

Article 11 Pay Items

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I. General

A. Unit Prices for Pay Items

1. The unit price for the Contract Items of work (Pay Items) as listed below shall include all labor, material, and equipment costs required to perform all the work specified in these Standards.

B. Pay Item Numbers

1. Pay Item numbers shall be as set forth in Appendix C (Pay Item Numbers) of these Standards.

II. Pay Item Descriptions

A. General Conditions

1. Work shall be as described in Article 10 (Construction Specifications), Section I.F. (General Conditions) and Section I. I (Project Supervision), of these Standards.
2. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item).

Contract Item (Pay Item)	Pay Unit
General Conditions, Max. \$_____	Lump Sum
Project Supervision, Max. \$_____	Lump Sum

3. "General Conditions, Max. \$" will be paid 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. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum, minus any deductions incurred for inadequate performance as allowed by the contract. This amount will not be increased for any reason, including, but not limited to: extensions of time, agreed-upon extra costs, additional work added to the contract; adjustments to unit prices; and all similar additions to the contract.

4. "Project Supervision, Max. \$____" 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. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum, minus any deductions incurred for inadequate performance as described herein. This amount will not be increased for any reason, including extensions of time, extras, and/or additional work. The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified.

B. Project Cleanup and Restoration

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Project Clean-Up and Restoration.....	Lump Sum

2. The lump sum price for "Project Clean-Up and Restoration" shall include all remaining project clean-up and restoration work, including all labor, material, and equipment costs required to complete the work as specified herein.

C. Audiovisual Recording

1. Work shall be as described in Article 10 (Construction Specifications), Section I.H. (Digital Audio-Visual Coverage), of these Standards.
2. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Digital Audio Visual Coverage.....	Lump Sum

3. Payment will be made for "Digital Audio Visual Coverage" following the review and acceptance of the recording by the PSAA. Within 14 days following the receipt of the recording, the PSAA will either accept it and authorize payment, or require that any discrepancies in the recording be addressed prior to making payment.

4. In the event that construction has already begun if re-recording of project areas is required, the Contractor shall be responsible for any extra costs or issues associated with re-recording the required areas due to lack of access, difficulty of access, inability to use the originally planned audiovisual equipment, or any other related costs.

D. Tree Protection Fence

1. Work shall be as described in Article 10 (Construction Specifications), Section VI.M. (Protective Fence and Tree Protection), of these Standards.
2. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Tree Protection Fence	Foot

3. "Tree Protection Fence" will be paid for at the contract unit price per linear foot of fence installed for protection of trees. Price paid shall be payment in full for all labor, materials, and equipment needed to accomplish this work. No additional payment will be made for maintenance or reinstallation of fence during the construction period.

E. Tree, Remove

1. Work shall be as described in Article 10 (Construction Specifications), Section VI.C. (Tree Removal), of these Standards.
2. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Tree, Rem, 6 In. - 12 In.	Each
Tree, Rem, 13 In. - 19 In.....	Each
Tree, Rem, 20 In. - 29 In.....	Each
Tree, Rem, 30 In. - 39 In.....	Each
Tree, Rem, 40 In. and larger	Each
Stump, Rem	Each

3. Removal of trees and stumps shall be paid for at the Contract Unit Price for each tree or stump removal. The tree removal pay item includes respective stump removal.

4. Removal of trees and stumps shall include backfilling the resulting hole with MDOT Class II Granular material compacted to 95% of its maximum dry density to the level of the existing ground surface before the stump was removed if the area(s) will be under, or within the 1:1 influence of a paved surface of any type
5. The unit price paid shall be payment in full for all labor, material, and equipment costs necessary for the complete removal and disposal offsite of each tree or stump in accordance with the schedule of sizes.
6. The size of trees shall be determined by the diameter of tree trunk measured at a point 4-½ feet above the ground. The size of the stumps shall be determined by the diameter of the stump measured at the top of the stump.
7. The removal and disposal of all stumps, hedges, brush, shrubs, roots, and trees having a diameter of less than six (6) inches shall be considered to be incidental to the Project and will not be paid for separately.

F. Abandoning and Removal of Storm Pipe and Drainage Structures

1. Work shall be as described in Article 10 (Construction Specifications), Section II.AA (Abandonment and Removal of Sewers and Drainage Structures), of these Standards.
2. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Storm Sewer Pipe, ___In. Dia., Abandon	Foot
Storm Sewer Pipe, ___In. Dia., Rem.....	Foot
Storm Sewer Structure, Abandon	Each
Storm Sewer Structure, Rem.....	Each
Storm Sewer Drop Structure, Rem	Each

3. Payment for “Storm Sewer Pipe, ___In. Dia., Abandon” includes complete filling of the sewer with flowable fill in accordance with these Standards.
4. Payment for “Storm Sewer Structure, Abandon” includes all work to bulkhead the existing holes/sewers, breaking down the top 4 vertical feet of the structure, breaking out the bottom of the structure as required by the specifications, and filling the structure with flowable fill or compacted granular material as specified.

5. Payment for pay items “Storm Sewer Pipe, ___ In. Dia., Rem” and “Storm Sewer Structure, Rem” and “Storm Sewer Drop Structure, Rem” includes the complete excavation and removal of the entire sewer/structure and furnishing, placing, and backfilling the excavation per these Standards.

G. Abandonment and Removal of Water Main Pipe and Appurtenances

1. Work shall be as described in Article 10 (Construction Specifications), Section II.BB. (Abandoning and Removal of Water Main and Appurtenances), of these Standards.
2. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Water Main Pipe, ___ In. Dia, Abandon	Foot
Water Main Pipe, Abandon, Modified	Lump Sum
Water Main Pipe, ___ In. Dia, Rem	Foot
Gate Valve in Box, ___ In. Dia, Abandon	Each
Gate Valve in Box, ___ In. Dia, Rem	Each
Gate Valve in Well, ___ In. Dia, Abandon.....	Each
Gate Valve in Well, ___ In. Dia, Rem.....	Each
Fire Hydrant Assembly, Rem	Each

3. Payment for “Water Main Pipe, ___ In. Dia, Abandon” and “Water Main Pipe, ___ In. Dia, Rem” shall be measured and paid for by length in lineal feet and shall include all labor, materials, and equipment costs necessary to abandon or remove the pipe including, but not limited to; excavation; cutting of pipe; furnishing and installing push-on joint plugs or caps and thrust blocks; constructing brick and mortar bulkheads; the furnishing, placement, and compaction of approved granular backfill material, as required; and, the removal and proper disposal off-site of all excess materials. Also included is all work for complying with the appropriate environmental and worker safety laws and requirements regarding the removal/abandonment of asbestos pipe. Payment for “Water Main Pipe, ___ In. Dia, Abandon” also includes filling the water main with flowable fill where specified.

4. Payment for "Water Main Pipe, Abandon, modified" shall include all labor, materials, and equipment costs necessary to abandon and remove pipe as necessary including, but not limited to; excavation; cutting of pipe; furnishing and installing push-on joint plugs or caps and thrust blocks; constructing brick and mortar bulkheads; the furnishing, placement, and compaction of approved granular backfill material, as required; and, the removal and proper disposal off-site of all excess materials. Also included is all work for complying with the appropriate environmental and worker safety laws and requirements regarding the removal/abandonment of asbestos pipe.
5. Pay items for Abandoning and Removing Gate Valves in Wells, Gate Valves in Boxes, and Fire Hydrant Assemblies shall include all labor, materials, and equipment costs necessary to completely abandon (salvage) or remove the valve or fire hydrant and companion valve, including removing and salvaging the valve, valve boxes, gate well frame and covers, and fire hydrant assemblies, neatly stack on-site and deliver to Public Works, including unloading, within 2 days of removal. Also included is the removal of the top 4 feet of valve wells; breaking out the valve well base; filling the structure with flowable fill; furnishing, placement, and compaction of approved granular backfill material, as required; stockpiling valves for future use by City; and the removal and proper disposing off-site of all excess materials.

H. Abandonment and Removal of Sanitary Sewer Pipe and Structures

1. Work shall be as described in Article 10 (Construction Specifications), Section II.AA. (Abandonment and Removal of Sewers and Drainage Structures), of these Standards.
2. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Sanitary Sewer Pipe, ___ In. Dia., Abandon	Foot
Sanitary Sewer Pipe, ___ In. Dia., Rem	Foot
Sanitary Sewer Structure, Abandon	Each
Sanitary Sewer Structure, Rem	Each

3. Payment for "Sanitary Sewer Pipe, ___ In. Dia., Abandon" includes filling the sewer with flowable fill and bulkheading.

4. Payment for "Sanitary Sewer Structure, Abandon" includes all work to bulkhead the existing holes/sewers, breaking down the top 4 vertical feet of the structure, and filling the structure with flowable fill.
5. Payment for pay items "Sanitary Sewer Pipe, ___ In. Dia., Rem" and "Sanitary Sewer Structure, Rem" includes the complete excavation and removal of the entire sewer/structure and furnishing, bulkheading, placing, and backfilling the excavation per these Standards.

