractor's responsibility to inform the respective utility owner(s) of these findings. In such instances, the City may direct the Contractor to adjust the structure(s) to grade. This work will be paid as "Adjust Structure Covers" and/or "Additional Depth Structures-Adjustment/Repair".

Lowering Existing Structure or Monument/Gate Valve Box

The Contractor shall remove and lower structure covers, monument boxes and gate valve boxes for the milling and pulverizing operation, and when directed by the Engineer. The measurement for these items shall be paid for at the Contract unit price each, which shall include the labor, equipment and material associated with the lowering, including any aggregate or asphalt cover material required. In addition, the Contract unit price for Lowering Existing Monument/Gate Valve Box shall include two-days advance notification to Engineering to allow the witnessing of the monument, and the protection and saving of the monument.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 560, Lowering Existing Structure	Each
Item No. 561, Lowering Existing Monument/Gate Valve Box	Each

Clean Out Discovered Manhole

Where a hidden utility structure is discovered, the City may order the Contractor to remove all the existing debris and thoroughly clean the structure at the Contract unit price. The City may also choose to have the Utilities Department or another contractor clean the structures, in which case the Contractor shall not be compensated. If the City chooses a third party to clean the structures, the Contractor is required to coordinate his work with them at no additional cost to the City.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 562, Clean Out Discovered Manhole	Each

Structure Covers

This item shall consist of replacing covers and/or castings for drainage structures, gate wells and inlet structures where called for on the Plans, and as directed by the Engineer. Structure covers will be measured and paid for on the basis of the weight of each particular cover installed, as listed below. All covers and/or castings shall conform to the model(s) specified, as follows:

<u>Type of Casting</u>	<u>MDOT Designation</u>	<u>NEENAH No. (Weight, Lbs)</u>	<u>EJIW No. (Weight, Lbs)</u>
Manhole Frame and Cover	A	R-1642, Type C cover* (380 lbs.)	1040, Type A cover* (400 lbs.)
Barrier Curb Inlet		R-3031B, Type S grate (500 lbs.)	7045, Type M1 grate (490 lbs.)
Barrier Curb Double Inlet	K	R-3249F, Type S grate (410 lbs.)	N/A
Mountable Curb Inlet	C	R-3034B, Type S grate (500 lbs.)	7065, Type M1 grate (470 lbs.)
Gutter Inlet	R	R-3448C, Type S grate (285 lbs.)	5080, Type M2 grate (315 lbs.)
Gutter Double Inlet	R	R-3448B, Type S grate (265 lbs.)	5000, Type M2 grate (285 lbs.)
Yard Drain (Bee Hive)	E	R-2560-E1 (285 lbs.)	1040, Type 02 grate (355 lbs.)
Yard Drain (City Park)	N/A	N/A	1040, Type M1 grate (400 lbs.)

*Frames and covers shall have machined bearing surfaces. Covers shall have two, 1-inch vent holes located opposite each other and 6" from the edge of the cover. Each cover shall have the word "SEWER" or a raised "W" cast in the surface, whichever is applicable.

PAY ITEMS

PAY UNIT

Item No. 563, Structure Covers

Lbs.

Reconstruct Structure

This item includes all labor, materials and equipment necessary to reconstruct an inlet-junction chamber, inlet, double inlet, or manhole structure of any depth and diameter, from bottom to top, and the final adjustment of the structure casting. It shall also include the removal and proper disposal off-site of the existing structure, salvaging and transporting the existing casting and/or cover to the City Yard, and the backfill of Class II sand

around the structure compacted to 95% of its maximum unit weight as determined by the AASHTO T-180 test.

There is a possibility that the Contractor may find hidden utility structures during the work. It is the Contractor's responsibility to inform the respective utility owner(s) of these findings. In such instances, the City may direct the Contractor to adjust the structure(s) to grade. This work will be paid as "Adjusting Structure Covers" and/or "Additional Depth Structure-Adjust/Repair".

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 564, Reconstruct Structure	Each

Reconstruct Gate Valve Box

This item consists of exposing the gate valve assemblies and furnishing and installing complete new gate valve boxes, as indicated on the Plans or directed by the Engineer.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 565, Reconstruct Gate Valve Box	Each

Adjust Structure Cover

This item of work includes the removing of existing frame and cover, and the adjusting up or down of the structure. The maximum vertical adjustment for this item shall be 15 inches which shall be measured from the lowest elevation to which a structure is lowered to, up to the finished grade elevation.

