HIDALGO COUNTY DRAINAGE DISTRICT No. 1
STANDARD SPECIFICATIONS BOOK

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SECTION 01181
PRIVATE UTILITIES

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for areas of work involving private utility companies including, but not limited to the following:
   1. Telephone Companies.
   2. Gas Companies.
   3. Power (Electric) Companies.
   4. Cable Television Companies.
   5. Pipeline Companies.

1.2 NOTIFICATIONS

A. Notify private utilities of proposed work at least 48 hours prior to starting work at site.
B. The following organizations provide construction notification services for member companies:
   1. DIG-TESS
      1-800-DIG-TESS
      1-800-344-8377

1.3 UTILITY RELOCATIONS

A. Where relocation of utility work is necessary for construction purposes, coordinate the relocations with the Engineer prior to start of work.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 01270
MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for measurement and payment procedures, conditions for nonconformance assessment and nonpayment for rejected products.

1.2 MEASUREMENT

A. Measurement methods delineated in individual Sections are intended to complement the criteria of this Section. In the event of conflict, the requirements of the individual Section governs.
B. Take measurements and compute quantities accordingly.
C. Provide equipment, workers and survey personnel as necessary to perform the measurement.

1.3 UNIT QUANTITIES

A. Quantity and measurement estimates stated on the Unit Price Schedule are for contract purposes only.
B. If greater or lesser quantities are required than those quantities indicated in the Unit Price Schedule, provide the required quantities at the unit prices contracted.
C. Measurement by Volume: Measure by cubic dimension.
D. Measurement by Area: Measure by square dimension.
E. Linear Measurement: Measure by linear dimension, at the item centerline or mean chord.
F. Unit Price Measurement: Measure by unit designated on the Unit Price Schedule.

1.4 PAYMENT

A. Payment includes: Full compensation for required supervision, labor, products, tools, equipment, plant, transportation, services and appurtenances; erection, application or installation of an item of the work; and Contractor's overhead and profit.
B. Total compensation for required work shall be included in the unit price bid on the Unit Price Schedule. Claims for payment of work not specifically covered in the list of unit prices contained in the Unit Price Schedule will not be accepted.
C. Progress payments will be based on the Engineer's observations and evaluations of quantities incorporated in the work multiplied by the unit price.

D. Final payment for pay items governed by unit prices will be made on the basis of actual measurements and quantities determined by the Engineer, multiplied by the unit price for the pay item which is incorporated in or made necessary by the work.

E. Prepare and submit an Application for Payment for work completed and not previously paid. The application at a minimum shall include the following:
   1. Application for Payment: The application will be in a form acceptable to the Engineer. A sample form will be provided to the Contractor.
   2. Construction Schedule: See Section 01325 – Construction Schedules, General Form and Contents of Schedules.
   3. Contractor Payroll Certificate: See Prevailing Wage Rates. (If applicable).
   4. Pollution Prevention Plan (PPP) Reports: See Storm Water Pollution Prevention Plan. (if applicable)
   5. Quantity supporting documents include: plotted and tabulated cross-sections, quantity calculations or suppliers' invoices, etc.
   6. Application supporting documents and submittal items are provided to verify products, regulations and contract requirements are being met. Application supporting documents include: field obtained data, truck volume tickets, truck weight tickets, seed and fertilizer tags, pesticide use records, etc. and other supporting documents as they may be necessary or required by Contract Documents.

F. Incomplete Applications for Payment will not be processed and will be returned to the Contractor.

1.5 NONCONFORMANCE OF WORK

A. Remove and replace the work, or portions of the work, not conforming to the Contract Documents.

B. If, in the opinion of the Engineer, it is not practical to remove and replace the work, the Engineer will direct one of the following remedies:
   1. The nonconforming work will remain as is, but the unit price will be adjusted to a lower price at the discretion of the Engineer.
   2. The nonconforming work will be modified as authorized by the Engineer, and the unit price will be adjusted to a lower price at the discretion of the Engineer, if the modified work is deemed to be less suitable than originally specified.

C. Individual Sections may modify these options or may identify a specific formula or percentage price reduction.

D. The authority of the Engineer to assess the nonconforming work and identify payment adjustment is final.

1.6 NONPAYMENT

A. Payment will not be made for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable to

Engineer.

2. Products determined as nonconforming before or after placement.
3. Products placed beyond the lines and levels of the required work.
4. Products remaining on hand after completion of the work, unless specified to remain.
5. Loading, hauling and disposing of rejected products.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 01292
SCHEDULE OF VALUES

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes the requirements for the submittal of a Schedule of Values.
B. Prepare and submit a Schedule of Values for major pay items when partial payments are requested. Use the Schedule of Values only as a basis for Application for Payment.
C. Refer to Section 01270 – Measurement and Payment.

1.2 SUBMITTALS

A. Refer to Section 01330 – Submittal Procedures.
B. Submit the Schedule of Values to the Engineer for review and approval.
C. After review by the Engineer, revise and resubmit the Schedule of Values, if required. The initial Application for Payment will not be processed until the Schedule of Values is approved.
D. During review, the Engineer may request additional documentation to support the data on the Schedule of Values.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 01325
CONSTRUCTION SCHEDULES

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for preparation, submittal and associated revisions of a construction schedule and the monthly submittal of an updated progress schedule.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.
D. Payments for progress meetings are incidental to site preparation and restoration.

1.3 GENERAL FORM AND CONTENTS OF SCHEDULES

A. Provide progress schedule in the form of a horizontal bar chart (Gantt Chart). Provide a Critical Path Method (CPM) schedule where required for complex projects or where scheduling is critical.

1.4 SUBMITTALS

A. Submit the initial construction schedule prior to beginning work.
B. Submit a revised construction schedule showing current and estimated future progress with each Application for Payment request. Applications for Payment will not be processed without the revised construction schedule.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION

3.1 PROGRESS MEETINGS

A. Meet with the Engineer 1 week prior to each scheduled Application for Payment to discuss progress and corrective action. Meetings are required for contracts with 120 or more calendar days and are also required for contracts behind schedule as determined by the Engineer.

END OF SECTION

SECTION 01328
CONSTRUCTION SURVEYING

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for construction surveying, construction staking and the coordination of the control with the Engineer.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 STANDARDS

A. Utilize recognized survey practices as published by the Texas Board of Professional Land Surveying.

1.4 CONTROL

A. Horizontal and vertical control and right-of-way monuments, as shown on the Plans, will be marked in the field at the direction of the Engineer.
B. Preserve control and right-of-way points. Where control points are in areas of construction, offsets or set supplemental control points will be established by the Contractor at no cost to the District. Notify the Engineer prior to performing work that will disturb project control.
C. Provide construction surveying and construction staking necessary to establish the line and grade of the proposed work from the control points.

1.5 ACCEPTANCE OF CONTROL

A. Notify the Engineer of any discrepancies discovered in the locations of survey control points prior to starting work.

1.6 DAMAGED MONUMENTATION

A. Re-establish property corners and right-of-way monumentation damaged or destroyed by the Contractor at no cost to the District. Perform the survey work to the tolerances of a “Category 1A – Land Title Survey” as set forth in the TSPS Manual of Practice for Land Surveying in Texas. All survey work shall adhere to the current Act and Rules of the Texas Board of Professional Land Surveying.
B. Report promptly to the Engineer the loss or destruction of any reference points or boundary monumentation.
C. Reimburse the District for the cost to reestablish permanent reference points disturbed by Contractor’s operations.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 01330
SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes procedures for the submittals identified by the Contract Documents.

1.2 SUBMITTAL PROCEDURES

A. Deliver available submittals to the Engineer at the Pre-Construction meeting. Allow no less than 14 calendar days for initial review of submittals by the Engineer. The Engineer will review and return submittals as expeditiously as possible, but the amount of time required for review will vary depending on the complexity and quantity of data submitted. This time for review shall in no way be justification for delays or additional compensation to the Contractor. Allow time to make delivery of material or equipment after the submittal is approved.

B. Submit 2 copies of documents unless otherwise specified.

C. The Engineer's review of submittals covers only general conformity to the Contract Documents. Quantities will not be reviewed or verified by the Engineer. Contractor is responsible for errors, omissions or deviations from Contract Documents. Review of submittals in no way relieves the Contractor from obligation to furnish required items according to the Contract Documents.

D. Revise and resubmit submittals as required. Identify all changes made since previous submittal.

E. The Contractor shall assume the risk for material or equipment that is fabricated or delivered prior to approval. No material or equipment shall be incorporated into the work or included in periodic progress payments until approval has been obtained in the specified manner.

F. Submittal Numbering:
   1. Transmit each submittal to the Engineer.
   2. Identify each submittal by project I.D., submittal number, section number and pay item number.
   3. Sequentially number each submittal beginning with the number 1. Resubmittals shall use the original number followed with an alphabetic suffix (i.e., 2A for the first resubmittal of Submittal 2 or 15C for the third resubmittal of Submittal 15). Each submittal shall only contain one type of work, material or equipment. Mixed submittals will not be accepted.
   4. Identify variations from requirements of Contract Documents and identify product or system limitations.

G. Contractor's Stamp: Apply Contractor's stamp, certifying that the items have been reviewed in detail and are correct and in accordance with Contract Documents, except as noted by any requested variance.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 01422
REFERENCE TECHNICAL STANDARDS

PART 1 – GENERAL

1.1 SUMMARY

A. Reference to various technical standards as published by technical societies, national and state associations or other authorities is made in the Contract Documents. The abbreviations along with the titles are listed below.

1.2 ABBREVIATIONS

AALA – American Association of Laboratory Accreditation.
AASHTO – American Association of State Highway and Transportation Officials.
ACI – American Concrete Institute.
AISC – American Institute of Steel Construction.
ANSI – American National Standards Institute.
ASTM – American Society for Testing Materials International.
AWS – American Welding Society.
AWPA – American Wood-Preservers' Association.
CPMB – Concrete Plant Manufactures Bureau.
CRSI – Concrete Reinforcing Steel Institute.
OSHA – Occupational Safety and Health Administration.
TSPS – Texas Society of Professional Surveyors.
TxDOT – Texas Department of Transportation

1.3 GOVERNING VERSION – Not used

1.4 CONTRACTUAL OBLIGATIONS

A. The technical standards are referenced for technical specifications only. Certain technical standards contain or imply contractual obligations. These obligations are void if they conflict with the Contract Documents.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 01457
CONSTRUCTION TESTS AND INSPECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for tests and inspection.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 ACCESS TO WORK

A. The District, the Engineer, engineer's consultants, other representatives and personnel of the District, independent testing laboratories and governmental agencies with jurisdictional interests shall have access to the work at reasonable times for their observation, inspection and testing. Provide proper and safe conditions for such access and advise of site safety procedures and programs.

1.4 TESTS AND INSPECTIONS

A. Testing and Inspection includes, but is not limited to, services of a construction materials engineering laboratory or other agent employed by the District, to perform laboratory testing, field testing or examinations required in the Contract Documents.
B. The District will employ and pay for testing as noted above. Exceptions include, but are not limited to, the following:
    1. Arrange, obtain and pay for inspections, tests and approvals required by laws and regulations of other public bodies having jurisdiction. Transmit to the Engineer the required certificates of inspection or approval.
    2. Arrange, obtain and pay for inspections, tests or approvals required for acceptance of materials or equipment. This includes expenses surrounding materials, mix designs or equipment submitted for approval for incorporation in the work.

3. Perform retest or inspection of the corrected defective work at no cost to the District.

C. Retests that are required to verify the adequacy of reworked areas or work performed for the Contractor's convenience will be deducted from the Contractor's final payment.
D. Provide Engineer 24 hour notice of readiness of the work for inspections, tests or approvals and cooperate with inspectors and testing personnel to facilitate required inspections or testing.
E. Inspections and tests performed for either Engineer or Contractor shall be performed by an independent testing laboratory listed and qualified to provide the service to Hidalgo County Drainage District No. 1.
F. Acceptance of tests or inspections in no way relieves the Contractor of obligation to furnish required work in accordance with the Plans and Specifications.