I. Removing Pavement and Concrete Items

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
HMA, Any Thickness, Rem	Square Yard
HMA Surface, Rem	Square Yard
HMA Patch, Rem	Square Yard
Concrete Pavt, Any Thickness, Rem	Square Yard
Curb, Gutter, and Curb and Gutter, Any Type, Rem.....	Foot
Sidewalk, Sidewalk Ramp, & Driveway Approach, Any Thick, Rem. .	Sq. Foot
Cold-Milling HMA Surface	Square Yard
Cold-Milling HMA Surface, Plunge Cut	Square Yard
Cold-Milling HMA Surface, Modified.....	Ton
Cold-Milling for Concrete Curb and Gutter Reveal	Square Yard

2. The full-depth saw cutting required for all removals shall be included in the unit price of the item of work being performed will not be paid for separately.
3. Composite pavement will be paid for as "Concrete Pavt, Any Thickness, Rem" based on the area of pavement removed, regardless of thickness.
4. Payment for pay items "HMA, Any Thickness, Rem", "HMA, Surface, Rem", "HMA Patch, Rem", "Concrete Pavt, Any Thickness, Rem", and "Sidewalk, Sidewalk Ramp, & Driveway Approach, Any Thickness, Rem" will be based on the area of pavement, sidewalk, or drive removed. The removal area shall be based upon the average length and width measurements as determined in the field by the PSAA.
5. "HMA Surface, Rem" will be measured by the area in square yards and would typically be used for removing all the HMA surface from a composite road.

6. "HMA Patch, Rem" will be measured by the area in square yards and would typically be used for removing wedged HMA surfaces on driveways.
7. Payment for pay item "Curb, Gutter, and Curb and Gutter, Any Type, Rem" shall be based upon the length removed.
8. Damage to the surrounding and/or supporting material(s) designated to remain in place shall be repaired at the sole expense by the Contractor in accordance with the direction of the PSAA.
9. "Cold-Milling HMA Surface" will be measured by the area in square yard.
10. "Cold-Milling HMA Surface, Plunge Cut" will be measured by the area in square yard to be applied to areas of bituminous material having a thickness of up to 4 inches, as identified by the PSAA for milling after the first pass of HMA surface removal is complete.
11. "Cold-Milling HMA Surface, Modified" will be measured by the weight in tons.
12. "Cold-Milling for Concrete Curb and Gutter Reveal" will be measured by the area in square yard, from edge of metal to face of curb, to be applied to areas of bituminous material having a thickness of up to 4 inches. This item will not be paid if the work is performed at the same time as the overall road cold-milling operation. Completion of a safety edge is required and will not be paid separately.
13. "Cold-Milling HMA Surface," "Cold-Milling HMA Surface, Plunge Cut," "Cold-Milling HMA Surface (Modified)" and "Cold-Milling for Concrete Curb and Gutter Reveal" unit costs include the cost for all labor, equipment and materials required to remove, load, haul, and dispose of the cold milled material, protecting existing improvements, milling around (not lowered) structure covers including those used for storm, sanitary, and water structures, gate and monument boxes, other private utility structures, and other features specified on the plans or as identified in the field, cleaning the remaining HMA or concrete pavement surfaces, and, if applicable, cleaning the cold milled edges and bottom of milling surface. The Engineer will not pay for material picked up by cleaning after cold-milling. Also included in the unit price shall be the complete removal and disposal of all miscellaneous unremoved areas that remain after the initial cold-milling operation has been completed or thin sections of HMA that remain on surfaces that are to remain in place.

J. Earthwork

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Machine Grading, _____	Square Yard
Machine Grading, _____ , Modified	Station
Hand Dig, _____	Square Yard
Earth Excavation	Cubic Yard
Embankment.....	Cubic Yard

2. "Machine Grading" will be measured in square yards for the area as shown on the plans or as necessary in the field to construct the Work.
3. "Machine Grading, Modified" will be measured by length in 100-foot long stations, or portions thereof, along the centerline of the road or feature being constructed (including sidewalks); and includes work on both sides of the road or centerline being measured.
4. Payment for "Machine Grading" or "Machine Grading, Modified" shall include all labor, material and equipment necessary to grade and compact the site, including, but not limited to, the removal and offsite disposal of any surplus or unsuitable materials, and the furnishing from off-site of any additional PSAA approved fill materials necessary to construct the embankment and subgrade to the contours and cross-sections as shown on the plans.
5. Payment for pay item "Earth Excavation" includes all labor, material, and equipment necessary for excavation to the lines and grades shown on the plans and includes stripping and stockpiling topsoil; all excavation and disposal of all unsuitable material including but not limited to all rocks, earth, and large stones; protecting existing improvements; filling holes and voids with compacted granular backfill; the excavation and disposal of other items exposed in excavating to the subgrade; fine grading and compacting subgrade; and proofrolling.
6. Payment for pay item "Embankment" includes all labor, material, and equipment required to construct the embankment to the lines and grades shown on the plans and includes stripping and stockpiling topsoil; providing, placing, and compacting the fill material; and all necessary subgrade preparation.

7. Payment for pay items "Earth Excavation" and "Embankment" will be per cubic yard. The quantity of earth excavation and embankment was calculated from existing and proposed grades. The quantity paid will be plan quantity unless there is a field change which affects the plan quantity. No field measurement for payment of these items will be done at the time of construction.
8. Payment for pay items "Hand Dig,____" shall include all labor, material, and equipment costs required to complete the excavation, and root pruning as required, to the designed rough grade or removal limits as shown on plans and/or directed by PSAA.

K. Subgrade Undercut

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Subgrade Undercutting, Type ____	Cubic Yard

2. Payment includes excavation and proper disposal off-site of all unsuitable material, as determined by the PSAA, below the proposed subgrade elevation, including providing, placing and compacting the undercut backfill material. In fill areas, payment includes undercut excavation and disposal of all unsuitable material, as determined by the PSAA, below the existing ground elevation (after removal of all topsoil and organic materials) including providing, placing and compacting the undercut backfill material to its required dry density to existing grade.
3. Measurement for "Subgrade Undercutting, Type ____" will be determined by field measurement as directed by the PSAA.

L. Exploratory Excavation

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Exploratory Excavation, SD-TD- __, (0-10' deep)	Each
Exploratory Excavation, SD-TD- __, Additional Depth	Foot

2. Pay items for Exploratory Excavation includes all costs for all labor, equipment and materials necessary to complete the work, including all costs associated with repair or replacement of damaged items resulting from the Contractor's activities. Work includes excavation, furnishing of approved backfill materials, placing and compacting of backfill materials, and proper off-site disposal of all unsuitable material for exploratory excavations to locate the desired miscellaneous utilities or objects. Also included is the furnishing and installation of any required sheeting, shoring, bracing, dewatering and barricading required to perform the work in a manner in accordance with all relevant safety standards.
3. Pay items for Exploratory Excavation, Additional Depth shall be measured by the vertical foot from top of existing grade vertically to the bottom of the excavation beyond 10 feet in depth for a 4-foot maximum diameter hole, or as approved by the Engineer. The measurement and payment for the excavated depth of each 4-foot maximum diameter hole shall paid separately. An individual excavation will be paid only once regardless of the number of utilities or objects that are located if they are contained within the 4- foot diameter excavation.

M. Non-Hazardous Contaminated Material Handling and Disposal

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Non-Hazardous Contaminated Material Handling and Disposal...	Cubic Yard

2. Payment shall include all costs for materials, labor and equipment needed for storage, loading, transportation, and disposal of the non-hazardous contaminated material. Disposal costs shall include all documentation required by the landfill. Payment for this item shall be the same, regardless of whether the Contractor temporarily stores the contaminated material or immediately removes it from the jobsite. The Contractor shall not be paid for re-handling of the material due to construction staging, stockpiling, or other related activities.

3. "Non-Hazardous Contaminated Material Handling and Disposal" will be measured by volume in cubic yards, loose measure, as contained in the hauling unit. Under no circumstance will the Contractor be paid for quantities of this material that have not been approved for payment by the PSAA and as measured and tracked by the PSAA and the Contractor. The Contractor will not be paid "standard amounts" that have been determined by the disposal facility; only measured volumes as computed by the PSAA will be paid. Prior to payment, the PSAA shall be given receipts from the disposal facility for the number of cubic yards disposed of at that facility.

N. Dewatering

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Dewatering	Lump Sum

2. Payment for "Dewatering" shall include all labor, material, and equipment required for furnishing, installing, maintaining, and operating, complete dewatering systems as necessary to complete the work in dry conditions. Dewatering shall include, but not be limited to: the preparation of shop plans, design drawings, and calculations; all deep wells, well points, header tubing, discharge tubing, and suction tubing; pumps, generators, electrical lines and service; special well backfill; grouting of wells when they are no longer needed; removal of well casings and all appurtenances; protection of existing or proposed improvements; miscellaneous restoration; furnishing, maintaining, and removing all soil erosion and sedimentation control devices associated with dewatering; complying with all applicable local, state, and federal environmental and soil erosion and sedimentation control measures; and, all other items necessary to complete the work, whether specifically mentioned or implied.

O. Erosion Control

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Erosion Control, Check Dam.....	Foot
Erosion Control, Inlet Protection, Fabric Drop	Each
Erosion Control, Silt Fence	Foot
Erosion Control, Mud Mat	Square Yard

2. Payment for "Erosion Control, Check Dam" includes all labor, material and equipment costs necessary to furnish, install and maintain check dams. Also included in the unit price for this item of work is furnishing and installing rock, furnishing and placement of the required geotextile fabric, and any other miscellaneous work needed to properly complete the work. Also included in the unit price for this item of work is the removal and proper disposal offsite of the check dam upon project completion.
3. Payment for "Erosion Control, Inlet Protection, Fabric Drop" includes all labor, equipment, and material costs needed to furnish, install, maintain, clean and remove the device, and re-install and/or replace the inlet filter as needed when directed by the PSAA.
4. Payment for "Erosion Control, Silt Fence" includes all labor, material and equipment costs to furnish, trench, install, toe-in, maintain, and remove when no longer needed erosion control silt fence. The unit price for this item of work shall also include maintaining the erosion control silt fence in a fully operational manner in accordance with the applicable details. All erosion control silt fence that is damaged by the Contractor's operations, for any reason, shall be replaced at the Contractor's sole expense.
5. Payment for "Erosion Control, Mud Mat" includes all labor, material and equipment costs necessary to furnish, install and maintain mud mats. Also included in the unit price for this item of work is the removal and proper disposal offsite of mud mat upon project completion.