No additional compensation will be paid to the Contractor for the two step adjusting process for structures in paved areas.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 566, Adjust Structure Cover	Each

Adjust Monument Box or Gate Valve Box

This item includes the final adjustment of existing or new covers/castings up or down to a maximum of 15" and to their finished elevations. This shall include; the replacement of the top half of the water valve boxes and monument boxes where required; providing two-days advance notification to Engineering to allow the witnessing of the monument; and protecting and saving the monument.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 567, Adjust Monument Box or Gate Valve Box	Each

Additional Depth Structures - Adjustment/Repair

Where the required adjustment on a structure is more than 15" from the existing elevation, the amount of the adjustment in excess of the first 15", shall be measured as additional depth by the vertical foot or fraction thereof. This shall also cover the repair of manholes and structures where less than the substantial rebuilding of the structure, as determined by the Engineer, is required. This work shall be paid by the vertical foot (VF) or fraction thereof, at the Contract unit price.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 568, Additional Depth Structure-Adjustment/Repair	VF

Point Existing Structure

This item shall consist of the pointing of existing structures as indicated on the Plans or as directed by the Engineer. The removal of existing loose mortar and proper disposal off-site of same shall also be included in this item.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 569, Point Existing Structure	Each

Item No. 570, Part-Width Construction

Description

This work shall consist of constructing utilities, edge drains, pavements of any type, curb, curb and gutter, and all other work which is required, as indicated on the Plans and as directed by the Engineer by the part-width construction method. "Part-Width Construction" is to be performed in accordance with the MDOT Standard Specifications for Construction (1990 edition), Section 6.31, except as specified herein.

The Contractor shall segment the pavement construction as necessary to satisfactorily complete the work, and to safely maintain vehicular and pedestrian traffic. This includes pavement gapping at drives and intersections if required, in the opinion of the Engineer, to complete the work. Pavement Gapping will not be paid for separately. This work shall also include the installation and removal of dust palliative, maintenance aggregate and cold patching mixtures as required, and as directed by the Engineer, for maintenance of vehicular and pedestrian traffic.

Measurement and Pavement

Part-Width Construction shall be paid on a per-station basis, or portion thereof, as measured along each street per the station numbers indicated on the Plans. The pay unit "Station" shall be defined as an area of land with a length of 100 lineal feet, and width being the entire width of the paving construction as determined by the construction limits established on the Plans or as directed by the Engineer.

The unit price for "Part-Width Construction" shall include all labor, material and equipment costs associated with the part-width construction of the work as specified herein, including but not limited to, pavement gapping at drives and intersections, the placement and removal of dust palliative, maintenance aggregate and cold patching mixtures, and the general items of the work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
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Item Nos. 580-581, Remove Pavement Markings

Description

This work shall consist of the complete removal of any existing pavement markings as indicated on the Plans, as detailed in these Specifications, and as directed by the Engineer. If pavement markings on an open roadway are to be obscured for more than 24 hours in advance of a change in traffic pattern, temporary markings shall be placed no later than the close of the workday in which said pavement markings were removed. The cost of this temporary placement of pavement markings shall be considered to be included in the unit price of pavement marking removal and will not be paid for separately.

Measurement and Payment

The completed work for removal of pavement markings shall be paid for by the lineal feet (LF) of marking removed. The completed work for removal of pavement marking symbols or legends shall be paid for on the basis of each symbol or legend removed.

The unit prices for these items of work shall include, but not be limited to, all labor, material and equipment costs associated with the complete removal of existing pavement markings, as indicated on the Plans, as detailed in these Specifications, or as directed by the Engineer.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 580, Remove Pavement Markings	LF
Item No. 581, Remove Pavement Markings-Symbol or Legend	Each

Item Nos. 582-583, Temporary Pavement Markings

Description

This work shall consist of the placement of Type R (removable) and/or Type NR (non-removable) temporary pavement markings on pavement surfaces as indicated on the Plans, as detailed in these Specifications, and as directed by the Engineer.

Measurement and Payment

Payment for placing "Temporary Pavement Marking, Type R" is based on the number of lineal feet of equivalent 4-inch line installed in place. The skips in dashed lines are not included in the measurement. Markings less than 2 feet in length shall be removed and replaced by the Contractor at the Contractor's expense.

The unit price for "Temporary Pavement Marking, Type R" shall include all labor, material and equipment costs associated with the installation of temporary, removable-type pavement marking, as specified herein. It shall also include, but not be limited to, pavement cleaning as necessary for the placement of marking tape, removal of the tape when no longer needed, as directed by the Engineer, and the other items of work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 582, Temporary Pavement Marking (Type R)-In Place	LF

Item No. 583, Temporary Pavement Marking (Type NR)-In Place

LF

Item Nos. 584-589 & 592-599, Pavement Markings

Description

This work shall consist of furnishing and placing permanent pavement markings, as indicated on the Plans, as detailed in these Specifications, and as directed by the Engineer. The materials used shall meet the current MDOT minimum specification requirements.