1.5 SUBMITTALS

A. Submit testing laboratory or examination reports, as specified or required, dated, signed and sealed by a Licensed Professional Engineer in the State of Texas accepting technical responsibility for the report. The work performed by the laboratory shall be covered by a report that accurately, clearly and unambiguously presents the test or examination results and other relevant information in accordance with the criteria for accreditation used by the American Association for Laboratory Accreditation (AALA).

1.6 LIMITS OF AUTHORITY

A. The testing laboratory is not authorized to:
   1. Release, revoke, alter or enlarge on requirements of the Contract Documents.
   2. Approve or reject any portion of the work.
   3. Perform any duties of the Contractor.
   4. Stop the work.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 01554
EMERGENCY ACTION PLAN & STOP LOGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Section includes requirements of an Emergency Action Plan (EAP) to address contingency plans in the event of damage to the floodway.
B. Section includes furnishing and installation of stop logs, guide frames and stop log lifters as shown on the plans and as specified herein.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 SUBMITTALS

A. Conform to requirements of Section 01330 – Submittal Procedures.
B. Additionally, provide the following information to confirm compliance with the specification of stop logs:
   1. Complete description of all materials including the material thickness of all structural components of the stop logs, guide frames, and stop log lifter.
   2. Installation drawings showing all details of construction, details required for installation, dimensions and anchor bolt locations.
   3. Maximum bending stress/deflection of the stop logs under the maximum design head.
   4. Name of the principle manufacturing facility.

1.4 EMERGENCY ACTION PLAN

A. The EAP document should include the following:
   1. Discussion of procedures for timely and reliable detection.
   2. Classification (level of emergency).
   3. Response procedure to a potential emergency condition.
   4. Contact personnel and agencies including primary and secondary telephone numbers.
   5. Contractor's hierarchy of responsible personnel.
   6. Traffic control measures.
   7. Identification of resources to be available on or near project site in event of damage to the floodway.
B. The EAP document should be:
   1. Approved by the IBWC and/or other agencies listed on the plans.

2. Dated, signed and sealed by a Licensed Professional Engineer.

1.5 QUALITY ASSURANCE OF STOP LOGS

A. All of the equipment specified under this Section shall be furnished by a single manufacturer with a minimum of 20 years' experience designing and manufacturing stop logs.
B. The specification is based on Aluminum Stop Logs as manufactured by Waterman Valve of Exeter, CA.

PART 2 - PRODUCTS

2.1 STOP LOGS GENERAL

A. Stop log assemblies shall be as specified herein and have the characteristics and dimensions shown on the Contract Drawings.
B. Leakage shall not exceed 0.05 gpm/ft of wetted seal perimeter.
C. The stop logs shall be provided with a continuous resilient seal along the bottom edge of each stop log. Vertical seals shall be mechanically fastened to the guide frame rails.
D. Stop logs shall be of the height as shown in the Contract Drawings and they shall be designed to function properly when stacked in any order.
E. Stop logs shall be designed to be self-draining, non-buoyant and to drop into place under their own weight without any downward pressure necessary.
F. All structural components of the stop logs shall be fabricated of aluminum and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.
G. All structural components of the guide frames shall be fabricated of aluminum and/or stainless steel and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.
H. All welds shall be performed by welders with AWS certification.
I. Finish: Mill finish on aluminum and stainless steel. All aluminum in contact with concrete shall be field coated by the contractor with a heavy coat of bitumastic paint. Welds on aluminum shall be cleaned to provide a uniform finish. Welds on stainless steel shall be passivated to remove weld burn and scale.
J. Materials:

Components	Materials
Frame Guides and Invert	Stainless Steel, Type 304L, Type 316L, ASTM A240, A276 Aluminum, Alloy 6061-T6, ASTM B 209, B308
Stop Logs	Aluminum, Alloy 6061-T6, ASTM B 209, B308
Lip Seal	Neoprene ASTM D-2000, EPDM
Anchor Studs, Fasteners and Nuts	Stainless Steel, Type 316, ASTM A276, F 593, F594

2.2 FRAME GUIDES

A. The frame guides or grooves and invert member shall be constructed of stainless steel or extruded aluminum with a minimum thickness of 1/4-inch.
   1. Frame design shall allow for embedded mounting or mounting directly to a wall with stainless steel anchor bolts and grout. Mounting style shall be as shown on the Contract Drawings.
   2. An invert member shall be provided across the bottom of the guides. The invert member shall be of the flush bottom type.

2.3 STOP LOGS

A. The stop logs shall be constructed of extruded aluminum shapes with a minimum thickness of 1/4-inch.
   1. Each stop log height shall be as indicated on the Contract Drawings.
   2. Maximum bending stress shall not exceed 7600 psi at the maximum operating head.
   3. Maximum deflection shall not exceed 1/360 of stop log span at the maximum operating head.
   4. Each stop log shall be provided with 2 alignment pins to ensure log stack alignment in service.
   5. Adequate drainage shall be provided for each stop log.
   6. Two slots shall be provided in the top of each stop log for removal and installation via the stop log lifter.
   7. Each stop log shall be outfitted with an identification tag indicating the manufacturer.

2.4 SEALS

A. Each stop log shall be outfitted with a continuous resilient lip seal along the bottom edge of each log.
   1. The continuous lip seal shall be constructed of rubber or EPDM and shall be mechanically retained to the stop log.
   2. The lip seal shall be activated by a combination of the weight of the stop log and the differential water pressure, which pushes the seal against the inside of the groove assembly.
   3. Stop logs that utilize rubber “J” seals or “P” seals are not acceptable.

2.5 LIFTER

A. One stop log lifter shall be provided for each different guide frame width.
   1. The lifter shall be constructed of (aluminum) (painted mild steel) (stainless steel) and shall be outfitted with UHMW guide bars and stainless-steel fasteners.

2. The lifter shall be provided with lifting hooks designed to automatically engage lifting pins through the slots in the top of the stop logs. A lanyard release will be incorporated into the design.
3. The lifter shall be capable of installing and removing all stop logs of the same width whether they are installed or at the operating floor level.

2.6 STORAGE RACKS

A. Storage racks, if shown on the Contract Drawings, shall be provided to house stop logs while they are not in use.
   1. Storage racks shall be constructed of aluminum, painted mild steel or stainless steel and shall be mounted, as shown on the Contract Drawings.

2.7 ANCHOR BOLTS

A. Anchor bolts shall be provided by the stop log manufacturer for mounting the guide frames and storage racks (if applicable).
   1. Quantity and location shall be determined by the stop log manufacturer.
   2. If epoxy type anchor bolts are provided, the stop log manufacturer shall provide the studs and nuts.
   3. For surface mount installations, anchor bolts shall have a minimum diameter of ½ inch. For embedded mount installations, anchor bolts shall have a minimum diameter of 3/8 inch.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation of the stop logs, guide frames and appurtenances shall be done in a workmanlike manner. It shall be the responsibility of the contractor to handle, store and install the equipment specified in this Section in strict accordance with the manufacturer's recommendations.
B. The contractor shall review the installation drawings and installation instruction prior to installing the guide frames.
C. The guide frames shall be installed in a true vertical plane, square and plumb.
D. The contractor shall fill the void in between the guide frames and the wall with non-shrink grout as shown on the installation drawing and in accordance with the manufacturer’s recommendations.

3.2 FIELD TESTING

A. After installation, all stop logs shall be field tested in the presence of the engineer and owner to ensure that all items of equipment are in full compliance with this Section. The stop logs shall be inserted into the guide

frames to confirm that they operate in accordance with the specification. Each stop log assembly shall be water tested by the contractor, at the discretion of the engineer and owner, to confirm that leakage does not exceed the specified allowable leakage.

END OF SECTION

SECTION 01555
TRAFFIC CONTROL AND REGULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Requirements for signs, signals, control devices, traffic barriers, flares, lights and traffic signals; construction parking control, designated haul routes, and bridging of trenches and excavations.
B. Qualifications and requirements for use of flagmen.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule, and the following schedule
   1. Traffic control and regulation. Payment for traffic control and regulation is on a lump sum basis. Include preparation and submittal of traffic control plan if different than shown on Drawings, and provision of traffic control devices, equipment, and personnel necessary to protect the Work and public. Payment will be based on Contractor's Schedule of Values for traffic control and regulation.
   2. Payment for traffic control for wastewater or water line projects will be authorized by the Engineer in three (3) parts. Partial payment will be made according to following schedule:
      a. Payment of 25 percent of traffic control amount will be authorized when permanent control devices and necessary temporary markings, sufficiently deployed along job site as required to maintain progress of work, are installed at job site and approved. This limiting percentage will be prorated based upon extent of Contractor's setup.
      b. A payment of 50 percent of traffic control amount will be authorized when pavement replacement commences. This limiting percentage will be prorated based upon linear footage, as measured along centerline axis of wastewater or water line, of pavement replaced.
      c. A payment of 25 percent of traffic control amount will be authorized when permanent pavement markings are restored

and all unnecessary permanent and temporary control devices removed. This limiting percentage will be prorated based upon the extent of restoration.

3. Flagmen: Measurement is on a lump sum basis for flagmen as required for the project. The amount invoiced shall be determined based on the schedule of value submitted for flagmen.
4. New Portable Concrete Low-Profile Traffic Barrier Provided. Payment is on a unit price basis for each linear foot of low-profile traffic barrier provided, installed with hardware assemblies and connected together in accordance with the approved traffic control plan.
5. Portable Concrete Low-Profile Traffic Barrier Installed. Payment is on a unit price basis for each linear foot of low-profile traffic barrier delivered to the project location, installed with hardware assemblies and connected together in accordance with the approved traffic control plan.
6. Portable Concrete Low-Profile Traffic Barrier Moved and Reset. Payment is on a unit price basis for each linear foot of low-profile traffic barrier disassembled, moved on the project, reset at the new locations and connected together. Include cost to repair roadway in the unit price.
7. Portable Concrete Low-Profile Traffic Barrier Removed. Payment is on a unit price basis for each linear foot of low-profile traffic barrier removed from the project, including hardware assemblies, and stockpiling at location. In general, the Contractor shall provide, install, move, replace, clean, and remove upon completion of work all barricades, signs, cones, lights, and/or traffic control devices as directed.

C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 REFERENCES

A. Texas Manual on Uniform Traffic Control Devices (TMUTCD)
B. Article 4413 (29bb), commonly referred to as Private Investigators and Private Security Agencies Act, and Article 2.12, Texas Code of Criminal Procedure.

1.4 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.
B. Traffic control plan:
   1. If using traffic control plan contained in the Contract without modification, submit a letter confirming use of the plan.
   2. If using a different traffic control plan, submit the plan for approval. The plan must conform to TMUTCD requirements and be sealed by a Registered Texas Professional Engineer.
C. Submit copies of approved lane closure permits issued by Hidalgo County Planning Department.

D. Submit Schedules of Values for traffic control plan and flagmen within 30 days following Notice to Proceed.

PART 2 - PRODUCTS

2.1 SIGNS, SIGNALS, AND DEVICES

A. Comply with TMUTCD requirements.
B. Traffic cones and drums, flares and lights: Conform to local jurisdictions' requirements.

PART 3 - EXECUTION

3.1 PUBLIC ROADS

A. Submit requests forms for lane closure and sidewalk closure to the Hidalgo County Planning Department at least three working days prior to need for blocking vehicular lanes or sidewalks. Do not block lanes or sidewalks without approved permits. Obtain application from the Hidalgo County Planning Department at 1304 S. 25th St.
Edinburg, TX 78539 or at the following internet address:
https://www.hidalgocounty.us/261/Planning
B. Follow laws and regulations of governing jurisdictions when using public roads. Pay for and obtain permits from jurisdiction before impeding traffic or closing lanes. Coordinate activities with the Engineer.
C. Give the Engineer one-week notice before implementing approved traffic control phases. Inform local businesses of impending traffic control activities.
D. Notify police department, fire department, and local schools, churches, and businesses in writing a minimum of five business days prior to beginning work.
E. Maintain 10-foot wide all-weather lanes adjacent to the Work for emergency vehicle use. Keep all-weather lanes free of construction equipment and debris.
F. Do not to obstruct normal flow of traffic from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. on designated major arterials or as directed by the Engineer.
G. Maintain local driveway access to residential and commercial properties adjacent to work areas at all times. Use all-weather materials approved by the Engineer to maintain temporary driveway access to commercial and residential driveways.
H. Keep streets entering and leaving job site free of excavated material, debris, and foreign material resulting from construction operations in compliance with applicable ordinances.
I. Remove existing signage and striping that conflict with construction

activities or that may cause driver confusion.