P. Subbase

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Subbase, CIP.....	Cubic Yard

2. Payment includes all labor, material and equipment needed to furnish, place, and compact the subbase material of the type specified on the Plans or in these Standards. Material paid for by Cubic Yard will be calculated using the nominal width and depth of the subbase as indicated on the plans.
3. No allowance will be made for material the Contractor places outside area indicated on the plans to aid in the Contractor's operations.

Q. Aggregate Base Course and Surface Courses

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Aggregate Base, ___ In., 21AA, CIP	Square Yard
Aggregate Base Course, 21AA, CIP	Cubic Yard
Aggregate Surface Course, ___ In., 23A, CIP	Square Yard
Aggregate Surface Course, 23A, CIP	Cubic Yard
Aggregate Shoulder, CI I, 22A	Ton
Aggregate Shoulder, CI I, 21AA	Ton
Aggregate Shoulder, CI II, 23A	Ton

2. Payment includes all labor, material and equipment needed to furnish, place and compact the aggregate base course or surface course material to the thickness designated on the Plans.
3. Material paid for by Cubic Yard will be calculated using the nominal width and depth of the aggregate base course or surface course as indicated on the plans.
4. No allowance will be made for material the Contractor places outside area indicated on the plans to aid in the Contractor's operations.

R. Geotextile Fabric

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Geotextile Separator Fabric	Square Yard
Geotextile Stabilization Fabric	Square Yard

2. Payment includes all labor, material and equipment costs required to furnish and install geotextile fabric. Measurement will be in square yards for the material as indicated on the Plans. No allowance will be made for overlaps or splices as required by the material manufacturer or as specified herein. Any material damaged by the Contractor's operations, shall be removed and replaced by Contractor at no additional cost to the project.

S. Storm Sewer and Culvert

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
____ In., PE Storm Sewer, SD-TD-2	Foot
____ In., CL ____ RCP Storm Sewer, SD-TD-1	Foot
____ In., CMP Storm Sewer, SD-TD-2.....	Foot
____ In., PE End Section.....	Each
____ In., CL ____ RCP End Section	Each
____ In., CMP End Section	Each
Storm Sewer Tap, ____ In., Dia	Each
Pipe Undercut & Backfill, Storm.....	Cubic Yard

2. Storm Sewer and Culverts shall be paid for by the length of pipe actually installed from end-of-pipe to end-of-pipe. Payment of the unit price for this item of work shall include all labor, material, and equipment costs, including excavation, furnishing and placement of backfill, proper disposal off-site of all surplus material, video inspection, and all other needed items to properly complete the work as shown on the plans, as detailed in the Specifications, and as directed by the PSAA.
3. Payment for “End Sections” shall include all labor, material and equipment costs necessary to furnish and install end section on new or existing culverts in accordance with the applicable trench detail.
4. Storm Sewer Tap shall be paid for new connections or new hole not an existing connection. When tapping an existing pipe or structure, a minimum opening of the entering pipe’s outside diameter plus 6 inches (150 mm) shall be cut into the receiving structure. A minimum 3 inch (75 mm) mortar layer shall be packed completely around the entering pipe and struck smooth with the inner wall of the pipe or structure. Pipe passing through the pipe or structure shared is to be cut flush to conform to the inner wall. The entering pipe on the outside portion of the connection shall be encased to provide sufficient bearing under the pipe. Payment of the unit price for this item of work shall include all labor, material, and equipment costs.

5. Payment for "Pipe Undercut & Backfill, Storm" will be based on cubic yards as measured compacted in place. Payment will include the additional excavation, placement of backfill material compacted in place, and all related work. Measurement for the backfill width will be the outside diameter of the pipe plus 2 feet. Measurement for depth will be from the bottom of the excavation to the bottom of the pipe barrel.

T. Drainage Structures

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Storm Manhole, ___ In. Dia., (0-8' deep)	Each
Storm Manhole, ___ In. Dia., Additional Depth	Foot
Storm Inlet-Junction, ___ In. Dia., (0-8' deep)	Each
Storm Inlet-Junction, ___ In. Dia., Additional Depth	Foot
Storm Single Inlet, ___ In. Dia., (0-8' deep)	Each
Storm Single Inlet, ___ In. Dia., Additional Depth	Foot
Storm High Capacity Inlet, ___ In. Dia., (0-8' deep)	Each
Storm High Capacity Inlet, ___ In. Dia., Additional Depth	Foot
Storm Manhole with Weir, ___ In. Dia., (0-8' deep)	Each
Storm Manhole with Weir, ___ In. Dia., Additional Depth	Foot
Storm Manhole Over Existing ("Doghouse"), ___ In. Dia.	Each
Storm Structure Cover	Each
Storm Structure Cover, Adjust	Each
Storm Structure Adjust, Additional Depth	Foot
Storm Structure, Reconstruct	Foot

2. Payment for drainage structures (Storm Manholes, Inlet-Junction, Single Inlets, and High Capacity Inlets) includes furnishing the labor, equipment, and materials for all necessary excavation; disposing of surplus excavated material; backfilling, frame and structure cover; and constructing the structure complete, including pipe connections and structure cleaning. A standard depth drainage structure shall be considered to be 8 feet or less in depth from the inside bottom of the structure (including sump) to the top of the cover.
3. Payment for "Additional Depth" for drainage structures 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, for the portion of the structure which is deeper than 8 feet (including sump).

4. Payment for "Storm Manhole Over Existing ("Doghouse"), ___ In. Dia" shall include all work required to design and construct the manhole structure over and around the existing sewer pipe, including but not limited to: field investigation of existing sewer pipe, design of the manhole structure and appurtenances, submitting shop drawings to the PSAA for review and approval, fabricating and constructing the doghouse style manhole structure over and around the existing sewer pipe, constructing a concrete base for the manhole structure, furnishing and installing the manhole access riser structure with frame and cover, removal of portions of the existing sewer pipe within the new manhole structure, benching, connections into the manhole structure for storm outlet pipes with associated flow channels, temporary or final grade adjustments of the manhole riser structure, and all associated earthwork and backfill.
5. Payment for "Storm Structure Cover" of the type specified shall include all labor, materials and equipment needed to furnish and install the drainage structure cover, exclusive of the structure frame.
6. Payment for "Structure Cover, Adjust" shall include all labor, material and equipment necessary to raise a structure frame and cover not more than 6 inches or lower them not more than 12 inches. Adjusting covers includes saw cutting, removing and replacing pavement; furnishing and installing a structure frame; reuse of the existing cover; and furnishing, installing and compacting granular backfill material as necessary. Payment for furnishing a new structure cover will be paid for as "Storm Structure Cover."
7. Payment for "Structure, Reconstruct" includes all labor, materials and equipment required to rebuild deteriorated portions of existing structures as determined by the PSAA. Reconstructing structures includes saw cutting, removing and replacing pavement; furnishing and installing a structure frame; reuse of the existing cover; and furnishing, installing, and compacting granular backfill material. Measurement for Reconstruct Structure will be in vertical feet from the bottom of the frame to the top of the existing masonry that was not removed. Structures paid for as "Structure, Reconstruct" will not be paid for as "Structure Cover, Adjust". In a case where the existing structure cover cannot be reused, payment for furnishing a new structure cover will be paid for as "Storm Structure Cover."

U. Underdrain

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Underdrain, Subgrade, __ In.....	Foot
Underdrain, Subbase, __ In.....	Foot
Underdrain, Edge, __ In.....	Foot
Underdrain, Outlet, __ In.....	Foot
Underdrain, Outlet Ending, __ In.....	Each

2. Underdrain will be paid for at the contract unit price per length in feet and shall be payment in full for all labor, equipment and material needed to accomplish this work.
3. The unit price shall include the cost of the 6-inch perforated pipe, geotextile wrap, pipe fittings and/or plugs, furnishing bedding and backfill material (as specified), trenching, compaction of the trench backfill, taps to new and existing drainage structures, all excavation, final trimming required to meet the dimensions of the typical and specific cross-sections, and the proper disposal offsite of all surplus excavated materials. The unit price for Underdrain, Outlet would also include the cost of the following: 1. Locating installed outlets; 2. Maintaining the end of the outlet pipe or end section clear of obstructions; and 3. Providing and installing temporary tie-downs.
4. In addition to above, the unit price for Underdrain, Outlet Ending also includes the cost of the following: 1. Excavating the area at the end of the outlet; 2. Providing and placing the concrete ring, steel end section, or concrete end section; and 3. Disposing of surplus excavated material.

V. Curb Drain

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Curb Drain, HDPE DR 17, HDD, 6 inch	Foot
Curb Drain, HDPE DR 17, SD-TD-2, 6 inch	Foot
Curb Drain, Tap	Each
Curb Drain, Cleanout.....	Each

2. Measurement and payment for pipe installation shall be made per linear foot of installed pipe by measuring the distance from center of cleanout cap to the connection point of downstream storm structure.

3. Curb Drain Tap shall be paid for making the connection to the downstream Catch Basin or storm structure. Curb Drain Tap shall also be paid for making the connection to existing sump pump discharge lines, with up to five feet of HDPE or PVC pipe, and saddle, shall be included to make the proper connection.