Measurement and Payment

The completed work as measured for these items will be paid for at the Contract unit prices for the following pay items. In all cases, payment will be based on the actual quantity installed and accepted. The skips in dashed lines are not included in the measurement.

The unit prices for these items of work shall include all labor, material, and equipment costs associated with the furnishing and placing of permanent pavement markings. This includes, but is not limited to, the cleaning of pavement surfaces by power sweeper and/or high-pressure air, all preparation and cleanup, and the general items of the work as specified herein.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 584, Reflectorized-Fast Dry Pavement Marking, 4" White	LF
Item No. 585, Reflectorized-Fast Dry Pavement Marking, 4" Yellow	LF
Item No. 586, Reflectorized-Fast Dry Pavement Marking, 6" White	LF
Item No. 587, Reflectorized-Fast Dry Pavement Marking, 24" White	LF
Item No. 588, Reflectorized-Fast Dry Pavement Marking, Symbol White	Each
Item No. 589, Reflectorized-Fast Dry Pavement Marking, Legend White	Each
Item No. 592, Cold Plastic Pavement Marking, Symbol White	Each
Item No. 593, Cold Plastic Pavement Marking, Legend White	Each
Item No. 594, Hot-Applied, Thermoplastic Pavement Marking, 4" White	LF
Item No. 595, Hot-Applied, Thermoplastic Pavement Marking, 4" Yellow	LF
Item No. 596, Hot-Applied, Thermoplastic Pavement Marking, 6" White	LF
Item No. 597, Hot-Applied, Thermoplastic Pavement Marking, 24" White	LF
Item No. 598, Hot-Applied, Thermoplastic Pavement Marking, Symbol White	Each
Item No. 599, Hot-Applied, Thermoplastic Pavement Marking, Legend White	Each

4. STREETLIGHT ITEMS

Item Nos. 601-602 & 611-614, Electrical Conduit

Description

This work shall consist of placing conduit lines at locations as indicated on the Plans, as detailed in these Specifications, and as directed by the Engineer. The conduit shall be carefully aligned and capped as necessary.

Measurement and Payment

The completed work shall be paid for by the lineal feet (LF) of conduit measured in place.

The unit price for this item of work shall include all labor, material and equipment costs associated with the installation of the conduit as specified herein, including but not limited to, all pipe fittings, sweeps and elbows, insertion of pull-string, all excavation, and furnishing, placing and compaction of granular backfill. The removal and proper disposal of all excavated material, including construction debris, is also included in this item.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 601, 2" Galvanized Electrical Conduit	LF
Item No. 602, 3" Galvanized Electrical Conduit	LF
Item No. 611, 2" Schedule 40 PVC Electrical Conduit	LF
Item No. 612, 3" Schedule 40 PVC Electrical Conduit	LF
Item No. 613, 2" Schedule 80 PVC Electrical Conduit	LF
Item No. 614, 3" Schedule 80 PVC Electrical Conduit	LF

Item No. 620, Electrical Handhole

Description

This work shall consist of furnishing all labor, materials and equipment necessary for installing streetlight and/or traffic signal electrical handhole boxes and covers at the locations indicated on the Plans, as detailed in these Specifications, and as directed by the Engineer.

Measurement and Payment

The completed work as measured shall be paid for on the basis of each electrical handhole installed and accepted, in place.

The unit price shall include all labor, equipment and material necessary to complete the item of work.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 620, Electrical Handhole	Each

Item Nos. 630-632, Foundations

Description

This work shall consist of furnishing all labor, equipment and materials to construct streetlight foundations, as detailed in these Specifications, and foundations upon which the traffic and pedestrian signal poles will be erected in accordance with Section 6.26.08 of MDOT Standard Specifications for Construction (1990 Edition).

Measurement and Payment

The completed work as measured will be paid for on the basis of each foundation installed and accepted, in place.

The anchor bolts and conduit sweeps for signal bases will be furnished by the City.