J. Provide safe access for pedestrians along major cross streets.
K. Alternate closures of cross streets so that two adjacent cross streets are not closed simultaneously.
L. Do not close more than two consecutive esplanade openings at a time without prior approval from the Engineer.

3.2 CONSTRUCTION PARKING CONTROL

A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and the local City's, County's, or HCDD No.1's operations.
B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.3 FLARES AND LIGHTS

A. Provide flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.4 HAUL ROUTS

A. Utilize haul routes designated by authorities or shown on drawings for construction traffic.
B. Confine construction traffic to designated haul routes.
C. Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

3.5 TRAFFIC SIGNS AND SIGNALS

A. Construct necessary traffic control devices for temporary signals required to complete the Work including loop detectors, traffic signal conduits, traffic signal wiring and crosswalk signals. Notify the Hidalgo County Planning Department and appropriate Precinct office a minimum of 60 days in advance of need for control boxes and switchgear. The appropriate Hidalgo County Precinct Office will perform necessary service, programming or adjustments, to signal boxes and switchgear if required during construction.
B. Install and operate traffic control signals to direct and maintain orderly traffic flow in areas under Contractor's control affected by Contractor's operations. Post notices, signs and traffic controls before moving into next phase of traffic control.
C. Relocate traffic signs and signals as the Work progresses to maintain effective traffic control.

D. Unless otherwise approved by the Engineer, provide driveway signs with name of business that can be accessed from each crossover. Use two signs for each crossover.
E. Replace existing traffic control devices in Project area.
F. The Engineer may direct Contractor to make minor adjustments to traffic control
G. signage to eliminate driver confusion and maintain orderly traffic flow during construction at no additional cost to the District.

3.6 BRIDGING TRENCHES AND EXCAVATIONS

A. When necessary, construct bridges over trenches and excavation to permit an unobstructed flow of traffic across construction areas and major drives. Use steel plates of sufficient thickness to support H-20 loading and install to operate with minimum noise.
B. Shore trench or excavation to support bridge and traffic.
C. Secure bridging against displacement with adjustable cleats, angles, bolts or other devices when:
    1. bridging is placed over existing bus routes,
    2. more than five percent of daily traffic is comprised of commercial or truck traffic,
    3. more than two separate plates are used for bridging, and
    4. when bridge is to be used for more than five consecutive days.
D. Extend steel plates used for bridging a minimum of 1 foot beyond edges of trench or excavation. Use temporary paving materials such as premix to feather edges of plates to minimize wheel impact on secured bridging.

3.7 REMOVAL

A. Remove equipment and devices when no longer required.
B. Repair damage caused by installation.
C. Remove post settings to a depth of 2 feet.

3.8 TRAFFIC CONTROL, REGULATION AND DIRECTION

A. Use Flagmen to control, regulate and direct an even flow and movement of vehicular and pedestrian traffic, for periods of time as may be required to provide for public safety and convenience, where:
    1. multi-lane vehicular traffic must be diverted into single lane vehicular traffic,
    2. vehicular traffic must change lanes abruptly,
    3. construction equipment must enter or cross vehicular traffic lanes and walks,
    4. construction equipment may intermittently encroach on vehicular traffic lanes and unprotected walks and crosswalk,
    5. traffic regulation is needed due to rerouting of vehicular traffic around

the Work site, and
6. where construction activities might affect public safety and convenience.

B. Use of Flagmen to assist in the regulation of traffic flow and movement does not relieve Contractor of responsibility to take other means necessary to protect the Work and public.

3.9 INSTALLATION STANDARDS

A. Place temporary pavement for single lane closures, in accordance with TMUTCD.
B. Reinstall temporary and permanent pavement markings as approved by the Engineer. When weather conditions do not allow application according to manufacturer's requirements, alternate markings may be considered. Submit proposed alternate to the Engineer for approval prior to installation. No additional payment will be made for use of alternate markings.

3.10 MAINTENANCE OF EQUIPMENT AND MATERIAL

A. Submit name, address and telephone number of individual designated to be responsible for maintenance of traffic handling at construction site to the Engineer. Individual must be accessible at all times to immediately correct deficiencies in equipment and materials used to handle traffic including missing, damaged, or obscured signs, drums, barricades, or pavement markings.
B. Inspect signs, barricades, drums, lamps and temporary pavement markings daily to verify that they are visible, in good working order, and conform with traffic handling plans as approved by the Engineer. Immediately repair, clean, relocate, realign, or replace equipment or materials that are not in compliance.
C. Keep equipment and materials, signs and pavement markings, clean and free of dust, dirt, grime, oil, mud, or debris.
D. Obtain approval of the Engineer to reuse damaged or vandalized signs, drums, and barricades.

END OF SECTION

SECTION 01562
CONSTRUCTION FENCE

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for furnishing, installing, maintaining and removing construction fence.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

PART 2 – PRODUCTS

2.1 FENCE PROPERTIES

A. Provide construction fence comprised of extruded, high-density polypropylene, 4 foot tall minimum and orange in color unless shown otherwise on the Plans. The mesh openings shall be no larger than 3.25 inches by 1.75 inches.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install the construction fence with posts of sufficient size and spacing to insure that the construction fence remains upright throughout its installed length and functions as an effective barrier for the areas designated for protection.
B. Maintain and repair the construction fence throughout the duration of the project, at no cost to the District, to insure that the barrier continuously performs its intended function.

3.2 REMOVAL AND DISPOSAL

A. Remove and dispose of the construction fence upon completion of the project. Refer to Section 02120 – Material Disposal.

END OF SECTION

SECTION 01565
GENERAL SOURCE CONTROLS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for best management practices and care of the work area.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 DEFINITION

A. State Waters: The water of the ordinary flow, underflow, and tides of every flowing river, natural stream, and lake, and of every bay or arm of the Gulf of Mexico, and the stormwater, floodwater, and rainwater of every river, natural stream, and watercourse in the state. State Waters do not include percolating groundwater, diffuse surface rainfall runoff, groundwater seepage, or springwater before it reaches the watercourse.

1.4 PROTECTION OF TREES

A. Heavy equipment, vehicular traffic and stockpiles of construction materials are not permitted within the dripline of any tree designated to remain. Contractor shall avoid all contact with trees to remain unless otherwise directed by the Engineer.
B. Trees to remain, as shown on the Plans or marked onsite, shall be boxed or fenced at the perimeter of the tree's dripline.
C. Tree trunks, exposed roots and limbs of the trees designated to remain which are damaged during construction operations will be cared for as prescribed by an urban forester or licensed tree expert at the expense of the Contractor.
D. Replace trees that were designated to remain which are damaged beyond repair or removed without authorization by the Contractor. Determination of trees damaged beyond repair and the tree's suitable replacement will be made by an urban forester or a licensed

tree expert and approved by the Engineer. Determination and replacement expenses shall be paid for by the Contractor at no additional cost to the District.

E. Provide warranty for survivability of replacement tree(s) for 1 year after planting.

1.5 DUST CONTROL

A. Control dust blowing and movement on construction sites and roads to prevent exposure of soil surfaces, to reduce on and offsite damage, to prevent health hazards and to improve traffic safety.

B. Control dust blowing by utilizing one or more of the following:
   1. Paper or wood mulches bound with natural or chemical binders.
   2. Temporary vegetative cover.
   3. Apply dust suppressants at manufacturer's recommended rate for duration required.
   4. Irrigation by water sprinkling.
   5. Spreading hay.

C. Implement dust controls immediately whenever dust can be observed blowing on the site or as directed by the Engineer.

D. Provide copy of Water Rights Permit from the Texas Commission on Environmental Quality (TCEQ) prior to using State Water.

1.6 EQUIPMENT MAINTENANCE AND REPAIR

A. Confine maintenance and repair of construction machinery and equipment to areas specifically designated for that purpose. Locate and design designated areas so that oils, gasoline, grease, solvents and other potential pollutants cannot be allowed into soils, receiving streams or stormwater conveyance systems. Provide adequate waste disposal receptacles for liquid, as well as, solid waste. Inspect and clean maintenance areas daily.

B. On a site where designated equipment maintenance areas are not feasible, care must be taken during each individual repair or maintenance operation to prevent potential pollutants from becoming available to be washed into streams or stormwater conveyance systems. Provide and use temporary waste disposal receptacles.

1.7 WASTE COLLECTION AND DISPOSAL

A. Refer to Section 02120 – Material Disposal.

B. Provide a plan for the collection and disposal of waste materials on the site. Designate locations for trash and waste receptacles and establish a collection schedule. Specify and carry out methods for ultimate disposal of waste in accordance with applicable local, State and Federal health and safety regulations. Make special provisions for the collection and disposal of liquid wastes and toxic or hazardous materials.

C. Keep receptacles and other waste collection areas neat and orderly. Do not allow waste to overflow its container or accumulate for excessively long periods of time. Locate trash collection points where they will least likely be affected by stormwater runoff.

1.8 PUBLIC ROAD MAINTENANCE

A. Remove soil spilled, dropped, washed or tracked on to public rights-of-way immediately.

1.9 WASHING AREAS

A. Wash vehicles such as concrete or dump trucks and other construction equipment in accordance with current local, State and Federal rules and regulations and, as a minimum, vehicles such as concrete or dump trucks and other construction equipment shall not be washed at locations where runoff will flow directly into a watercourse or stormwater conveyance system. Special areas shall be designated for washing vehicles. These areas should be located where the wash water will spread out and evaporate or infiltrate directly into the ground, or where runoff can be collected in a temporary holding or seepage basin. Construct wash areas with gravel or rock bases to minimize mud generation.

1.10 STORAGE OF CONSTRUCTION MATERIALS, CHEMICALS, ETC.

A. Isolate sites where chemicals, cements, solvents, paints or other potential water pollutants are to be stored, so that they will not cause runoff pollution.
B. Store toxic chemicals and materials, such as pesticides, paints and acids in accordance with manufacturer's guidelines. Protect groundwater resources from leaching by placing a plastic liner or other impervious materials, as approved by the Engineer, on any areas where toxic liquids are to be opened and stored.

1.11 SANITARY FACILITIES

A. Provide construction site with adequate sanitary facilities for workers in accordance with applicable local, State and Federal health regulations.

1.12 INSPECTION REPORTS

A. Best Management Practices (BMP's) must be implemented for sediment Control. Submit Inspection and Maintenance Reports as required.

1.13 PART 2 – PRODUCTS – Not used

1.14 PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 01580
PROJECT SIGNS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for project identification sign installation and maintenance and for SWPPP/BMP (Storm Water Pollution Prevention Plan/Best Management Practices) sign and CSN (Construction Site Notice) holder construction, installation, maintenance and removal.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

PART 2 – PRODUCTS

2.2 PROJECT SIGNS

A. Project identification sign(s) to be installed by the Contractor.
B. SWPPP/BMP Sign:
    1. Place laminated copies of Notice of Intents (NOIs) for Contractor and Owner on front of sign as required.
    2. Post both laminated Storm Water Permits upon receipt.
C. Construction Site Notice Holder(s):
    1. Place laminated Construction Site Notice on front of notice holder.

2.3 SUPPORTS

A. Project Identification Sign:
    1. When required, provide (0.4) pressure treated 12 feet long, 4 inch by 4 inch posts with appropriate hardware. Paint posts white.
B. SWPPP/BMP Sign:
    1. When required, provide (0.4) pressure treated 12 feet long, 4 inch by 4 inch posts. Paint posts white.
C. Construction Site Notice Holder(s):

1. When required, provide (0.4) pressure treated 4 feet long 2 inch by 4 inch lumber to secure notice holder. Paint posts white.