W. Bituminous Pavement

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
HMA, ____	Ton
HMA Approach.....	Ton
HMA, High Stress	Ton
HMA Base Crushing and Shaping	Syd
Hand Patching.....	Ton

2. Payment includes all labor, material and equipment required to furnish and install HMA Pavement of the type and thickness specified, providing the required Contractor Quality Control services, including furnishing and applying prime and bond coat, compacting the mixture, protection of existing improvements from damage during placement and compaction operations, and protecting installed pavement until cooled.
3. Unused HMA remaining in trucks after the work is completed shall be returned to the plant and re-weighed, and the corrected weight slip shall be provided to the Engineer. No payment will be made for the unused HMA material. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.
4. "HMA Base Crushing and Shaping" shall include costs for all labor, equipment and materials necessary to complete the work. The Contractor, at its sole expense, will remedy, as directed by the Engineer, any damage to the foundation, pathway, or roadway embankment or subgrade caused by traffic or its operations. The Engineer will not pay additional compensation or allow extensions of contract time for additional measures required to protect the grade as specified. The Engineer will not pay additional compensation or allow extensions of contract time for tree trimming measures and coordination of this work with City forces. The Engineer will pay for the trimming and pruning of trees by an authorized subcontractor, if necessary, as extra work.

5. "HMA, High Stress" shall include all labor, material and equipment required to furnish and install HMA Pavement of the type and thickness specified with a higher Performance Graded binder. The difference between the High Stress HMA Mixture and the typical HMA pay item is the Performance Graded binder.

X. Micro-Surfacing

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Chip Seal	Square Yard
Micro-Surfacing.....	Square Yard

2. "Chip Seal" will be measured by the area in square yards. Price includes the cost for all labor, equipment and materials required to prepare the existing surface and furnish and install chip seal material.
3. "Micro-Surfacing" will be measured by the area in square yards. Price includes the cost for all labor, equipment and materials required to prepare the existing surface and furnish and install micro-surfacing mixture.

Y. Concrete Pavement

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Conc Pavt, Non-Reinf, ___ In.	Square Yard
Conc Pavt With Integral Curb, Non-Reinf, ___ In.	Square Yard
Conc Pavt Repair (MDOT Detail 8)	Foot
Joint, Contraction, ___	Foot
Joint, Expansion, ___	Foot
Joint, Plane-of-Weakness, W	Foot
Conc, Speed Hump	Square Yard
Conc, Speed Cushions	Square Yard
Conc, Speed Table	Square Yard
Conc, Raised Crosswalk	Square Yard
Conc, Raised Intersection	Square Yard

2. Payment includes all labor, material and equipment required to furnish and install Concrete Pavement, including ensuring concrete durability, curing, pavement gapping, and protection against rain, and hot and cold weather.

3. Measurement and payment of "Conc Pavt Repair (MDOT Detail 8)" shall be in feet measured along the centerline of the repair joint or crack, and shall include saw cutting full depth, removal, lane tie placement, furnish and placement of concrete, and curing compound.
4. Payment for "Joint, ____" includes the cost of transverse end-of-pour joints and transverse plane-of-weakness joints per Standard Detail. The City will pay for other transverse joints by the length, based on plan dimensions, for the type of joint required. The unit price for the transverse contraction, transverse expansion, transverse plane-of-weakness, and intersection joints include the cost of the following: 1. Providing required joint materials such as load transfer assemblies, expansion joint fillers, and joint seals or sealants; 2. Providing a joint layout detail plan, if required; 3. Sawing, forming, and cleaning the joints; 4. Providing and applying bond breaker, if required; and 5. Providing and placing poured joint sealant. The unit prices for other pay items include the cost of internal and external longitudinal joint.
5. "Conc, Speed Hump," "Conc, Speed Cushions," "Conc, Speed Table," "Conc, Raised Crosswalk," and "Conc, Raised Intersection" includes all labor, equipment, MDOT 21 AA aggregate base, compaction effort, concrete, curing compound, forms and materials to complete the work. Saw cutting and removing existing pavement will be paid for separately under pay item "HMA, Any Thickness, Rem;" pavement markings will be paid for separately under the appropriate pay item.

Z. Concrete Curb and Gutter

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Conc, Curb or Curb & Gutter, All Types.....	Foot
Conc, Driveway Opening, Type ____	Foot
Conc, Driveway Opening, Type ____, Modified	Foot
Conc, Driveway Opening, Type ____, High Early.....	Foot

2. Payment for the following items of work includes all labor, material and equipment costs required to furnish and install "Conc, Curb and Gutter, All Types" or "Conc, Driveway Opening, Type ____/Modified/High Early" including, but not limited to: performing the specified concrete durability tasks, curing the concrete for the required time period; and protection of the newly placed concrete against rain, wind, and temperature conditions that are adverse to the proper curing of the newly placed concrete as specified.
3. At curb openings for sidewalk ramps, the concrete curb and gutter (without the curb face) will be measured and paid for at the contract unit price for curb and gutter of the type being installed.

AA. Concrete Drives and Sidewalks

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Conc, Sidewalk, ____ In.	Square Foot
Conc, Sidewalk, Drive Approach, or Ramp, ____ In.,	Square Foot
Conc, Sidewalk, Drive Approach, or Ramp, ____ In., High Early.....	Square Foot
Brick Pavers, Sidewalk, Rem and Reinstall	Square Foot

2. Payment for the subject items includes all labor, material and equipment costs required to furnish and install concrete sidewalk and drive approaches including but not limited to: installing driveway base material as specified; performing the specified concrete durability tasks; curing the concrete for the required time period; and, protection of the newly placed concrete against rain, wind, and temperature conditions that are adverse to the proper curing of the newly placed concrete as specified.
3. Excavation for placement of driveway base material shall be included in the item of work "Machine Grading, _____, _____" and shall not be paid for separately.
4. Detectable warning surfaces that are cast-in-place, shall be paid for separately.
5. Payment for "Brick Pavers, Sidewalk, Rem and Reinstall" includes all labor, material, and equipment costs to removal and stockpile existing pavers, furnishing and installing edge restraint, leveling bed and joint sand, compacting pavers, and replacing pavers that could not be salvaged.

BB. Detectable Warning Surface

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Detectable Warning Surface	Foot

2. Payment includes all labor, material and equipment required to furnish and install Detectable Warning Surface in accordance with current ADA requirements.

CC. Fence

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Fence, Rem	Foot
Fence, Chain Link, __ In.	Foot
Fence, Salvage and Re-Erect.....	Foot

2. "Fence, Rem" includes removal and disposal, or removal and salvaging of fence posts and appurtenances, and filling holes and voids with compacted granular material. This does not apply to removal of silt fence or tree protection fence.
3. Payment for chain link fence and gates includes all labor, material and equipment required to furnish and install Fence and gates of the size and type specified.
4. "Fence, Salvage and Re-Erect" shall include all labor, material and equipment costs necessary to remove, store and protect the fence fabric until it is ready for use, salvage and protect fence posts from damage during the removal process, remove any existing concrete from salvaged fence posts, and re-erect salvaged posts and stretch salvaged fence fabric as required by the specifications. Also included in this work is installation of new MDOT 3500 concrete footings and furnishing and installing any new fabric, posts, and hardware as necessary that could not be salvaged.

DD. Pavement Markings

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

Contract Item (Pay Item)	Pay Unit
Pavt Mrkg, Type NR, Paint, __ In., __	Foot
Pavt Mrkg, Type NR, Paint, __	Each
Pavt Mrkg, Wet Reflective, Type __, __, __ In., __	Foot
Pavt Mrkg, Wet Reflective, Type __, __, __	Each
Pavt Mrkg, Ovly Cold Plastic, __, __	Each
Pavt Mrkg, Polymer Cement Surface, __, __	Each
Pavt Mrkg, Polymer Cement Surface, __, __	Square Foot
Pavt Mrkg, Polyurea, __, __	Each
Pavt Mrkg, Polyurea, __ In., __	Foot
Pavt Mrkg, Sprayable Thermopl, __ In., __	Foot
Pavt Mrkg, Thermopl, __ In., __, __	Foot
Pavt Mrkg, Thermopl, __ In., __, __	Each
Pavt Mrkg, Preformed Thermopl, Accessible Sym	Each
Pavt Mrkg, Waterborne, __ In., __	Foot
Pavt Mrkg, Longit, Remove.....	Foot
Pavt Mrkg, Transverse, Remove.....	FootPavt
Mrkg, Symbol or Legend, Remove.....	Each
Pavt Mrkg Cover, Type R, Black.....	Foot
Recessing Pavt Mrkg,	Foot
Rem Curing Compound,	Foot
Rem Curing Compound, for Spec Mrkg.....	Square Foot
Rem Spec Mrkg	Square Foot

2. Payment for these items of work includes all labor, material and equipment costs necessary for installing the specified pavement markings in place, and shall include pavement cleaning, complete removal of any dead animals in the pavement marking track, furnishing and placing glass beads, all required layout to precisely place the markings in their intended location(s), all traffic control required to safely install the intended pavement markings, and all site cleanup once the work has been completed. Skip pavement markings will only be measured for lines actually placed. Payment for Temporary Pavement Markings includes the removal and proper off-site disposal of all markings when they are no longer needed.

3. Removal of permanent pavement markings, where shown on the plans, will be paid for each item removed or for each per foot as specified on the Plans or as directed by the Engineer.