Placing and connecting the electrical conduit into or to the base is included in these pay items as is all materials, labor and equipment necessary to completely install the base as detailed on the Plans.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 630, Streetlight Foundation	Each
Item No. 631, Traffic Signal Foundation	Each
Item No. 632, Pedestrian Signal Foundation	Each

5. SOIL EROSION & SEDIMENTATION CONTROL ITEMS

Item Nos. 701-702, Stone and Inlet Filters

Description

This work shall consist of properly installing, at locations indicated on the Plans, and as directed by the Engineer, maintaining during the entire construction period, and removing at the end of construction, gravel filters and curb and gutter inlet filters, as detailed in the Specifications.

Measurement and Payment

Gravel filters will be measured and paid for by the unit cubic yard (C.Y.) for the amount of aggregate placed initially and for any amount added during the duration of the project, and shall include its placement, maintenance and removal.

Curb and gutter inlet filters will be paid for by the unit "Each". A filter will be paid for when initially installed at a particular structure. Payment will be for installing, maintaining, reinstalling, and, removing the filter at the end of construction and as directed by the Engineer.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 701, 6A Aggregate Stone Filter	CY
Item No. 702, Inlet Filter	Each

Item No. 703, Silt Fence

Description

This work consists of furnishing, installing, maintaining, and removing a water permeable filter fence, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

The payment for Silt Fence will be based on the actual number of lineal feet (LF) of silt fence, measured in place from end post to end post of each separate installation, which has been completed and accepted.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 703, Silt Fence	LF

6. LANDSCAPING & RESTORATION ITEMS

Item Nos. 800-849, Landscape Items

Description

This work shall consist of excavating planting areas for trees, shrubs, evergreens and ground cover plants; salvaging and disposing of the surplus material as required; furnishing and planting trees, shrubs and other plants of the type and size indicated on the Plans; backfilling the planting holes with prepared soil; watering and cultivating; and includes all materials and incidental operations required to complete the work as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

The cost of watering and cultivating as specified shall be included in each plant's unit price. After initial planting, 75 percent of each unit price shall be certified for payment. Fifteen percent shall be paid at the completion of the fifth watering and cultivation in the first growing season, and the final 10 percent shall be paid at the time of final acceptance.

The final inspection of all planting work under the Contract will be made by the Contractor and Engineer at the end of the maintenance and guarantee period(s).

Before final acceptance is given, the terms of the warranty shall be met and the site shall be cleared of all debris, soil piles and containers. Site preparation, as well as the mulched planting bed and required site clean-up as detailed in these Specifications are included in the unit price for each plant.

The completed work as measured for these items of work shall be paid for at the contract unit price each for the specified contract items.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item Nos. 800-809, Transplanting Items (as specified)	Each
Item Nos. 810-849, Planting Items (as specified)	Each

Item Nos. 881-882, Sodding and Permanent Seeding & Mulching

Description

This work shall consist of the preparing the rough graded ground, topsoiling, sodding and/or seeding and mulching, and watering areas designated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

The completed work as measured shall be paid for based on the square yard (SY) of area sodded or seeded and mulched, in place and accepted.

After initial sod or seed and mulch placement, 75 percent of the unit price will be certified for payment. The remaining 25 percent will be paid at the end of the turf establishment period.

The unit price shall include the labor, equipment and materials necessary to complete the soil base preparation, topsoiling, fertilization, sod or seed and mulch placement, watering, and turf maintenance and establishment.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 881, Sodding	SY
Item No. 882, Seeding & Mulching	SY

Item No. 891, Clean-Up & Restoration

Description

This work shall include the removal of all surplus materials from the site including, but not limited to, tools, temporary structures, dirt, rubbish, and excess excavated material. This work shall also include the restoration of all existing lawn areas, trees and landscaping, fences, road surfaces and shoulders with gravel surfaces being graded to a 2.5% crown section with the use of a road grader, drainage ditches, culverts, drives, sidewalks, and bikepaths disturbed by the work.

Measurement and Payment

This item shall be paid for on a lump sum (LS) basis and shall be paid upon approval of the site by the Engineer.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 891, Clean-Up & Restoration	LS

Item Nos. 895-898, Chain Link Fence

Description

This work shall consist of the complete installation of chain link fence, including, but not limited to; excavation and proper removal off-site of all exhumed and surplus materials; furnishing and installing concrete foundations and all fence materials; all as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Measurement and Payment

The measurement and payment for this item of work will be based on the actual number of lineal feet (LF) of chain link fence, measured from center-of-end post to center-of-end post of each separate installation, which has been completed and accepted.

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Item No. 895, Chain Link Fence (Height as Specified)	LF
Item No. 896, Chain Link Fence (Height as Specified)	LF
Item No. 897, Chain Link Fence (Height as Specified)	LF
Item No. 898, Chain Link Fence (Height as Specified)	LF