PART 3 – EXECUTION

3.1 CONSTRUCTION

A. SWPPP/BMP Sign:
   1. Construct sign roof from 3 pieces of 1 foot by 5 foot by ¾ inch thick exterior grade (EXT BC) plywood. Stack, fasten together and miter plywood for roof at 45 degree angle. Paint roof white.
   2. Construct sign from 4 foot by 4 foot by ¾ inch thick exterior grade (EXT BC) plywood. Paint sign white.
   3. Staple laminated NOIs to front of sign.
   4. Place 4 foot by 4 foot by ¼ inch clear plexiglass over notices on front of sign. Use ½ inch hot-dipped galvanized bolts, washers and nuts to secure plexiglass and sign to posts per drawing on Stormwater Pollution Prevention Detail Sheet. Use 3 bolts per post.
   5. Seal joint at top between plywood and plexiglass with white exterior grade waterproof caulk.

B. Construction Site Notice Holder(s):
   1. Construct notice holder from 1.5 foot by 1.5 foot by ¾ inch thick exterior grade (EXT BC) plywood. Paint white.
   2. Bolt notice holder to 2 by 4 inch posts with 2 hot-dipped galvanized screws per post. Paint posts white.
   3. Staple laminated Construction Site Notice to front of notice holder.
   4. Place Construction Site Notice holder at each entrance to the construction site.

3.2 INSTALLATION (WHEN REQUIRED)

A. Project Sign(s):
   1. Install Project Identification sign(s), SWPPP/BMP sign and Construction Site Notice holder(s) prior to construction start.
   2. Install, relocate, when required, and maintain all project signs for duration of Project.

B. Install sign(s) at location(s) designated by the Engineer or where shown on the Plans. Position the sign(s) in such a manner as to be fully visible and readable by the general public.

C. Install sign(s) level and plumb.

D. Project Identification Sign(s):
   1. Mount each Project Identification sign on two 12 feet long 4 inch by 4 inch posts; Install in the ground a minimum of 30 inches.

E. SWPPP/BMP Sign:
   1. Drive supports a minimum of 3 feet into ground**.**

F. Construction Site Notice Holder(s):
   1. Drive supports a minimum of 1 foot into ground.

3.3 MAINTENANCE

A. Maintain signs and supports.
B. Report deterioration or damage to the Project Identification sign(s) immediately. At the Engineer's discretion, the Engineer will provide new Project Identification sign(s). If required, install new sign(s) at no cost to the District.
C. Maintenance and replacement of the SWPP/BMP sign and Construction Site Notice holder(s) are the Contractor's responsibility at no additional cost to the District.

3.4 REMOVAL

A. Upon completion of project, remove Project Identification sign(s) and supports. Transport sign and supports to designated location, as directed by the Engineer. Restore the area prior to final payment.
B. Remove and dispose of non-reuseable foundation material. Refer to Section 02120 – Material Disposal.
C. SWPPP/BMP sign and Construction Site Notice holder(s) are to remain in place after final payment, unless directed otherwise by the Engineer.

3.5 SAMPLE SIGN

HIDALGO COUNTY
DRAINAGE DISTRICT NO.1
Raul E. Sesin, P.E., CFM – District General Manager

PROJECT NAME

Hidalgo County Drainage District No.1 Board of Directors

Judge Richard F. Cortez	-	Chairman of the Board
Commissioner David L. Fuentes	-	Board Member
Commissioner Eduardo "Eddie" Cantu	-	Board Member
Commissioner Joe M. Flores	-	Board Member
Commissioner Ellie Torres	-	Board Member

Contractor _____ Engineer: _____ Project Manager: _____

END OF SECTION

SECTION 01785
PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for preparing and maintaining record documents for the project to reflect the construction as built.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 MAINTENANCE OF RECORD DOCUMENTS

A. Maintain at the job site, one copy of:
   1. Contract Documents.
   2. Reviewed Shop Drawings.
   3. Change orders and field orders.
   4. Field test records.
   5. Correspondence.
   6. Notice of Intent (NOI).
   7. Construction Site Notice.
   8. TPDES Storm Water Permit.
   9. Storm Water Pollution Prevention Plan (SWPPP).
   10. Notice of Termination (NOT) as they are filed.
   11. Other Environmental Permits, as required.

B. Store record documents apart from documents used for construction. Do not use record documents for construction purposes. Provide files and racks for orderly storage. Maintain documents in clean, dry, legible and orderly condition. Make documents and samples available at all times for inspection by the Engineer.

1.4 RECORDING

A. Label each document “PROJECT RECORD” in neat, large, printed letters.
B. Mark changes legibly in red pencil or red ink.

C. Keep record documents current.
D. Do not conceal work until required information is recorded.
E. Legibly mark and date Plans to record:
    1. Alignment and profile of the project, location and elevation of appurtenances.
    2. Horizontal and vertical location of underground utilities and appurtenances.
    3. Location of internal utilities and appurtenances referenced to permanent surface improvements.
    4. Field changes of dimension and detail.
    5. Changes made by change order or field order.
    6. Details not on original Plans.
F. Legibly mark specifications and addenda to record:
    1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
    2. Changes made by change order or field order.
G. Legibly annotate, mark and date Shop Drawings to record changes made after approval.

1.5 SUBMITTALS

A. At project completion, deliver record documents to the Engineer. Place letter-sized material in a 3-ring binder, neatly indexed. Bind Plans and Shop Drawings in rolls of convenient size for ease of handling.
B. Accompany submittals with a transmittal letter containing:
    1. Date.
    2. Project title and number.
    3. Contractor's name and address.
    4. Title and number of each record document.
    5. Certification that each document as submitted is complete and accurate.
    6. Signature of Contractor.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 02200
SITE PREPARATION AND RESTORATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for construction preparation and final site restoration.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule and the following schedule
   1. Payment of 70 percent of bid amount: When mobilization is complete, including move-in of major equipment, installation of project signs, and sanitary facilities.
   2. Payment of 30 percent of bid amount: When clean up of project site is complete, including removal of construction debris, temporary facilities, signs and related project appurtenances.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION

3.1 DESCRIPTION

D. The work covered by this Section consists of furnishing all labor, materials, equipment, supplies, supervision, tools, and performing all work necessary for clearing and protection of facilities during construction and top soiling, finish grading, seeding, fertilizing, watering, maintenance, and clean-up of disturbed areas within the individual water plant areas at the completion of work, in accordance with these specifications and as shown on drawings.
E. Fences shall be relocated or installed as shown on drawings. All damage to existing fencing occurring during construction activities shall be repaired or replaced at the Contractor's expense to a condition equal to or better than existing prior to such damage. Fencing relocated for the convenience of accommodating construction activities shall be returned to its original location at the completion of the work.

F. Silt fencing and four (4) foot safety fencing is to be installed as indicated on the plans.
G. All sites shall be restored to a condition equal to or better than that existing prior to construction activities. All holes and open excavations shall be filled and compacted to the density of the surrounding area. Level all washes, ruts, depressions, and mounds to provide a smooth finish with no large debris, dirt clods, or lumps of size that would interfere with the operation of a standard rotary lawnmower.

3.2 GENERAL

A. Protect items designated for preservation from abuse, marring or damage during construction operations.
B. Maintain access and drainage continuously for duration of the project.
C. Remove structures, abandoned utility lines and related obstructions to a depth of 2 feet below the finished grade.
D. Collect tires, batteries, paint cans, oil cans and related debris items on the right-of-way in a location approved by the Engineer, for disposal by others.
E. When Work is finished, remove existing construction signs and reinstall in an approved location when directed by the Engineer.
F. Remove structures, outfall pipes, drainage facilities and other items that may interfere with the construction work or as designated on the Plans.
G. Maintain all-weather access to adjacent facilities that have driveways.
H. Establish and maintain access to the site.
I. Clean up the site.
J. Install, remove, relocate, replace and reinstall fences, barricades or barriers required to secure the site.
K. Secure the site as necessary to perform the Work.

3.3 ABANDONED UTILITY LINES

A. Remove abandoned utility lines that may interfere with the construction work or as designated on the Plans.
B. Notify the utility owner prior to work on such abandoned lines.
C. Plug and abandon utility lines left in place as approved by the Engineer.

3.4 ENCROACHMENTS

A. Remove encroachments into the District's right-of-way that interfere with the construction work or as designated on the Plans.
B. Coordinate with property owners at least 24 hours prior to any work on such encroachments.
C. Place the removed encroachment neatly on the adjacent property.

3.5 PROJECT SIGNS

A. Refer to Section 01580 – Project Signs.

3.6 BACKFILLING

A. Refer to Section 02315 – Excavating and Backfilling.

3.7 DISPOSAL

A. Refer to Section 02120 – Material Disposal.

END OF SECTION

SECTION 02221
REMOVING EXISTING PAVEMENTS, STRUCTURES, WOOD, AND DEMOLITION DEBRIS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Removing concrete paving, asphaltic concrete pavement, brick pavement and base courses.
B. Removing concrete curbs, concrete curbs and gutters, sidewalks and driveways.
C. Removing pipe culverts, sewers, and sewer leads.
D. Removing waterlines and water services lines including asbestos cement pipe per OSHA guidelines.
E. Removing existing inlets and manholes.
F. Removing and disposing of pre-stressed concrete beams and drill shafts.
G. Removing miscellaneous structures of concrete or masonry.
H. Removing existing bridge.
I. Removing existing wood and demolition debris.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 PREPARATION

A. Obtain advance approval from Project Manager for dimensions and limits of removal work.
B. Identify known utilities below grade. Stake and flag locations.
C. For removal of asbestos-containing materials, or materials that could potentially contain asbestos, comply with the following:
   1. Crew members must be trained in accordance with OSHA 29 CFR 1926.1101 – Asbestos.

2. Conduct negative exposure assessment to demonstrate asbestos exposure below permissible exposure limit (PEL) in accordance with OSHA 29 CFR 1926.1101 – Asbestos and EPA 40 CFR 763 – Asbestos.
3. If negative exposure assessment not conducted, or if results are above PEL, provide respiratory protection in accordance with Paragraph 3.02 of this Section.

3.2 PROTECTION

A. Protect following from damage or displacement:
   1. Adjacent public and/or private property.
   2. Trees, plants, and other landscape features designated to remain.
   3. Utilities designated to remain.
   4. Pavement and utility structures designated to remain.
   5. Bench marks, monuments, and existing structures designated to remain.
B. When required, provide respiratory protection in accordance with OSHA 29 CFR 1910.134 – Respiratory Protection, and National Institute of Occupational Safety and Health (NIOSH).

3.3 REMOVALS

A. Remove pavements and structures by methods that will not damage underground utilities. Do not use drop hammer near existing underground utilities.
B. Minimize amount of earth loaded during removal operations.
C. Where existing pavement is to remain, make straight saw cuts in existing pavement to provide clean breaks prior to removal. Do not break concrete pavement or base with drop hammer unless concrete or base has been saw cut to minimum depth of 2 inches.
D. When street and driveway saw cut location is greater than one-half of pavement lane width, remove pavement for full lane width or to nearest longitudinal joint as directed by Project Manager.
E. Remove sidewalks and curbs to nearest existing dummy, expansion, or construction joint.
F. Where existing end of pipe culvert or end of sewer is to remain, install 8-inch-thick masonry plug in pipe end prior to backfill in accordance with requirements of Section 02316 – Structural Excavating and Backfilling.
G. Labeling of Asbestos Cement (AC) Pipe:
   1. Label leak-tight container with warning statement of hazardous asbestos content in accordance with OSHA 29 CFR 1926.1101 and as noted below.
   2. Label waste material with following warning:

DANGER
CONTAINS ABESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGES TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

3. Neatly print labels in letters of sufficient size and contrast so label is easily visible and legible

3.4 BACKFILL

A. Backfill of removal areas shall be in accordance with requirements of Section 02316 – Structural Excavating and Backfilling.

3.5 DISPOSAL

A. Inlet frames, grates, and plates; and manhole frames and covers, may remain City property. Disposal shall be in accordance with requirements of Section 02120 - Material Disposal.
B. Remove from site, debris resulting from work under this section in accordance with requirements of Section 02120 - Material Disposal.
C. For asbestos-containing materials:
   1. Comply with 40 CFR Part 61 and 30 TAC Sections 330.137(b) for Industrial Class 1 waste.
   2. Inspect load to ensure correct packaging and labeling.
   3. Line vehicles with two layers of 6-mil polyethylene sheeting.
   4. Remove asbestos-containing waste from site daily.