EE. Traffic Maintenance and Control

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

Contract Item (Pay Item)	Pay Unit
Sign, Type B, Temp, Prismatic, Furn and Oper	Square Foot
Sign, Type B, Temp, Prismatic, Special, Furn and Oper	Square Foot
Sign, Rem, Salv	Each
Lighted Arrow, Type __, Furn and Oper.....	Each
Sign, Portable, Changeable Message, Furn and Oper	Each
Plastic Drum, High Intensity, Lighted, Furn and Oper	Each
Barricade, Type __, High Intensity, Lighted, Furn and Oper	Each
Barricade, Type __, High Intensity, Double Sided, Lighted, Furn and Oper..	Each
Temporary Pedestrian Surface, Furn & Oper.....	Foot
Temporary Pedestrian Ramp, Furn & Oper	Each
Pedestrian Type II Barricade, Temp, Furn & Oper	Each
Pedestrian Channelizer Device, Furn & Oper.....	Each
Channelizer Cone, High Intensity, 42 In., Furn & Oper	Each
Traffic Regulator Control	Lump Sum
Traffic Regulator Control, Modified.....	Hours

2. Payment for temporary signs shall be on a per square foot basis and shall include all labor, material and equipment costs necessary to furnish and install temporary signs as specified. This includes moving, re-installing, and operating devices as necessary as the work progresses and removing devices at the completion of the Project.
3. Sign, Rem, Salv includes the cost of removing attaching or fastening hardware if shown on the plans; and removing signs from supports; storing signs after removal, loading, transporting, and unloading the salvage sign to a location shown on the plans or as directed by the Engineer.
4. Payment for traffic control devices, measured as each, shall include all labor, material and equipment costs necessary to furnish, install, operate, maintain, relocate, and remove each traffic control device as specified. This includes moving, re-installing, and operating devices as necessary as the work progresses and removing devices at the completion of the Project.
5. "Traffic Regulator Control" and "Traffic Regulator Control (Modified)" shall include the cost of the following: a. Providing dedicated flagging personnel for actively managing traffic; b. Providing and operating equipment; and c. Providing traffic regulator training in accordance with OSHA standard 1926.201(a) and conforms to Part 6 of the Manual of Uniform Traffic Control Devices (MUTCD).

6. The use of construction team staff, supervisors, and operators for incidental, short term traffic control is not included in this pay item and will not be compensated for separately from the work being undertaken.
7. "Temporary Pedestrian Surface, Furn & Oper" includes all costs related to installation, maintenance, restoration, and removal of the surface and disposal of all associated materials throughout the life of the contract. Temporary Pedestrian Surface will be measured along the centerline of the pedestrian route for the maximum length used project wide. Temporary passing spaces are considered a part of the pedestrian surface and are included in this pay item.
8. "Temporary Pedestrian Ramp, Furn & Oper" includes furnishing, installing and removing a temporary pedestrian ramp at the locations shown on the plans or where directed by the Engineer, as well as all costs for maintaining, clearing debris, deicing, reconfiguring, and relocating the temporary pedestrian ramp throughout the life of the contract.
9. For temporary pedestrian ramps that are fabricated and reusable, payment shall be for the maximum quantity used at any one time. Ramps that are constructed at each location with suitable material that cannot be relocated, such as HMA, shall be paid for at each location.
10. "Pedestrian Channelizer Device, Furn & Oper" includes delivering, installing, maintaining, relocating and removing rails or wall sections, supports, ballast, and hinge points at the locations shown on the plans. Payment will be made on delivery for the quantity delivered to the project site by each (up to 5 ft wide unit), for the maximum used project wide, up to plan quantity. Any amount delivered exceeding plan quantity will not be paid unless approved by the Engineer. This includes all railing or wall sections, supports, ballast, hinge points, and miscellaneous hardware needed to construct the channelizer or system of channelizers.
11. "Pedestrian Type II Barricade, Temp, Furn & Oper" includes delivering, installing, maintaining, relocating, and removing a temporary pedestrian Type II barricade section as identified in the proposal or on the plans. One pedestrian Type II barricade is defined as a barricade section at least 43 inches wide, including all supports, ballast, and hardware.

12. All TPAR facilities furnished by the Contractor shall remain the property of the Contractor. The City shall not be responsible for stolen or damaged ramps, mats, channelizers, or other TPAR items. The Contractor shall replace missing TPAR facilities immediately, at no additional cost to the City.

FF. Temporary No Parking Signs

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contact Item (Pay Item)</u>	<u>Pay Unit</u>
Temporary "No Parking" Sign.....	Each

2. Measure Temporary "No Parking" Sign individually in place by the unit each and pay for it at the contract unit price, which price includes all cost for labor, equipment and materials necessary to complete the work. Signs will be provided by City. Measurement will be for the maximum number of signs installed on a project location at any one time. The unit price also includes the removal and return of "No Parking" signs to the City upon completion of the project, and the covering of any existing/permanent "No Parking" signs.
3. The City will back charge the Contractor for replacement costs associated with damaged and/or unreturned signs.

GG. Minor Traffic Control

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Minor Traffic Control, Max \$.....	Lump Sum

2. Payment for "Minor Traffic Control, Max \$" includes all labor, material and equipment costs necessary for:
 - a) The furnishing and operating of miscellaneous signs, warning devices, traffic regulators, temporary concrete barriers, and cones as required for the entire duration of the project;
 - b) Installing, maintaining and removing additional signs furnished by the City;
 - c) Furnishing and installing meter bags (where required by the Plans);
 - d) Coordinating with the City to have meter heads removed and reinstalled (where required by the Plans);

- e) Coordinating with the City on signal timing and phasing changes;
 - f) Maintaining pedestrian traffic in accordance with the requirements of PROWAG, ADA, ABA, and City Code;
 - g) Temporarily covering conflicting traffic controls with Engineer-approved covers;
 - h) Temporarily covering conflicting existing signs as directed by the PSAA with approved sign covers; and,
 - i) Any and all other miscellaneous and/or incidental items that are necessary to properly and safely perform the work.
3. Payment for Minor Traffic Control will be paid 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. When all of the work for this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum.
 4. The Contractor shall maintain vehicular and pedestrian traffic during the work by the use of traffic regulators, channelizing devices, and signs as necessary, as determined by the PSAA, and in accordance with MMUTCD. Traffic Regulator Control shall be paid as specified in Section EE (Traffic Maintenance and Control), of this Article.

HH. Slope Protection

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Riprap, Grouted	Square Yard
Riprap, Plain.....	Square Yard
Riprap, Heavy.....	Square Yard
Gabions, Stone Fill.....	Cubic Yard

2. Payment for Riprap items shall include all labor, material and equipment costs required to furnish the riprap, clear and prepare the subgrade, furnish and place geotextile liner, grout (where type requires) and to place the material to the designated thickness as shown on the plans and as directed by the PSAA. Riprap, Heavy will be measured in place by the square yard.

3. "Gabions, Stone Fill" will be measured by the cubic yard based on plan dimensions of the baskets installed. No adjustments to the calculated volume will be made to account for voids in the fill material. This item of work shall include all labor, materials, and equipment costs necessary to provide a complete installation of the gabions as detailed on the plan sheets.
4. Vegetation to be incorporated into the gabions (if specified on the Plans) shall be paid for separately.

II. Protecting and Preserving Irrigation Systems

1. The completed work as measured for the following pay item shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Irrigation System, Protection and Preserving.....	Lump Sum

2. Payment includes all labor, material and equipment costs required to investigate, locate, save and protect from damage, ensure continued and proper operation during the performance of the project work, re-establish operation as necessary, and upon completion of all project work, ensure that all existing sprinkler systems located within the project limits, or those affected by the project, are functioning in a satisfactory manner as determined by the PSAA.

JJ. Underground Sprinkling Systems, Restore

1. The completed work shall be paid for at the contract unit price for the following contract item (pay item) which shall include all materials, equipment and labor required to complete this work.

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Underground Sprinkling System, Restore	Dollar

2. Payment for Underground Sprinkling System, Restore will be paid for as an allowance after all disturbed sprinkling systems have been repaired and/or replaced, whichever occurs later. The Contractor shall supply the Engineer with actual invoices from the underground sprinkling specialist for this work effort and may add up to 5% markup.

3. The Contractor waives all claim for damages or delay which they may suffer by reason of the presence of lawn sprinkling equipment within the project site and understands that no extra compensation will be paid to them due to any lawn sprinkling equipment encountered.

KK. Trees and Shrubs

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Tree, Medium, B&B.....	Each
Tree, Large, B&B	Each
Plant, Gal	Each
Plant, Live Stake	Each
Plant, Plug	Each

2. Measurement and payment for these items shall include: excavation and preparation of the planting areas and individual planting locations; removal and proper off-site disposal of plant containers, packaging materials, and other related items; all materials necessary to install the plants as shown on the drawings and as detailed herein; transporting and furnishing to the jobsite all plants; preparing the existing soil and planting mixture; removing weeds; furnishing and placing shredded hardwood bark mulch as shown on the Plans; bracing/staking plant materials if needed and approved by the Engineer; water and watering; and, all labor and equipment necessary, completing all necessary tasks to maintain a healthy stand of plants, and Balled and Burlapped (B&B) Trees, as shown on the plans and as described herein, for a complete installation.
3. Tree planting shall include and Tree Drip Irrigation Bags and Watering and Cultivating. Tree Drip Irrigation Bags shall be Treegator Original 20-gallon slow-release watering bags, or approved substitution.
4. Fertilizer shall be slow release, at minimum 50% derived from a natural, organic source, 12-0-6 or approved substitution.
5. The Contractor shall submit a minimum size sample of ½-gallon sized container of structural soil and topsoil for approval prior to installation.

6. Tree and plant types shall be as shown on the Drawings. Trees selected from a table shall have no more than 20% of the quantity of a single species. This is to promote a diversity of species. The Contractor shall submit to the PSAA sources for all plant material. Plant stock submittal shall include: (a) Certificates from supplier(s): name, address, and contract information; (b) Botanical name, including cultivar, and common name; (c) Quantity; (d) Size; (e) Type (B&B, Container, Bare Root...etc.); and (f) Origin (Location grown) Tree Size, shall be 1.75 inch Caliper for Medium and 3 inch Caliper for Large, as defined by the [ANSI Z60.1 \(American Standard for Nursery Stock\) Section 2.](#)
7. Plant Size, Gal, shall have a minimum number of 3 canes, as defined by the [ANSI Z60.1 \(American Standard for Nursery Stock\) Section 2.](#)
8. Plant, Live Stake, shall have a range of diameters between ½ inch to 1 ½ inch and be at least 2 ft long. Harvested during dormant season and kept moist between harvest and planting.
9. Plant, plug, shall be 2" diameter and a depth adequate for the plant type.
10. Backfill soil for planting pits shall consist of 50% excavated material and 50% imported topsoil and shall be finely divided, loose, and free of clods. Lumps, stone, litter, and other foreign non-organic material larger than 1 inch shall be removed. Non-desirable organic matter, including plants, roots, weeds, and perennial rhizomes shall also be removed. If additional soil is required, topsoil shall be used.
11. After all plants have been installed, an inspection for Provisional Acceptance will be made by the Contractor and PSAA. After any necessary changes have been made by the Contractor, the PSAA will issue a letter of Provisional Acceptance after which the Landscape Maintenance and Warranty period will begin for one full calendar year according to the terms of the Landscape Maintenance and Warranty specifications.
12. The final inspection of all planting work under the Contract will be made by the Contractor and PSAA at the end of the maintenance and establishment periods. The Contractor shall remedy any noted deficiencies with the plants and planting area(s) within fourteen (14) calendar days of being notified of the deficiencies. Before final acceptance is given all terms of plant establishment shall be met.

LL. Landscape Maintenance and Warranty

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Landscape Maintenance and Warranty, 1 Year	Lump Sum
Landscape Maintenance and Warranty, 2nd Year	Lump Sum

2. Payment includes all labor, material and equipment costs required to: maintain plant materials in a healthy, thriving, condition; remove weeds (include roots) throughout the warranty period; and, meet all other performance requirements outlined in the specifications.
3. Payment for maintenance during the warranty period shall be based on the lump sum contract amount divided by the number of maintenance visits identified in the maintenance schedule supplied by the Contractor prior to issuance of Provisional Acceptance. The warranty period commences at the time of Provisional Acceptance. Payments will only be made for maintenance performed and verified through field reports submitted by the Contractor with each pay request. Also included in these items of work is the restoration of any area damaged by the Contractor during their maintenance or during replacement planting operations.

MM. Turf Establishment

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Turf Restoration	Square Yard
Hydroseeding	Square Yard
Sodding	Square Yard
Mulch Blanket	Square Yard
Mulch, High Velocity	Square Yard

2. Payment includes all labor, material and equipment costs required to furnish and install PSAA-approved topsoil, approved seed mixtures, hydroseeding, sod, fertilizer and mulch, including grading of the area to receive the topsoil, preparing the earth bed, spreading and raking the topsoil to provide a uniform surface free of large clods, lumps, rocks, brush, roots, or other deleterious materials, as determined by the PSAA.

3. The hydroseeding shall be placed on all lawn areas as called for on the Plans, and shall include furnishing and installing hydroseed, fertilizer, and all required watering necessary for the establishment of the turf. Watering will not be paid for separately.
4. Any damage or soiling to signs, fences, trees, pavements, or structures caused by turf establishment work shall be repaired and/or cleaned by the Contractor at the Contractor's sole expense.
5. After initial placement of the topsoil and hydroseed mixture(s), fifty (50) percent of the total quantity placed for each item will be certified for payment. Payment for the remaining fifty (50) percent of the total quantities will be held by the City until such time as all lawn areas have been established and accepted by the City.
6. Final acceptance shall occur no sooner than June 15 of the year after the year in which the lawn areas were initially planted during the previous spring planting season; or, final acceptance will occur no sooner than November 1 of the year after the year in which the lawn areas were initially planted during the previous summer planting season. In no case shall lawn areas be accepted in the same year in which they were planted.

NN. Street Lighting and Electrical

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Conductors, No. ___ AWG.....	Foot
Conduit, Schedule ___ PVC, ___ In.....	Foot
Conduit, Schedule ___ PVC, ___ In., Qty 2	Foot
Conduit, Schedule ___ PVC, ___ In., Directional Drill	Foot
Conduit, Schedule ___ HDPE, ___ In., Directional Drill.....	Foot
Handhole, Rem	Each
Handhole Assembly, ___ In. x ___ In. x ___ In.....	Each
Cabinet, Type _____	Each
Foundation, Light Pole.....	Each
Foundation, Light Pole, Rem.....	Each
Foundation, Streetlight Cabinet	Each
Foundation, Streetlight Cabinet, Rem	Each
Light Pole, _____	Each
Light Pole, _____, City Furnish.....	Each
Light Pole, Rem.....	Each
Light Pole, Rem and Salvage	Each

Light Pole, Reinstall	Each
Light Fixture, ____	Each
Light Fixture, ____, City Furnish.....	Each
Light Fixture, Reinstall	Each
Light Fixture, Rem	Each
Light Fixture, Rem and Salvage	Each
Streetlight Disconnect Box, Complete.....	Each
Photoelectric Control	Each

2. Conductors shall be paid for at the contract unit price per foot and shall include all labor, materials and equipment costs necessary for furnishing and installing conductors. Also included is furnishing and installing all miscellaneous electrical devices, fuses, connections, splices, grounding, testing, excavation, backfill, proper disposal off-site of all excess excavated material, and all other miscellaneous electrical work required for a complete and functioning system as required per the specifications, electrical code or as determined by the PSAA.
3. "Conduit Schedule __ PVC, __ In.; Conduit, Schedule __ PVC, __ In., Qty 2; Conduit, Schedule __ PVC, __ In., Directional Drill" will be measured by length in feet and shall include all labor, material and equipment costs required to furnish and install conduit; and shall include, but not be limited to, excavation, backfill, fittings, elbows, sweeps, pull strings, end caps, sleeves, tracer wire, expansion couplings, conduit spacers, concrete, and other work necessary for installation of as shown on the plans or specified. "Conduit, Schedule __ PVC, __ In., Qty 2" when more than 1 conduit, conduit shall be placed side by side.
4. "Conduit, Schedule __ PVC/HDPE, __ In., Directional Drill" will be measured by length in feet and shall include all labor, material and equipment costs required to furnish and install conduit; and shall include, but not be limited to, excavation, bore pits, trench sheeting and shoring, directional drilling, assembly, dewatering, spoils removal, backfill, compaction, fittings, elbows, sweeps, pull strings, end caps, sleeves, tracer wire, expansion couplings, conduit spacers, concrete and other work necessary for installation of as shown on the plans or specified.
5. "Handhole, Rem" shall be paid for at the contract unit price each and shall consist of furnishing all labor, materials and equipment necessary for removing existing handhole boxes and covers and backfilling if needed.

6. "Handhole Assembly, ___ In. x ___ In. x ___ In." shall be paid for at the contract unit price each and shall consist of all labor, materials and equipment costs necessary for furnishing and installing electrical handhole boxes and covers as specified on the Plans or as directed by the Engineer. Also included in this work are: the excavation and proper off-site disposal of all excess excavated materials; furnishing, installing and compacting MDOT Class II sand; and all work related to connecting handholes to new and existing conduits.
7. "Cabinet, Type" shall be paid for at the contract unit price and shall include all labor, material, and equipment costs required to complete the work as specified herein. Scheduling and coordinating this work with Detroit Edison shall also be included for large cabinets. The Contractor shall also be responsible for any fees charged by Detroit Edison associated with the installation of the disconnect box.
8. "Foundation, Light Pole" and "Foundation, Streetlight Cabinet" shall be paid for at the contract unit price each and shall include all labor, materials and equipment costs necessary for installing light pole foundations or cabinet foundations, as detailed on the Plans and as required by these Standards, or as directed by the Engineer. The pay item shall also include excavation and proper offsite disposal of materials, furnishing, installing and compacting bedding and backfill, and all work related to connecting foundation to new and existing conduits as required by these Standards or as directed by the Engineer.
9. "Foundation, Light Pole Remove" and "Foundation, Streetlight Cabinet, Remove" shall be paid for at the contract unit price each and shall consist of all labor, materials and equipment costs necessary to completely remove the existing foundation and associated appurtenances to the foundation to allow for installation of a new foundation. Payment shall include all excavation, clean-up and disposal off-site. Separate payment shall apply for each foundation that is removed.
10. "Light Pole, ___" shall be paid for at the contract unit price each and shall include all labor, material and equipment costs including but not limited to: luminaire-supporting structure including tower used for large-area illumination; any other materials required for complete installation of light pole on the existing or proposed foundation; all required testing; and placing pole assemblies into service, as shown on the plans and as detailed in the Specifications, or as directed by the Engineer. This item shall also include all labor, materials, and equipment necessary to reinstall all signs, electrical cabinets, or other objects attached to the pole.

11. "Light Pole, _____, City Furnish" shall be paid for at the contract unit price each and shall include all labor and equipment costs required for complete installation of light pole on the existing or proposed foundation; all required testing; and placing pole assemblies into service, as shown on the plans and as detailed in the specifications, or as directed by the PSAA. This item shall also include all labor, materials, and equipment necessary to reinstall all signs, electrical cabinets, or other objects attached to the pole. Light pole and associated materials for this pay item will be City furnished. The Contractor shall coordinate with the City to obtain stockpiled light poles. Any damage caused by Contractor's operations to City furnished light poles will require a new light pole be purchased at Contractor's cost.
12. "Light Pole, Remove" shall be paid for at the contract unit price each and shall consist of all labor, materials and equipment costs necessary to remove and properly dispose of the existing streetlight pole from existing foundation. This item shall also include all labor, materials, and equipment necessary to remove, salvage, and temporarily store all signs, electrical cabinets, or other objects attached to the pole.
13. "Light Pole, Remove and Salvage" shall be paid for at the contract unit price for each pole removed and salvaged. Payment includes all labor, materials, and equipment costs necessary to remove from existing foundation, salvage, protect, and store the existing pole until reinstallation.
14. "Light Pole, Reinstall" shall be paid for at the contract unit price each and shall include all labor, material and equipment costs necessary to reinstall a salvaged pole. Payment includes: luminaire-supporting structure including tower used for large-area illumination; any other materials required for complete reinstallation of light pole on the existing or proposed foundation; all required testing; and placing poles assemblies into service as shown on the Plans and as detailed in the specifications, or as directed by the PSAA. Separate payment for removing, salvaging, storing, and protection of light pole shall be made as "Light Pole, Remove and Salvage." Any damage caused by Contractor's operations to City furnished light poles will require a new light pole be purchased at Contractor's cost.
15. "Light Fixture, _____" shall be paid for at the contract unit price each and shall include all labor, equipment, and materials, including, but not limited to: all lamps; supports; hangers; brackets; globes and all other parts and devices necessary for complete operation and installation, as shown on the Plans and detailed in these specifications, or as directed by the PSAA.