END OF SECTION

SECTION 02232
SELECTIVE CLEARING

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for selective clearing of trees, brush and other vegetation.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 REFERENCE

A. ANSI A300 – Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices (includes supplements).

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION

3.1 GENERAL

A. Remove selected vegetation, as shown on the Plans or designated by the Engineer, within the construction work limits from the work site. Engineer will designate and clearly mark trees to be removed.
B. Cut selected vegetation flush with or within 2 inches of the surrounding ground surface. Leave the stump and root system in place.
    1. Mulching or chipping cut material in place is preferred.
    2. Exercise care to avoid damage to adjacent vegetation.
    3. Chips larger than 6 inches are not permitted.
    4. Tree limb and root pruning shall comply with ANSI A300.
    5. Work limits shall not exceed 1,500 linear feet or as directed by the Engineer.

3.2 HERBICIDE APPLICATION

A. Apply herbicide to stumps as directed by Engineer. Refer to Section 02941 – Herbicide Application.

3.3 DISPOSAL

A. Dispose according to Section 02120 – Material Disposal or stack tree logs and brush when directed by Engineer.

END OF SECTION

SECTION 02315
EXCAVATING AND BACKFILLING

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for removing, stockpiling and replacing on-site vegetation and topsoil, excavating, repairing slopes, backfilling, grading the berms, backslope swales and related work. This Section does not include excavating and backfilling for structures.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.
D. Dirt Excavation and Hauling Measurement shall be based upon cross sections as required which are based on dirt in the ground. No additional payment will be given for over excavation. Further, payment shall not be based on the number of truck-loads.
E. Cross-sections obtained by Contractor shall be tied to the base line and, as a minimum, at the same locations and limits as the design cross-sections.
F. Cross-sections obtained by Contractor shall be plotted at the same scale as design cross-sections where available or to the same horizontal and vertical scale where design cross-sections are not available.
G. Plots of cross-section shall include pre-construction, intermediate, final and design cross-sections.
H. Cross-sections in areas of buried riprap or protective linings, such as riprap and concrete channel lining, shall be to the top of these materials. Excavation required for placement of such protective lining is considered structural excavation and incidental to the cost of related protective lining. See Section 02316 – Structural Excavating and Backfilling.
I. For small areas or other areas where limits can readily be determined visually, measurement may be by conventional taping and/or measuring techniques, as approved by the Engineer. Measurement shall be witnessed by the Engineer.

J. Where paid for separately, backslope swales shall be measured as noted on the Unit Price Schedule.
K. Contractor shall perform all quantity calculations for approval by Engineer.
L. No payment will be made for over-excavation or over-filling beyond the design cross-sections, except as directed by the Engineer.
M. Support partial pay request quantities with pre-construction and intermediate cross-sections, Plan quantity calculations to-date or quantity calculations determined from field measurement techniques previously approved by the Engineer.
N. Support final pay request quantities by using pre-construction, intermediate and final cross-sections or final field measured quantity calculations, as approved by the Engineer.

1.3 REFERENCES

A. ASTM D 698 – Laboratory Compaction Characteristics of Soils Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3)).

1.4 DEFINITIONS

A. Existing Cross-Sections: Obtained by design engineer to prepare Plans and bid documents.
B. Pre-Construction Cross-Sections: Obtained by Contractor prior to construction to establish pre-construction conditions. Contractor may accept existing cross-sections as pre-construction cross-sections.
C. Intermediate Cross-Sections: Obtained by Contractor to establish extent of work, such as to remove disturbed soil and to repair slope failures.
D. Final Cross-Sections: Obtained by Contractor at completion of excavation and/or fill.
E. Design Cross-Section: Proposed channel section shown on Plans showing final grades.

1.5 SUBMITTALS

A. Refer to Section 01330 – Submittal Procedures.
B. Submit plotted cross-sections and earthwork quantity calculations in tabular form.

1.6 CONSTRUCTION TESTS AND INSPECTION

A. Refer to Section 01457 – Construction Tests and Inspection.

PART 2 – PRODUCTS

2.1 FILL MATERIAL

A. Refer to Section 02314 – Fill Material.

PART 3 – EXECUTION

3.1 SITE PREPARATION

A. Prepare the site for construction in accordance with Section 02200 – Site Preparation and Restoration and Section 02233 – Clearing and Grubbing.
B. Remove grass and other vegetative cover from areas to be excavated or filled.
C. Remove material that may interfere with the proposed work, including unusable materials, disturbed soils and/or objectionable material as directed by Engineer.
D. Engineer will inspect and approve foundation soil prior to placement of fill.

3.2 TOPSOIL

A. Refer to Section 02911 – Topsoil.

3.3 CARE AND CONTROL OF WATER

A. Refer to Section 02241 – Care and Control of Water.

3.4 CONSTRUCTION

A. Construct to lines, grades and dimensions shown on the Plans.
B. Return over-excavation beyond the specified limits to grade at no cost to the District.
C. Do not cast or place material, either temporarily or permanently, on top of bank without approval of Engineer.
D. Do not cut temporary shelves into side slopes without approval of Engineer.
E. Correct grading that results in standing water at no cost to the District.
F. Grade side slopes as required by the Engineer to smoothly transition the lateral into the main channel at locations where lateral ditches enter the channel.

3.5 FILL

A. Level soil surface prior to placing first layer of fill.
B. Compaction of foundation soil surface shall be considered satisfactory when the Contractor is capable of achieving specified compaction for the first layer of fill.
C. Protect foundation soils and/or fill soils from detrimental drying.
D. Scarify surfaces to receive fill to ensure proper bonding. When the surface can be penetrated by tamping roller feet, additional scarification is usually not necessary.

E. Cut into existing (undisturbed) material in a “benching” or “stair step” fashion. Each bench shall form a horizontal surface and corresponding nearly vertical surface. The height difference between adjacent horizontal surfaces shall be a minimum of 3 feet.
F. Mechanically compact backfill provided under Section 02314 – Fill Material in 8-inch maximum layers, loose measure, to not less than 95 percent of maximum standard dry density (ASTM D 698) within plus or minus 3 percent of optimum moisture content. Where approved for use by the Engineer, fat clay (CH) soil shall be mechanically compacted to not less than 95 percent or more than 98 percent of maximum standard dry density (ASTM D 698) at or within plus 3 percent of optimum moisture content.
G. Refer to Section 02316 – Structural Excavating and Backfilling for backfilling behind retaining structures, unless shown otherwise on the Plans.

3.6 BACKSLOPE DRAINAGE SYSTEMS

A. Backslope swale and interceptor structure elevations and locations shown on the Plans are approximate. Final elevations and locations shall be field verified by the Engineer prior to installation. Minor changes in location and grade shall be considered incidental and no extra payment will be made for such adjustments.

3.7 MAINTENANCE OF DRAINAGE

A. Maintain constant flow and drainage in the main and lateral channels, backslope swales and off-site swales.

3.8 EROSION AND SEDIMENT CONTROL

A. Use means, methods, sequences and scheduling to minimize erosion and sedimentation and other damage to the project site and facilities, including the following:
    1. Limit work in this Section to no more than 1500 feet of channel at any time.
    2. Construct backslope drainage system, silt fences and vegetate each reach of the channel as soon as practical. Refer to Section 02361 – Silt Fences and Section 02921 – Turf Establishment.
    3. Failure to construct erosion control facilities in a timely manner, may result in a directive to do so. Engineer may stop construction on the project if, in the opinion of the Engineer, conditions warrant such action.
    4. Remove sediment and debris prior to final acceptance of the Work by the Engineer at no additional cost to the District. The removal of sediment includes reaches of channel downstream of the project where sedimentation occurred due to construction of this Project.
    5. Comply with terms and conditions of the Texas Pollutant Discharge

Elimination System (TPDES) permit, the Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs) for this Project, if applicable.

3.9 MATERIAL DISPOSAL

A. Refer to Section 02120 – Material Disposal.

END OF SECTION

SECTION 02378
RIPRAP AND GRANULAR FILL

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for furnishing and installing riprap and granular fill and filling and burying riprap, when required.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for unit price procedures.
C. Excavation for riprap and buried riprap will not be measured separately, but is incidental to riprap surface measurement.
D. Riprap and granular fill used in toe walls, grade beams or termination trenches are incidental to surface measurement.
E. Topsoil will not be measured and paid separately, but is incidental to riprap surface measurement.

1.3 DELIVERY, STORAGE AND HANDLING

A. Keep the storage area clean, firm, smooth and well drained in order that the product can be placed with a minimum of foreign matter.
B. Stockpile and handle riprap and granular fill to minimize segregation of particle sizes either in the stockpile or while loading, hauling and handling.

PART 2 – PRODUCTS

2.1 RIPRAP

A. Provide riprap consisting of broken concrete or stone. Provide riprap that is dense, durable and hard material free from cracks, seams and other defects which would increase deterioration from handling and natural causes.
B. Shape and Dimensions.
   1. Provide riprap in cubic form, rather than elongated (flat) shapes.
   2. Provide riprap with a minimum thickness of 6 inches.
   3. No more than 25 percent shall have a length greater than 2-1/2 times the width or thickness. No length shall exceed 3 times the width or thickness.
C. Do not provide spalls, fragments and chips exceeding 5 percent by weight. The dimension and shape limitations do not apply to this portion

of the riprap.

D. Where broken concrete is used, cut exposed metal flush with the surface prior to placing the riprap.
E. Provide riprap conforming to the following tables:

TABLE 1

RIPRAP GRADATION NO. 1

Percent Lighter by Weight	Stone Weight Lbs.		Volume Cubic Ft (2)		Cubical Shape Ft (Each Side)		Spherical Shape Ft (Dia.)	
	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit
100	180	265	1.20	1.77	1.06	1.21	1.31	1.50
50	80	110	0.53	0.73	0.81	0.90	1.01	1.12
15	40	60	0.27	0.40	0.64	0.74	0.80	0.91

Notes:

1. The theoretical cube and sphere size is presented for guidance only.
2. Volume is based on 150 pcf, unit weight.
3. Riprap Gradation No. 1 is to be used where an 18 inch thick riprap mat is noted on the Plans.

TABLE 2

RIPRAP GRADATION NO. 2

Percent Lighter by Weight	Stone Weight Lbs.		Volume Cubic Ft (2)		Cubical Shape Ft (Each Side)		Spherical Shape Ft (Dia.)	
	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit
100	260	640	1.73	4.27	1.20	1.62	1.49	2.01
50	130	200	0.87	1.33	0.95	1.10	1.18	1.37
15	40	150	0.27	1.00	0.64	1.00	0.80	1.24

Notes:

1. The theoretical cube and sphere size is presented for guidance only.
2. Volume is based on 150 pcf, unit weight.
3. Riprap Gradation No. 2 is to be used where a 24 inch thick riprap mat is noted on the Plans.

2.2 GRANULAR FILL

A. Provide granular fill consisting of concrete or stone. Provide granular fill that is dense, durable and hard material.
B. Provide granular fill, as shown on the Plans or as directed by the Engineer, to the following dimensions:
   1. Provide 3 inch to 5 inch granular fill with no material diameter less than 3 inches and no material diameter greater than 5 inches.
   2. Provide 4 inch to 8 inch granular fill with no material diameter less than 4 inches and no material diameter greater than 8 inches.
   3. Provide riprap Gradation No. 1 and Gradation No. 2 as shown on the Plans or as directed by the Engineer.

C. Do not provide spalls, fragments and chips exceeding 5 percent by weight.
D. Where broken concrete is used, cut exposed metal flush with the surface prior to placing granular fill.

2.3 GEOTEXTILE

A. Refer to Section 02379 – Geotextiles for Erosion Control Systems.

PART 3 – EXECUTION

3.1 GRADE PREPARATION

A. Refer to Section 02241 – Care and Control of Water.
B. Trim and dress the channel bottom and side slopes to proper lines and grade prior to placing riprap or granular fill. Where shown on the Plans, place geotextile in accordance with Section 02379 – Geotextiles for Erosion Control Systems.
C. The Engineer will inspect prepared section prior to placing geotextile, riprap or granular fill.