16. "Light Fixture, ____, City Furnish" shall be paid for at the contract unit price each and shall include all labor and equipment costs necessary for complete operation and installation, as shown on the Plans and detailed in specifications, or as directed by the PSAA. Fixture and associated materials for this pay item will be City furnished. The Contractor shall coordinate with City to obtain existing stockpiled fixtures. Any damage caused by Contractor's operations to City furnished fixture will require a new fixture be purchased at Contractor's expense.
17. "Light Fixture, Reinstall" shall be paid for at the contract unit price each and shall include all labor and equipment costs necessary for reinstallation of existing fixture and shall assume removal, storing, protecting, and reinstallation of the fixture complete. Any damage to existing fixture will require a new fixture to be purchased at Contractor's expense.
18. "Light Fixture, Remove" shall be paid for at the contract unit price each and shall consist of all labor, materials and equipment costs necessary to remove and properly dispose of the existing streetlight fixture from existing streetlight pole. This item shall also include all labor, materials, and equipment necessary to remove.
19. "Light Fixture, Remove and Salvage" shall be paid for at the contract unit price each and shall consist of all labor, materials and equipment costs necessary to remove and properly dispose of the existing streetlight fixture from existing streetlight pole. This item shall also include all labor, materials, and equipment necessary to remove, salvage, protect, and store the existing fixture until reinstallation.
20. "Streetlight Disconnect Box, Complete" shall be paid for at the contract unit price and shall include all labor, material, and equipment costs required to complete the work as specified herein. Scheduling and coordinating this work with Detroit Edison shall also be included. The Contractor shall also be responsible for any fees charged by Detroit Edison associated with the installation of the disconnect box.
21. "Photoelectric Control" shall be paid for at the contract unit price each and shall include all labor, equipment, and materials, including, but not limited to: supports; hangers; brackets; and all other parts and devices necessary for complete operation and installation, as shown on the Plans and detailed in these specifications, or as directed by the PSAA.

OO. Water Main and Appurtenances

- The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

Contract Item (Pay Item)	Pay Unit
___ In., PC ___ DIP w/ polywrap, SD-TD-1.....	Foot
___ In., Class 56 DIP w/ polywrap, SD-TD-1.....	Foot
___ In., HDPE Pressure Pipe Water Main, Directional Drill.....	Foot
___ In. ___ ° DIP Bend	Each
___ In. x ___ In. DIP Reducer	Each
___ In. x ___ In. x ___ In. DIP Tee.....	Each
___ In. x ___ In. DIP Cross	Each
Gate Valve in Box, ___ In.	Each
Gate Valve in Well, ___ In.	Each
Tapping Sleeve & Valve in Box, ___ In.	Each
Tapping Sleeve & Valve in Well, ___ In.	Each
Fire Hydrant Assembly, Complete	Each
Fire Hydrant, Extension	Foot
Excavate & Backfill for Water Service Tap and Lead	Foot
Water Structure Cover	Each
Water Structure Cover, Adjust	Each
Sacrificial Anode, ___-pound	Each
Curb Box, Adjust	Each
Gate Box, Adjust	Each
Gate Box Cover	Each
Monument Box, Adjust.....	Each

- Payment for ___ In., Class __ DIP w/ polywrap, SD-TD-___", "___ In., Class ___ DIP w/ polywrap, SD-TD-___" includes all labor, material and equipment costs required to furnish and install water main and includes trench excavation and backfill, removing and properly disposing off-site of all excavated material, pipe bedding, connections to existing water main, testing, thrust blocks, and polyethylene encasement. Also included is all required costs associated with night time work, furnishing and operating supplemental lighting, and all other required elements of the work.

3. Payment for “____In., HDPE Pressure Pipe Water Main, Directional Drill” shall include all labor, material and equipment costs required for fusion welding, excavation, dewatering (including well points where needed), bore pit and/or trench sheeting and shoring, directional drilling, assembly, furnishing proper backfill material, compaction, proper disposal off-site of excess excavated material and drilling fluid, disinfection, testing, flushing, and placing new mains into service. Payment shall be measured in place by length in lineal feet along the centerline of the main with no reductions for fittings or valves. Payment for thrust blocks, restrained joints, plugs, or any other special fittings shall be considered as having been included with this pay item and will not be paid for separately.
4. Fittings, other than those specifically listed as separate contract items, such as blow-off assemblies, hoses, restrained joint pipe and gaskets, special gaskets, etc., shall not be paid for separately, but shall be considered included in the payment for Water Main.
5. Tees, Bends, Crosses, and Reducers and other fittings specifically listed as separate contract items (pay items), shall be paid for at the contract unit price for each unit installed. Payment for fittings for ductile iron pipe shall include polyethylene encasement.
6. Payment for “Gate Valve in Well, ____In.” includes all labor, material and equipment costs required to furnish and install the gate valve in well; frame and structure cover; backfill the specified valve; furnish and install pre-cast concrete gate well including the concrete base, straight pre-cast concrete sections, and transition sections; and the adjustment of the well structure cover to finish grade. No separate payment will be made for adjusting the structure covers on new gate valve in wells.
7. Payment for “Gate Valve in Box, ____In.” includes all labor, material and equipment costs required to furnish and install the gate valve; frame and structure cover; backfill the specified valve; and the adjustment of the box structure cover to finish grade. No separate payment will be made for adjusting new gate valve in boxes.
8. “Tapping Sleeve and Valve in Well” includes all labor, material and equipment costs required to furnish and install the tapping sleeve and valve; frame and structure cover; backfill the specified valve; furnish and install pre-cast concrete well including the concrete base, straight pre-cast concrete sections, and transition sections; connection to existing water main; and the adjustment of the well structure cover to finish grade. No separate payment will be made for adjusting the structure covers on new tapping sleeve and valve in wells.

9. "Tapping Sleeve and Valve in Box" includes all labor, material and equipment costs required to furnish and install the valve; frame and structure cover; backfill the specified valve; and the adjustment of the box structure cover to finish grade. No separate payment will be made for adjusting new gate valve in boxes.
10. "Fire Hydrant Assembly, Complete" includes all labor, material and equipment costs required to furnish and install the hydrant; the 6-inch gate valve in box; 3 feet of 6-inch pipe; the thrust block; and 5.5 ft depth of bury bottom of barrel to breakaway flange. Extensions required due to extra depth of water main, and as approved by PSAA, shall be paid for as "Fire Hydrant, Extension", vertical foot, as installed in the field.
11. "Fire Hydrant, Extension" shall include all labor and material(s) to extend hydrant as necessary to meet finish breakaway flange. Extensions required due to extra depth of water main, and as approved by PSAA.
12. Payment for "Excavate and Backfill for Water Service Tap and Lead" shall include, but not be limited to; all labor, material, and equipment costs necessary to excavate, backfill, and compact the water service trenches; expose and backfill the new water main; and proper properly dispose off-site of all excess excavated materials. Also included is the Work required to schedule and coordinate with City of Ann Arbor personnel for transferring and/or installing new water services. Measurement will be in lineal feet for the length from the new or existing water main, to the curb stop and box or the location where the water services are to be reconnected to the existing water service.
13. Payment for "Water Structure Cover" of the type specified shall include all labor materials and equipment needed to furnish and install the structure cover, exclusive of the structure frame.
14. Payment for "Water Structure Cover, Adjust" shall include all labor, material and equipment necessary to raise a structure frame and cover not more than 6 inches or lower them not more than 12 inches. Adjusting covers includes saw cutting, removing and replacing pavement; furnishing and installing a structure frame; reuse of the existing cover; and furnishing, installing and compacting granular backfill material as necessary. Payment for furnishing a new structure cover will be paid for as "Water Structure Cover."

15. Payment for "Sacrificial Anode, ___- pounds" includes all labor, material, and equipment costs to install the item as specified in Article 3 (Water), of these Standards.
16. Payment for "Monument Box, Adjust", "Curb Box, Adjust" and "Gate Box, Adjust" shall include all labor, material and equipment necessary to adjust the box which may include 2 ft diameter saw cutting, removing and replacing pavement; furnishing and installing a structure frame; reuse of the existing cover; and furnishing, installing and compacting granular backfill material as necessary. Payment for furnishing a new gate box cover will be paid for as "Gate Box Cover."
17. Payment for "Gate Box Cover" of the type specified shall include all labor materials and equipment needed to furnish and install the gate box cover.

PP. Line Stops

1. The completed work as measured for the following pay items shall be paid for at the contract unit price for the following contract item (pay item):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Temporary Water Main Line Stop, ___ In.	Each
Temporary Water Main Line Stop, Additional Rental Day.....	Each

2. All work shall be paid in full at the contract unit prices which shall include all the labor, materials, and equipment required to perform the work as detailed herein. This shall also include all required costs associated with night time work, furnishing and operating supplemental lighting, and all other required elements of the work.
3. The work shall include, but not be limited to; pavement saw cutting; excavation and proper disposal off-site of excavated material; the furnishing, installation, and removal of sheeting and/or shoring where needed; the furnishing, placement and compaction of approved bedding and backfill materials; furnishing and placing suitable, clean, gravel to create a stable working surface at the bottom of the excavation; de-watering; pipe cleaning, measuring, and performing all advance work necessary to prepare for the installation of the line stop; the removal of all materials and equipment associated with the work when no longer needed; and any other items needed to complete the work as detailed on the plans and as specified herein.
4. Temporary line stops include removing line stop at completion, all barricading and traffic control; and furnishing and installing backfill.

5. The temporary line stop, additional day rental shall commence after the first 24-hours of line stop usage, and paid for each 24-hour period thereafter.

QQ. Sanitary Sewer

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
___ In., SDR 26 PVC Sanitary Sewer, SD-TD-2	Foot
___ In., ES VCP Sanitary Sewer, SD-TD-2	Foot
___ In., CL _ RCP Sanitary Sewer, SD-TD-1	Foot
___ In., PC ___ DIP Gravity, SD-TD-1	Foot
___ In., SDR 26 Sanitary Service Wye.....	Each
___ In., CL__ RCP Sanitary Service Wye	Each
___ In., ES VCP Sanitary Service Wye	Each
___ In., SDR 26 PVC Sanitary Service Lead, SD-TD-2	Foot
Sanitary Manhole, ___ In. Dia., (0-8'deep).....	Each
Sanitary Manhole, ___ In. Dia., Additional Depth	Foot
Sanitary Manhole Over Existing ("Doghouse"), ___ In. Dia.....	Each
Sanitary Manhole Drop Connection, ___ In.	Foot
Sanitary Structure Cover	Each
Sanitary Structure Cover, Adjust	Each
Sanitary Sewer Tap, ___ In. Dia.....	Each
Pipe Undercut & Backfill, Sanitary	Cubic Yard

2. Sanitary Sewer as specified shall be measured in place by length in lineal feet (LF) from center of manhole to center of manhole. Sanitary Service Leads as specified shall be measured in place by length in lineal feet (LF) from service wye to tie-in. Payment will include, but not be limited to; excavation; furnishing the pipe; risers and fittings; all labor, material, and equipment needed for furnishing and installing sewer; removal and proper off-site disposal of all excess or unsuitable excavated material; any needed sheeting, shoring and bracing; the installation of water-tight plugs; protection of all existing utilities and service connections; furnishing and installing pipe bedding and backfilling as specified herein; furnishing an approved geotextile separator where specified; cleaning; video inspection; and testing.

3. “___ In. Dia., _____ Sanitary Service Wye,” shall be paid for based on each wye installed. The payment for the service wye will include the material, equipment and labor costs for the connection of the riser or lead to the wye. Also, the payment for the service wye will include the material, equipment and labor costs for: the excavation, removal, and proper disposal off-site of all excess or unsuitable excavated material; any needed sheeting, shoring and bracing; the installation of water-tight plugs; protection of all existing utilities and service connections; pipe bedding; by-pass pumping; backfilling; cleaning; testing; placing the plug or cap placed on the wye, riser or lead; and, the required wooden stake to locate the riser or lead in the future.
4. “Sanitary Manhole, ___ In. Dia., (0-8’deep)” will be paid for at the Contract unit price for each unit installed. Payment includes but is not limited to furnishing the labor, equipment and materials for all necessary excavation; any needed sheeting, shoring and bracing; properly disposing off-site of all surplus or unsuitable excavated material; backfilling and compaction; frame and structure cover; and, constructing the structure complete, including pipe connections and structure cleaning, up to 8 feet of structure depth. A standard depth sanitary manhole shall be considered to be 8 feet or less in depth from the inside bottom of the structure to the top of the cover.
5. Payment for “Sanitary Manhole, ___ In. Dia., Additional Depth” includes, but shall not be limited to furnishing the labor, equipment, and materials for all necessary excavation; any needed sheeting, shoring and bracing; disposing of surplus excavated material; backfilling and compaction; and constructing the structure complete, including pipe connections and structure cleaning, for the portion of the structure which is deeper than 8 feet. Payment for adjusting of manhole frames and covers shall be included in payment for ““Sanitary Manhole, ___ In., Dia., (0-8’deep)” and the manhole frames and covers will be paid for separately.
6. Payment for “Sanitary Manhole Over Existing (“Doghouse”), ___ In. Dia” shall include all work required to design and construct the manhole structure over and around the existing sewer pipe, including but not limited to: field investigation of existing sewer pipe, design of the manhole structure and appurtenances, submitting shop drawings to the PSAA for review and approval, fabricating and constructing the doghouse style manhole structure over and around the existing sewer pipe, constructing a concrete base for the manhole structure, furnishing and installing the manhole access riser structure with frame and cover, removal of portions of the existing sewer pipe within the new manhole structure, benching, connections into

the manhole structure for sanitary outlet pipes with associated flow channels, temporary or final grade adjustments of the manhole riser structure, and all associated earthwork and backfill.

7. Payment for "Sanitary Manhole Drop Connection, ___ In.," shall be based on vertical feet (Ft) installed from the invert of the drop connection pipe in the manhole to the invert elevation of the upper pipe in the same manhole. Payment includes but shall not be limited to: furnishing all labor, equipment and materials for all necessary excavation; any needed sheeting, shoring and bracing; proper removal and disposal off-site of surplus and unsuitable excavated material; pipe, fittings, and concrete; backfilling and compaction; and, connections needed to complete this item of work.
8. Payment for "Sanitary Structure Cover" of the type specified shall include all labor, materials and equipment needed to furnish and install the structure cover, exclusive of the structure frame.
9. Payment for "Sanitary Structure Cover, Adjust" shall include all labor, material and equipment necessary to raise a structure frame and cover not more than 6 inches or lower them not more than 12 inches. Adjusting covers includes saw cutting, removing and replacing pavement; furnishing and installing a structure frame; reuse of the existing cover; and furnishing, installing and compacting granular backfill material as necessary. Payment for furnishing a new structure cover will be paid for as "Sanitary Structure Cover."
10. "Sanitary Sewer Tap, ___ In. Dia.," shall be paid for new connections or new hole to an existing structure. When tapping an existing structure, a minimum opening of the entering pipe's outside diameter plus 6 inches shall be cut into the receiving structure. A minimum 3-inch mortar layer shall be packed completely around the entering pipe and struck smooth with the inner wall of the pipe or structure. Pipe passing through the pipe or structure wall shall extend into structures a minimum of ½ inch and a maximum of 3 inches. The entering pipe on the outside portion of the connection shall be encased to provide sufficient bearing under the pipe. Payment of the unit price for this item of work shall include all labor, material, and equipment costs.

11. Payment for "Pipe Undercut & Backfill, Sanitary" will be based on cubic yards (CY) as measured compacted in place. Payment will include the additional excavation, placement of backfill material compacted in place, and all related work. 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. 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. No adjustment in Contract Unit Price will be allowed for any increase or decrease in the quantity of undercut and refill actually constructed.

RR. Sewer and Manhole Rehabilitation

1. The completed work as measured for the following pay items shall be paid for at the contract unit prices for the following contract items (pay items):

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Clean Sanitary Sewer, ___ In. Dia.....	Lineal Foot
Televise Sanitary Sewer, ___ In. Dia.....	Lineal Foot
CIPP Liner ___ In. Dia., Sanitary Sewer.....	Foot
Preliner ___ In. Dia., Sanitary Sewer	Foot
Internal Chimney Seal	Each
External Chimney Seal.....	Each
Chemical Grouting	Gallon
Cementitious Manhole Liner.....	Vertical Foot
Epoxy Manhole Liner	Foot
Reconstruction Flow Channel	Each

2. Payment for "Clean Sanitary Sewer, ___ In. Dia." includes accessing the manhole, cutting and removing roots and mineral deposits, cleaning and removing all deposits, and removal and disposal of all debris.
3. Payment for "Television Inspection, Sanitary Sewer, ___ In. Dia." includes closed circuit television inspection of sewer from manhole to manhole including reverse setup when required due to obstruction.
4. Measurements shall be from manhole to manhole, and shall take place with both the ENGINEER and the CONTRACTOR (or their agents) present. Measurements shall be recorded and logged on a daily basis.

5. Rehabilitation of sanitary sewer will be paid for at the contract unit price per lineal foot. The contract unit price paid shall be payment in full for all labor, material, and equipment required for rehabilitation of existing sanitary sewers by insertion of a CIPP liner and shall include, but is not limited to; furnishing, transporting, preparing, and installing the structural pipe liner and CIPP end seals; furnishing and installing remote temperature sensing devices; reconnecting existing sewers or leads; performing any needed liner repairs; gaining access to work site; removal and replacement of site improvements; pre- and post-lining sewer television inspection; all required warranty work; and all other work and items necessary to complete the Work.
6. Internal and External Chimney Seal includes all excavation, preparation of surface, furnishing and installing sealing materials, cleanout of structure, and cleanup and restoration of the site of the work.
7. Payment for Chemical Grouting of manholes will be per gallon of chemical grout pumped thru the manhole wall to seal the manhole. Payment includes all preparation, patching, sealing, injecting grout, and cleanup.
8. Manhole Liner of the type specified includes all preparation of surface, sealing and stopping leaks, furnishing and installing liner materials, and cleanup and restoration of the site of the work.
9. "Reconstruction Flow Channel" includes all labor, material and equipment necessary to remove existing loose, deteriorated, or broken concrete; preparation of surface; and construction of new flow channel.