3.2 EXCAVATION AND FILL

A. Excavate the channel. Refer to Section 02315 – Excavating and Backfilling.
B. Excavate for riprap. Refer to Section 02316 – Structural Excavating and Backfilling.

3.3 RIPRAP OR GRANULAR FILL PLACEMENT

A. Place the riprap or granular fill to the slopes, lines and grades as shown on the Plans.
B. To establish a well-graded mass of riprap with minimal voids, fill voids between larger riprap blocks with spalls and smaller blocks of the largest feasible size to form a compact mass. Do not place spalls and small blocks in place of larger size riprap or granular fill.
C. Install riprap and granular fill mat to the thickness as shown on the Plans. Riprap shall have minimum mat thickness as shown on the gradation tables.
D. Place the riprap and granular fill to avoid displacement or damage to the prepared surface or geotextile and in a manner to avoid segregation of particle sizes.
E. Fill riprap voids and bury riprap a minimum of 6 inches with topsoil on side slopes as directed by the Engineer.

END OF SECTION

SECTION 02490
TRENCH SAFETY SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for the installation and maintenance of a trench safety system.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 REFERENCES

A. Implement the Trench Safety System requirements of the Federal, State and local Safety and Health Regulations and the Occupational Safety and Health Administration (OSHA), 29 CFR, Part 1926 Subpart P – Excavation.
B. Texas Health and Safety Code Ann., Chapter 756. Miscellaneous Hazardous Conditions. Subchapter C. Trench Safety § 756.023. Trench Excavation for Political Subdivision.

1.4 SUBMITTALS

A. Refer to Section 01330 – Submittal Procedures.
B. Submit a safety plan specifically for the construction of trench excavation. Design the trench safety plan to be in accordance with OSHA regulations referenced above that govern the presence and activities of individuals working in and around trench excavations.
C. Construction and Shop Drawings containing deviations from OSHA regulations or special designs shall be sealed by a licensed Texas Professional Engineer retained and paid by the Contractor.
D. Review of the safety plan by the Engineer will only be in regard to compliance with this Section and will not constitute approval by the Engineer or relieve the Contractor of obligations under State and Federal trench safety laws.

PART 2 – PRODUCTS – Not used

PART 3 – EXECUTION – Not used

END OF SECTION

SECTION 02510
POLYPROPYLENE (HPP) CORRUGATED WALL PIPE

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for Polypropylene (HPP) pipe for gravity sewers and drains, including fittings and appurtenances.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 REFERENCES

A. AASHTO M330 Polypropylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter.
B. ASTM F 2881-Standard Specification for 12 to 60 in. [300 to 1500 mm] Polypropylene (HPP) Dual Wall Pipe a.11d Fittings for Non-Pressure Storm Sewer Applications.
C. ASTM F 2736- Standard Specification for 6 to 30 in. (152 to 762 mm) Polypropylene (HPP) Corrugated Single Wall Pipe and Double Wall Pipe.
D. ASTM F 2764 Standard Specification for 30 to 60 in. [750 to 1500 mm] Polypropylene (HPP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications.
E. ASTM D 2321 - Standard Recommended Practice for Underground Installation of Flexible Thermoplastic Pipe.
F. ASTM D 3212- Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
G. ASTM F 477- Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.4 SUBMITTALS

A. Refer to Section 01330 - Submittal Procedures.
B. Provide manufacturer's product specification and certification that pipe was manufactured in compliance with standards referenced in this Section.

PART 2 PRODUCTS

A. Install pipe in accordance with the manufacturers recommended

installation procedure and ASTM D 2321

2.1 GENERAL

A. Furnish corrugated-wall gravity sanitary sewer pipe with bell-and-spigot end construction conforming to ASTM D 3212. Joining will be accomplished with dual elastomeric gaskets in accordance with manufacturer's recommendations. Use integral bell-and-spigot gasketed joint designed so that when assembled, elastomeric gasket, contained in machined groove on pipe spigot, is compressed radially in pipe bell to form a positive seal. Design joint to avoid displacement of gasket when installed in accordance with manufacturer's recommendations.

B. Furnish corrugated-wall polypropylene (CPP) pipe for gravity storm sewer and storm sewer culvert pipe. Joints shall be installed such that connection of pipe sections will form continuous line free from irregularities in flow line. Suitable joints are:
   1. Integral Bell and Spigot with dual elastomeric gaskets. Bell shall overlap minimum of two corrugations of spigot end when fully engaged.

C. Jointing:
   1. Gaskets:
      a. Meet requirements of ASTM F 477. Use gasket molded into circular form or extruded to proper section and then spliced into circular form. When no contaminant is identified, use gaskets of properly cured, high-grade elastomeric compound. Basic polymer shall be natural rubber, synthetic elastomer, or blend of both.
      b. **PP** Pipes are Not allowed to be installed in potentially contaminated areas, unless approved by the Engineer.

CONTAMINANT	**GASKET MATERIAL REQUIRED**
Petroleum (diesel, gasoline)	Nitrile Rubber
Other Contaminants	As recommended by pipe manufacturer

   2. Lubricant. Use lubricant for assembly of gasketed joints which has no detrimental effect on gasket or on pipe, in accordance with manufacturer's recommendations.
   3. Diameters 12- through 60-inch shall have a reinforced bell with a polymer composite band installed by the manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install pipe in accordance with the manufacturer’s recommended

installation procedures and Section 02631 – Storm Sewers and Outfalls.

B. Install pipe in accordance with the manufacturers recommended installation procedure and ASTM D 2321
C. PP pipe is not approved in applications requiring augering of pipe.
D. Bedding and backfill: Conform to requirements of Section 02317 - Excavation and Backfill for Utilities.
E. Use only workmen trained in the installation of PP Pipe.
F. Cutting pipe: Comply with pipe manufacturer's recommendations. After cutting, leave end pipe in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 02611
REINFORCED CONCRETE PIPE

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for reinforced concrete pipe.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 REFERENCES

A. ASTM A 506 – Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe.
B. ASTM A 507 – Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.
C. ASTM C 76 – Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
D. ASTM C 443 – Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
E. ASTM C 655 – Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe.
F. ASTM C 877 – External Sealing Bands for Non-circular Concrete Sewer, Storm Drain, and Culvert Pipe.

1.4 SUBMITTALS

A. Refer to Section 01330 – Submittal Procedures.
B. Submit for approval, Shop Drawings and data on piping, fittings, gaskets and appurtenances. Indicate conformance to appropriate reference standards using Certificate of Compliance.
C. Submit manufacturer's literature for product specified including materials, sizes, flow carrying capacity and installation procedures.

PART 2 – PRODUCTS

2.1 REINFORCED CONCRETE PIPE

A. Provide circular reinforced concrete pipe in accordance with the requirements of ASTM C 76 for Class III wall thickness. Provide joints comprised of rubber gaskets conforming to ASTM C 443.

B. Provide reinforced concrete arch pipe in accordance with the requirements of ASTM C 506 for Class A-III. Provide joints comprised of rubber gaskets conforming to ASTM C 877.
C. Provide reinforced concrete elliptical pipe, either vertical or horizontal, in accordance with the requirements of ASTM C 507 for Class VE-III for vertical or Class HE-III for horizontal. Provide joints comprised of rubber gaskets conforming to ASTM C 877.
D. Provide reinforced concrete D-load pipe in accordance with the requirements of ASTM C 655.

PART 3 – EXECUTION

3.1 EXCAVATION AND INSTALLATION

A. Excavate in accordance with the requirements of Section 02316 – Structural Excavating and Backfilling.
B. Install as shown on the Plans or in accordance with the requirements of Section 02631 – Storm Sewers and Outfalls.

END OF SECTION

SECTION 02633
PRECAST CONCRETE INLETS, HEADWALLS, AND WINGWALL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Precast concrete inlets for storm or sanitary sewers, including cast iron frame and plate or grate.
B. Precast concrete headwalls and wingwalls for storm sewers.
C. Precast junction box with lid or grate top.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 REFERENCES

A. ASTM C 76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

1.4 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.
B. Submit shop drawings for approval of design and construction details for precast concrete inlets, junction box headwalls, and wingwalls. Precast units differing from standard designs shown on Drawings will be rejected unless shop drawing submittals are approved. Clearly show proposed substitution is equal or superior in every aspect to standard designs.
C. Submit manufacturers' data and details for frames, grates, rings, and covers.

1.5 STORAGE AND SHIPMENT

A. Store precast units on level blocking. Do not place loads until design strength is reached. Shipment of acceptable units may be made when 28-day strength requirements have been met.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete: Provide concrete for precast machine-made units meeting requirements of ASTM C 76 regarding reinforced concrete, cement, aggregate, mixture, and concrete test. Minimum 28-day compressive

strength shall be 4000 psi.

B. Reinforcing Steel: Place reinforcing steel to conform to details shown on Drawings and as follows:
   1. Provide positive means for holding steel cages in place throughout production of concrete units. Maximum variation in reinforcement position is plus or minus 10 percent of wall thickness or plus or minus 1/2 inch, whichever is less. Regardless of variation, maintain minimum cover of concrete over reinforcement as shown on Drawings.
   2. Welding of reinforcing steel is not permitted unless noted on Drawings.
C. Miscellaneous Metal: Cast-iron frames and plates conforming to requirements of Section 02090 - Frames, Grates, Rings, and Covers.

2.2 SOURCE QUALITY CONTROL

A. Tolerances: Allowable casting tolerances for concrete units are plus or minus 1/4 inch from dimensions shown on Drawings. Concrete thickness in excess of that required will not constitute cause for rejection provided that excess thickness does not interfere with proper jointing operations.
B. Precast Unit Identification: Mark date of manufacture and name or trademark of manufacturer clearly on inside of inlet, headwall, or wingwall.
C. Rejection: Precast units rejected for non-conformity with these specifications and for following reasons:
   1. Fractures or cracks passing through shell, except for single end crack that does not exceed depth of joint.
   2. Surface defects indicating honeycombed or open texture.
   3. Damaged or misshaped ends, where damage would prevent making satisfactory joint.
D. Replacement: Immediately remove rejected units from Work site and replace with acceptable units.
E. Repairs: Occasional imperfections resulting from manufacture or accidental damage may be repaired if, in opinion of the Engineer, repaired units conform to requirements of these specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify lines and grades are correct.
B. Verify compacted subgrade will support loads imposed by inlets.

3.2 INSTALLATION

A. Install units complete in place to dimensions, lines, and grades as shown on Drawings.
B. Excavate in accordance with requirements of Section 02317 - Excavation and Backfill for Utilities.
C. Bed precast concrete units on foundations of firm, stable material shaped

to conform to shape of unit bases.

D. Provide adequate means to lift and place concrete units.

3.3 FINISHES

A. Use hydraulic cement to seal joints, fill lifting holes and as otherwise required.

B. When box section of inlet has been completed, shape floor of inlet with mortar to conform to Drawing details.

C. Adjust cast iron inlet plate frames to line, grade, and slope shown on Drawings. Grout frame in place with mortar.

3.4 INLET WATERTIGHTNESS

A. Verify that inlets are free of leaks. Repair leaks in approved manner.

3.5 CONNECTIONS

A. Connect storm sewer leads to inlets as shown on Drawings. Seal connections inside and outside with hydraulic cement. Make connections watertight.

3.6 BACKFILL

A. Backfill area of excavation surrounding each completed inlet, headwall, or wingwall according to requirements of Section 02317 - Excavation and Backfill for Utilities.

END OF SECTION

SECTION 02741
ASPHALTIC CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Surface course of compacted mixture of coarse and fine aggregates and asphaltic binder.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 REFERENCES

A. ASTM C 33 - Standard Specification for Concrete Aggregates.
B. ASTM C 131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
C. TxDOT Tex-106-E - Calculating the Plasticity Index of Soils
D. TxDOT Tex-126-E - Molding, Testing, and Evaluating Bituminous Black Base Material.
E. TxDOT Tex-200-F - Sieve Analysis of Fine and Coarse Aggregates.
F. TxDOT Tex-203-F - Sand Equivalent Test.
G. TxDOT Tex-204-F - Design of Bituminous Mixtures.
H. TxDOT Tex 206-F - Compacting Test Specimens of Bituminous Mixtures.
I. TxDOT Tex-207-F - Determining Density of Compacted Bituminous Mixtures.
J. J TxDOT Tex-208-F - Test for Stabilometer Value of Bituminous Mixtures.
K. TxDOT Tex-217-F - Determining Deleterious Material and Decantation Test for Coarse Aggregates.
L. TxDOT Tex-227-F - Theoretical Maximum Specific Gravity of Bituminous Mixtures.
M. TxDOT Tex-530-C - Effect of Water on Bituminous Paving Mixtures.
N. TxDOT Tex-531-C - Prediction of Moisture Induced Damage to Bituminous Paving Materials Using Molded Specimens.

1.4 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.
B. Submit certificates that asphalt materials and aggregates meet requirements.
C. Submit proposed design mix and test data for surface course.
D. Submit manufacturer's description and characteristics of spreading and finishing machine for approval.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Coarse Aggregate:
   1. Use gravel, crushed stone, or combination thereof, that is retained on No. 10 sieve, uniform in quality throughout and free from dirt, organic or other injurious matter occurring either free or as coating on aggregate. Use aggregate conforming to ASTM C 33 except for gradation. Furnish rock or gravel with Los Angeles abrasion loss not to exceed 40 percent by weight when tested in accordance with ASTM C 131.
   2. Aggregate by weight shall not contain more than 1.0 percent by weight of fine dust, clay- like particles, or silt when tested in accordance with Tex-217-F, Part II.
B. Fine Aggregate: Sand, stone screenings or combination of both passing No. 10 sieve. Use aggregate conforming to ASTM C 33 except for gradation. Use sand composed of sound, durable stone particles free from loams or other injurious foreign matter. Furnish screenings of same or similar material as specified for coarse aggregate. Plasticity index of that part of fine aggregate passing No. 40 sieve shall be not more than 6 when tested by TxDOT Tex- 106-E. Sand equivalent shall have minimum value of 45 when tested by TxDOT Tex-203-F.
C. Composite Aggregate: Conform to following limits when graded in accordance with TxDOT Tex-200-F. Use type specified on Drawings:

GRADATION OF COMPOSITE AGGREGATE		
SIEVE SIZE	**PERCENT PASSING**	
	Course Surface (TxDOT Type C)	**Fine Surface (TxDOT Type D)**
-	-	-
3/4 “	95 to 100	-
1/2"	-	98.0-100.0
3/8"	70.0-85.0	85.0-100.0
#4	43 to 63	50.0 to 70.0
#8	32.0-44.0	35.0-46.0

#30	14.0-28.0	15.0-29.0
# 50	7.0-21.0	7.0-20.0
#200	2.0-7.0	2.0-7.0
VMA % minimum	14.0	15.0
* 2 to 8 when Test Method Tex-200-F, Part II (Washed Sieve Analysis) is used.		

D. Asphalt Binder: Moisture-free homogeneous material which will not foam when heated to 347 F, meeting the following requirements.

PERFORMANCE GRADED BINDER	
CRITERIA / TEST	**PERFORMANCE GRADE (PG64-22)**
Average 7-day Maximum Pavement Design Temperature, C	< 64
Minimum Pavement Design Temperature, C	> -22
ORIGINAL BINDER	
Flash Point Temperature, T48; Minimum C	230
Viscosity, ASTM D 4402; Maximum, 3Pa*s (3000 cP) Test Temperature, C	135
Dynamic Shear, TP5; G*/sin[ ], Minimum, 1.00 kPa Test Temperature @ 10 rad/sec., C	64
ROLLING THIN FILM OVEN (T240) OR THIN FILM OVEN (T179) RESIDUE	
Mass Loss, Maximum , %	1.00
Dynamic Shear, TP5; G*/sin [ ], Minimum, 2.20 kPa Test Temperature @ 10 rad/sec., C	64
PRESSURE AGING VESSEL RESIDUE (PP1)	
PAV Aging Temperature, C	100
Dynamic Shear, TP5; G*/sin [ ], Minimum, 5000 kPa Test Temperature @ 10 rad/sec., C	25
Physical hardening	Report
Creep Stiffness, TP1; S, Maximum, 300 Mpa -value, Minimum, 0.300 Test Temperature @ 60 sec., C	-12
Direct Tension, TP3; Failure Strain, Minimum, 1.0% Test Temperature @ 1.0 mm/min, C	-12

E. Anti-stripping Agent:

1. Evaluate mixture of aggregate, asphalt, and additives proposed for use for moisture susceptibility and requirement for anti-stripping agents. To substantiate mix design, produce and test trial mixtures using proposed project materials and equipment prior to placement. Test for susceptibility to moisture and trial mixture may be waived by the

Engineer when similar designs using same material have previously proven satisfactory.

2. Liquid Anti-stripping Agent. Use anti-stripping agent with uniform liquid with no evidence of crystallization, settling, or separation of components. Submit sample of anti- stripping agent proposed for use and manufacturer's product data, including recommended dosage range, handling and storage, and application instructions.

2.2 EQUIPMENT

A. Mixing Plant: Weight-batching or drum mix plant with capacity for producing continuous mixtures meeting specifications. With exception of a drum mix plant, plant shall have satisfactory conveyors, power units, aggregate handling equipment, hot aggregate screens and bins, and dust collectors.
B. Provide equipment to supply materials adequately in accordance with rated capacity of plant and produce finished material within specified tolerances. Following equipment is essential:
   1. Cold aggregate bins and proportioning device
   2. Dryer
   3. Screens
   4. Aggregate weight box and batching scales
   5. Mixer
   6. Asphalt storage and heating devices
   7. Asphalt measuring devices
   8. Truck scales
C. Bins: Separate aggregate into minimum of four bins to produce consistently uniform grading and asphalt content in completed mix. Provide one cold feed bin per stockpile.

2.3 MIXES

A. Employ certified testing laboratory to prepare design mixes. Test in accordance with TxDOT Tex-126-E or Tex-204-F, Tex-206-F, Tex-208-F, Tex-530-C and Tex-531-C.
B. Density, Stability and Air Void Requirements:

Percent Density		Percent	HVEEM Stability Percent
Min	Max.	Optimum	Not Less Than
94.5	97.5	96	35

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify compacted base course is ready to support imposed loads.
B. Verify lines and grades are correct.

3.2 PREPARATION

A. Tack Coat: Conform to requirements of Section 02743 - Tack Coat. Where mixture will adhere to surface on which it is to be placed without use of tack coat, tack coat may be eliminated when approved by the Engineer.
B. Prepare subgrade in accordance with requirements of Section 02711 - Hot Mix Asphalt Base Course, Section 02712 - Cement Stabilized Base Course, or Section 02713 - Recycled Crushed Concrete Base Course.
C. Prepare subgrade in advance of asphalt concrete paving operation.
D. Perform pavement repair and resurfacing as indicated in Section 02951 - Pavement Repair and Resurfacing.
E. Do not use cutback asphalt.
F. Milling of pavement for speed humps: Mill pavement (concrete or asphalt) to depth of one inch and width between 18 and 24 inches around entire perimeter of proposed hump, as shown in detail for speed hump design.

3.3 PLACEMENT

A. Do not place asphalt pavement less than 2 inches thick when surface temperature taken in shade and away from artificial heat is below 50 F and falling. Asphalt may be placed when temperature is above 40 F and rising.
B. Haul prepared and heated asphaltic concrete mixture to project in tight vehicles previously cleaned of foreign material. Mixture temperature shall be between 250 F and 325 F when laid.
C. Spread material into place with approved mechanical spreading and finishing machine of screening or tamping type.
D. Surface Course Material: Surface course 2 inches or less in thickness may be spread in one lift. Spread lifts in such a manner that, when compacted, finished course will be smooth, of uniform density, and will be to section, line and grade as shown. Place construction joints on surface courses to coincide with lane lines or as directed by the Engineer.
E. Joints: Pass roller over unprotected ends of freshly laid mixture only when mixture has cooled. When work is resumed, cut back laid material to produce slightly beveled edge for full thickness of course. Remove old material which has been cut away and lay new mix against fresh cut.
F. When new asphalt is laid against existing or old asphalt, saw cut existing or old asphalt to full depth to provide straight smooth joint.
G. In smaller restricted areas where use of paver is impractical spread material by hand. Compact asphalt by mechanical means. Carefully place materials to avoid segregation of mix. Do not broadcast material. Remove lumps that do not break down readily.

3.4 COMPACTION

A. Construct test strip to identify correct type, number, and sequence of rollers necessary to obtain specified in-place density or air-voids when directed by the Engineer. Prepare test strip at least 1,000 feet in length, comparable to

placement and compaction conditions for Project.

B. Begin rolling while pavement is still hot and as soon as it will bear roller without shoving, displacement or hair cracking. Keep wheels properly moistened with water to prevent adhesion of surface mixture. Do not use excessive water or petroleum by-products.
C. Compact surface thoroughly and uniformly, first with power-driven, 3-wheel, or tandem rollers weighing a minimum of 8 tons. Obtain subsequent compression by starting at side and rolling longitudinally toward center of pavement, overlapping on successive trips by at least one-half width of rear wheels. Make alternate trips slightly different in length. Continue rolling until no further compression can be obtained and rolling marks are eliminated. Complete rolling before mat temperature drops below 185 F.
D. Use tandem roller for final rolling. Double coverage with approved pneumatic roller on asphaltic concrete surface is acceptable after flat wheel and tandem rolling has been completed.
E. Along walls, curbs, headers and similar structures, and in locations not accessible to rollers, compact mixture thoroughly with lightly oiled tamps.
F. Compact binder course and surface course to a minimum density of 91 percent of maximum possible density of voidless mixture composed of same materials in like proportions.

3.5 TOLERANCES

A. Furnish templates for checking surface in finished sections. Maximum deflection of templates, when supported at center, shall not exceed 1/8 inch.
B. Completed surface, when tested with 10-foot straightedge laid parallel to center line of pavement, shall show no deviation in excess of 1/8 inch in 10 feet. Correct surface not meeting this requirement.
C. Dimensions of speed humps shall conform to details for speed hump design and speed hump height tolerances.

3.6 QUALITY CONTROL

A. Testing will be performed.
B. For in-place depth and density, take minimum of one core at random locations for each 1000 feet of single lane pavement. On a 2-lane pavement, take samples at random every 500 feet from alternating lanes. Take cores for parking lots every 500 square yards of base to determine in-place depth and density. If cul-de sac or streets are less than 500 feet, minimum of 2 cores (one per lane) will be procured. On small projects, take a minimum of two cores for each day's placement. For first days placement and prior to coring, minimum of 5 nuclear gauge readings will be performed at each core location to establish correlation between nuclear gauge (wet density reading) and core (bulk density). This process will continue for each day's placement until engineer determines that a good bias has been established for that nuclear gauge.

C. Determine in-place density in accordance with TxDOT Tex-207-F and Tex-227-F from cores or sections. Other methods of determining in-place density, which correlate satisfactorily with results obtained from roadway specimens, may be used when approved by the Engineer. Average densities for each street placed in a single day to determine compliance.
D. Contractor may request three additional cores in vicinity of cores indicating nonconforming in-place depths or density at no additional cost to the District. In-place depth and density at these locations shall be average of four cores.
E. Fill cores and density test sections with new compacted asphaltic concrete.
F. Speed humps: Measure dimensions of completed speed hump, before applying pavement markings, at locations shown on Speed Hump Height Measurement Worksheet. Complete one worksheet for each speed hump, and send completed worksheets the Engineer.

3.7 NONCONFORMING PAVEMENT

A. Recompact and retest nonconforming street sections not meeting surface test requirements or having unacceptable surface texture. Patch asphalt pavement sections in accordance with procedures established by Asphalt Institute. Retesting is at no cost to the District.
B. Remove and replace areas of asphalt surface found deficient in thickness by more than 10 percent. Use new asphaltic surface of thickness shown on Drawings. Remove and replace areas of asphalt surface found deficient in average density.
C. Replace speed humps which do not conform to requirements of details, or which are rejected by the Engineer.

3.8 PROTECTION

A. Do not open pavement to traffic until completion of rolling and temperature has cooled to set asphaltic concrete surface, or as shown on Drawings.
B. Maintain asphalt pavement in good condition until completion of Work.
C. Repair defects immediately by replacing asphalt pavement to full depth.

3.9 PAVEMENT MARKINGS FOR SPEED HUMPS

A. Apply pavement markings to speed humps in conformance with dimensions shown on detail for speed hump design.

END OF SECTION

SECTION 02754
CONCRETE DRIVEWAYS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Portland cement concrete driveways.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for unit price procedures.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Concrete: Conform to material and proportion requirements for concrete of Section 02751 – Concrete Paving.
B. Reinforcing Steel: Conform to material requirements for reinforcing steel of Section 02751 - Concrete Paving.
C. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 02752 - Concrete Pavement Joints
D. Expansion Joint Filler: Conform to material requirements for expansion joint material of Section 02752 - Concrete Pavement Joints.
E. Subgrade Materials: Conform to subgrade material requirements of Section 02336 - Lime Stabilized Subgrade, or Section 02338 - Portland Cement Stabilized Subgrade.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare subgrade in accordance with applicable portions of Section 02336 - Lime Stabilized Subgrade, and Section 02338 - Portland Cement Stabilized Subgrade

3.2 PLACEMENT

A. Place and finish concrete in accordance with applicable portions of Section 02751 - Concrete Paving

3.3 JOINTS

A. Install joints in concrete driveway in accordance with Section 02752 - Concrete Pavement Joints.

3.4 CONCRETE CURING

A. Cure concrete driveway in accordance with Section 02753 – Concrete Pavement Curing.

3.5 PROTECTION

A. Conform to applicable requirements of Section 02753 – Concrete Pavement Curing.

END OF SECTION

SECTION 02951
PAVEMENT REPAIR AND RESTORATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Repairing and replacing streets, highways, and other pavements that have been cut, broken, or damaged due to utility excavation.

1.2 MEASUREMENT AND PAYMENT

A. Where there is not a separate item listed on the Unit Price Schedule for work in this Section, no separate measurement and payment are made. Include cost for work under this Section in the related item listed on the Unit Price Schedule.
B. Where an item is listed on the Unit Price Schedule, Measurement and Payment is as noted on the Unit Price Schedule.
C. Refer to Section 01270 – Measurement and Payment for unit price procedures.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Subgrade:
   1. Provide backfill material as required by applicable excavation and fill sections (Sections 02315 through 02319) and Section 02330 - Embankment.
   2. Provide material for stabilization as required by applicable portions of Section 02336 - Lime Stabilized Subgrade, and Section 02338 - Portland Cement Stabilized Subgrade.
B. Base: Provide base material as required by applicable portions of Section 02711 - Hot Mix Asphaltic Base Course, Section 02712 - Cement Stabilized Base Course, and Section 02713 - Crushed Concrete Base Course.
C. Pavement: Provide paving materials as required by applicable portions of Section 02741 - Asphaltic Concrete Pavement, and Section 02771 - Curb, Curb and Gutter, and Headers, and Section 02775 - Concrete Sidewalks.

PART 3 - EXECUTION

3.1 PREPARATION

A. Notify the Engineer prior to commencement of excavation in pavement for which an Excavation in Public Way permits has been obtained. Follow

directions contained in the permit.

B. Saw cut pavement 18 inches wider than width of trench needed to install utilities unless otherwise indicated on Drawings.
C. When removing pavement to existing deformed metal strip (i.e. dummy joint), saw cut pavement minimum 2 inches deep on opposite side of deformed metal strip. Place saw joint far enough behind deformed metal strip to obtain continuously straight joint. Remove damaged portion of deformed metal strip as required to provide proper joint. Saw cut and remove metal strip before placement of new concrete pavement.
D. Protect edges of existing pavement to remain from damage during removals, utility placement, backfill, and paving operations. For concrete pavement, protect undisturbed subgrade that is to remain to support replacement slab.
E. Dowel in existing pavement where no reinforcement is found or is broken due to construction activities. Unless otherwise directed by the Engineer, provide No. 6 bars 24 inches long, drilled and embedded 8 inches into center of existing slab with 'PO-ROC' epoxy grout or approved equal. Space dowels to match new pavement reinforcement spacing.
F. Provide transitional paving and earthwork as required to tie proposed pavement to existing pavement when unable to dowel new pavement into existing pavement.

3.2 INSTALLATION

A. Parking Areas, Service Drives, Driveways, and Sidewalks: Replace with material equal to or better than existing or as indicated on Drawings. Conform to applicable requirements for Materials.
B. Street Pavements and Curbs, Curbs and Gutters: Replace subgrade, base, and surface course with like materials or as indicated on Drawings and HCDD No. 1 Standard Detail. Curbs and curbs and gutters shall match existing. Conform to requirements for Materials.
    1. For concrete pavement, install size and length of reinforcing steel and pavement thickness indicated on Drawings and HCDD No. 1 Standard Detail. Place types and spacing of joints to match existing or as indicated on Drawings.
    2. Where existing pavement consists of concrete pavement with asphaltic surfacing, resurface with minimum 2-inch depth asphaltic pavement.
    3. Repair state highway and county crossings in accordance with TxDOT permit or county requirements as appropriate and within 1 week after utility work is installed.

3.3 WASTE MATERIAL DISPOSAL

A. Dispose of waste material in accordance with requirements of Section 02120 - Waste Material Disposal.

3.4 PROTECTION

A. Maintain pavement in good condition until completion of Work.
B. Replace pavement damaged by Contractor's operations at no cost to the District.

END OF SECTION

SECTION 02970
CHAIN LINK FENCE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Furnishing and erecting a chain link fence, in conformity with details, lines and grades as shown on the drawings.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 REFERENCES

A. ASTM A120 – Pipe, steel, black and hot-dipped zinc-coated (galvanized) welded and seamless, for ordinary uses.
B. ASTM A121 – Zinc coated (galvanized) steel barbed wire.
C. ASTM A123 – Zinc (hot galvanized) coating on products fabricated from rolled, pressed and forged steel shapes, plates, bars and strip.
D. ASTM A153 – Zinc coated steel chain link fence fabric.
E. ASTM A392 – Zinc coated steel chain link fence fabric.
F. ASTM A491 – Aluminum coated steel chain link fence fabric.
G. ASTM A570 – Hot-rolled carbon steel sheet and strip structural quality.
H. ASTM A572 - High-strength low-alloy columbium-vanadium steels of structural quality.
I. ASTM A585 – Aluminum-coated steel barbed wire.
J. ASTM B211 – Aluminum-alloy bar, rod, and wire.
K. ASTM B221 – Aluminum-alloy extruded bars, rods, wire shapes and tubes.
L. RR-F-191/1 – Federal Specification Fencing, Wire, Post, and Metal.
M. RR-F-191/3 – Federal Specification Fencing, Wire, Post, and Metal.
N. RR-F-191/4 – Federal Specification Fencing, Wire, Post, and Metal.

1.4 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

PART 2 - PRODUCTS

2.1 MATERIAL

A. The fabric shall be woven with a 9-gauge galvanized steel wire in a 2-inch mesh and shall meet the requirements of ASTM A392, Class II.
B. Barbed wire shall be 3-strand 12 1/2-gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of ASTM A121, Class 3.
C. Posts, rails, and braces furnished for use in conjunction with zinc-coated steel fabric. Line posts, rails, and braces shall be galvanized steel pipe.
    1. Galvanized steel pipe shall conform to the requirements of ASTM A120, Schedule 40, except the hydrostatic testing requirement is waived. Galvanizing shall be in accordance with ASTM A123.
    2. The steel used in all structural shapes shall conform to the requirements of ASTM A 572, Grade 45, and shall be galvanized in accordance with the requirements of ASTM A123.
    3. Roll-formed sections shall be fabricated from material meeting the requirements of ASTM A570, grade 45, and shall be galvanized in accordance with the requirements of ASTM A123.
    4. The dimensions of the posts, rails, and braces shall be in accordance with the Standard Detail in the plans.
D. Gate frames shall consist of galvanized steel pipe and conform to the specifications for the same material under Section 2.03. The fabric shall be of the same type material as used in the fence.
E. Wire fabric ties, and tension wire for use in conjunction with a given type of fabric shall be of the same material identified with the fabric type. The tension wire shall be 7-gauge coiled spring wire coated similarly to the respective wire fabric being used.
F. Wire fabric ties shall be hog rings of galvanized steel wire not less than 9 gauge.
G. All material shall conform to Federal Specifications RR-F-191/4.
H. Miscellaneous steel fittings and hardware for use with zinc-coated or aluminum-coated steel fabric shall be of commercial grade steel or better quality, wrought of cast as appropriate to the article, and sufficient in strength to provide a balanced design when used in conjunction with fabric, posts, and wires of the quality specified herein. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A153. Miscellaneous aluminum fittings for use with aluminum alloy fabric shall be wrought or cast aluminum alloy. Barbed wire support arms shall withstand a load of 250 pounds (113 kg) applied vertically to the outermost end of the arm.
I. Concrete shall be of a commercial grade with a minimum 28-day compressive strength of 2,500 psi.
J. Each roll of fabric shall carry a tag showing the kind of base metal (steel, aluminum, or aluminum alloy number), kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts,

wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel, aluminum, or aluminum alloy number), and kind of coating.

PART 3 - EXECUTION

3.1 CLEARING FENCE LINE

A. All trees, brush, stumps, logs, and other debris which would interfere with the proper construction of the fence in the required location shall be removed a minimum width of 2 feet (0.6m) on each side of the fence centerline before starting fencing operations. The material removed and disposed of shall not constitute a pay item and shall be considered incidental to fence operations.

3.2 INSTALLING POSTS

A. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans.
B. The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts.
C. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within 7 days after the individual post footing is completed.
D. Should rock be encountered at a depth less than the planned footing depth, a hole 2 inches (50mm) larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches (300mm). After the posts are set, the remainder of the drilled hole shall be filled with grout, composed of one part Portland cement and two parts mortar sand. Any remaining space above the rock shall be filled with concrete in the manner described above.
E. In lieu of drilling, the rock may be excavated to the required footing depth. No extra compensation shall be made for rock excavation.

3.3 INSTALLING TOP RAILS

A. The top rail shall be continuous and shall pass through the post tops. The coupling used to join the top rail lengths shall allow for expansion.

3.4 INSTALLING BRACES

A. Horizontal brace rails, with diagonal truss roads and turnbuckles, shall be installed at all terminal posts.

3.5 INSTALLING FABRIC

A. The wire fabric shall be firmly attached to the posts and braced in the manner shown on the plans. All wire shall be stretched taut and shall be installed to the required elevations. The fence shall generally follow the contour of the ground, with the bottom of the fence fabric no less than 1 inch (25mm) or more than 4 inches (100mm) from the ground surface. Grading shall be performed where necessary to provide a neat appearance.
B. At locations of small natural swales or drainage ditches and where it is not practical to have the fence conform to the general contour of the ground surface, longer posts may be used and multiple strands of barbed wire stretched thereon to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches (150mm) or less.

3.6 ELECTRICAL GROUNDS:

A. Electrical grounds shall be constructed where a power line passes over the fence or at 500-foot (150mm) intervals. The ground shall be accomplished with a copper clad rod 8 feet (2.4m) long and a minimum of 5/8 inch (15mm) in diameter driven vertically until the top is 6 inches (150mm) below the ground surface. A No. 6 solid copper conductor shall be clamped to the rod and to the fence in such a manner that each element of the fence is grounded. Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction.

END OF SECTION

SECTION 02971
MAILBOX ASSEMBLES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Install, remove, temporarily relocate, or replace mailbox assemblies of the type specified.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for unit price procedures.

1.3 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Furnish mailbox assemblies in accordance with the plans. An assembly does not include the mailbox unless otherwise on the plans. Provide new mailbox assembles for permanent installations.

PART 3 - EXECUTION

3.1 CONSTRUCTION

A. Temporarily relocate mailbox assemblies as shown on the plans or as directed. Furnish and install approve mailbox assemblies and mount mailboxes on those assemblies. Maintain mailbox assembles in a serviceable condition. Furnish and install additional mailbox assemblies as directed. Relocate mailbox and assemblies to permanent locations upon completion of construction work.

END OF SECTION