HARRIS COUNTY

FLOOD CONTROL DISTRICT

SPECIFICATIONS

Harris County Flood Control District
Standard Specifications Book 2020

(Incorporated herein by reference for all
purposes as if set out verbatim herein)

City of Houston
Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic 2023

(Incorporated herein by reference for all
purposes as if set out verbatim herein)

Texas Department of Transportation
Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges
September 1, 2024

(Incorporated herein by reference for all purposes as if set out verbatim herein)

SPECIAL PROVISION
TO
SECTION 02120

MATERIAL DISPOSAL

Insert new Article 1.4 as follows:

1.4 REVIEW OF FEDERAL PROJECT DISPOSAL SITES

A. As part of HCFCD's efforts to comply with the National Environmental Policy Act (NEPA) and HUD Community Development Block Grant (CDBG) funding requirments, HCFCD will document all disposal sites. To satisfy record keeping requirements per NEPA guidelines, HCFCD will complete a Record of Environmental Consideration (REC) Checklist for each disposal site submitted. The checklist is included at the end of this section. This is a requirement for HCFCD to qualify for Federal reimbursement.

B. HCFCD will have 5 business days to review and determine the acceptability of the disposal site submittals. Required documentation includes the following (as appropriate):
   1. Copies of relevant permits and documentation of compliance with relevant federal and local actions.
   2. One copy of a right-of-entry for each proposed disposal site. The right-of-entry shall allow HCFCD representatives access to the disposal site to determine if the site can be approved in accordance with this Special Provision. A point of contact to coordinate site access for HCFCD representatives must be provided. Any barriers to site access must be noted to avoid unnecessary delay.
   3. Fill quantity amounts are required for each site submitted.

C. HCFCD reserves the right to reject any or all sites submitted by the Bidder or Contractor. Lack of satisfactory disposal sites will not be cause for a time extension for completion of the Project.

D. Locations for temporary stockpiles must be treated the same as disposal sites in satisfying this Special Provision. Temporary stockpiles must be relocated to disposal sites prior to acceptance and final payment for this project.

E. The following types of sites may be approved for potential disposal sites:
   1. Landfills licensed by the state (must include a copy of the active Texas Commission on Environmental Quality Municipal Solid Waste Disposal Permit indicating the landfill is currently licensed to accept fill material).
   2. Locations that have previously been evaluated, approved, and have successfully completed the compliance actions for another HCFCD federal project with consideration of NEPA.
   3. Sites previously impacted by others for approved purposes totally unrelated to this project, such as sand pits. "Previously impacted"

means that the site has been cleared and grubbed in preparation for construction activities. “Approved purposes” means any development or activity which has met all requirements of Federal, State, and local governmental bodies, and can demonstrate the issuance of all required permits. Such purposes might include, but not be limited to, development of a site for residential, commercial, industrial, or public use projects. A site cleared and grubbed specifically to receive fill from this project is not an approved site if it contains any characteristics described in Article 1.4, Section F., below.

F. Sites with the following characteristics are not likely to be approved for potential disposal sites.
   1. Sites exhibiting indications for or actual habitat for state and federally threatened and endangered species.
   2. Sites with or likely to contain cultural resources.
   3. Sites containing or showing indications of hazardous, toxic or radioactive waste (HTRW) (also referred to as regulatory programs) where there is likelihood that the fill material would become contaminated and incur costs for removal and special disposal.
   4. Sites adjacent to active regulatory programs if the fill material is to be used for backfilling or subsurface fill which could potentially come in contact with possibly impacted groundwater, regardless of whether the proposed disposal site holds all required permits.
   5. Sites with wetlands (both inside and outside the floodplain).
   6. Sites showing diversity of native species and/or mature growth with minimal or no incursion of invasive species.
   7. Sites with habitats of specific interest that include, but are not limited to, the following: bottomland forest, native prairies and old growth forest.

END OF SPECIAL PROVISION

(TO BE COMPLETED BY HCFCD)

RECORD OF ENVIRONMENTAL CONSIDERATION CHECKLIST

Project Name: Taylor Gully Channel Improvements and Woodridge Stormwater Detention Basin Project
Project ID: G103-80-03.1-E002 & G503-06-00-E003
Disposal Site Address:

Prepared By: **Title:** **Organization:** **Date:**

☐ New Site
☐ Previously Approved Site

I. <u>Compliance Review for Environmental Laws (other than NEPA)</u>

A. National Historic Preservation Act
HISTORIC STRUCTURES

☐ No historic structures on or near site.
☐ No potential to affect historic properties.
☐ Structure less than 50 years old.
☐ Structure over 50 years old.
  ☐ Structure determined ineligible (SHPO/FEMA determination on file).
    ☐ Structure determined eligible (SHPO/FEMA determination on file).
☐ Tribal Trust/Reservation property affected?

Comments:

ARCHEOLOGICAL RESOURCES

☐ Project does not involve any disturbance or involves minor disturbance to a previously disturbed area.
☐ Project does not involve any or only minor disturbance of previously undisturbed ground.
☐ Project involves greater than minor disturbance of previously undisturbed ground.
  ☐ SHPO indicates low potential for presence of archeological or cultural resources.
    ☐ SHPO indicates high potential for resources to be present.
☐ Tribal Trust/Reservation property affected?

Comments:

B. Clean Water Act

☐ Project site located outside of and would not affect any waters of the U.S.
☐ Project site located in or would affect waters of the U.S.

Comments:

C. Endangered Species Act

☐ Project does not affect the physical environment (land disturbance, vegetation removal, sedimentation, dust, noise/waste/hazardous materials emission into the environment, etc.).
☐ Project affects the physical environment
  ☐ Threatened or endangered species or critical habitat not present in or near project site.
    ☐ Species or critical habitat present in or near project site.

Comments:

D. Fish and Wildlife Coordination Act

☐ Project located outside of sensitive habitat, a natural stream or body of water or will not affect any sensitive habitat, natural stream or body of water.
☐ Project is in or affects sensitive habitat, a natural stream or body of water.

Comments:

E. Magnuson-Stevens Fishery Conservation and Management Act

☐ Project is not located near and has no effect on Essential Fish Habitat.
☐ Project near or has an effect on Essential Fish Habitat.

Comments:

F. Wild and Scenic Rivers Act

☐ Project is not along and does not affect a Wild or Scenic River.
☐ Project is along or affects a Wild or Scenic River.

Comments:

G. Coastal Zone Management Act/Coastal Barrier Resources Act

☐ Project is not located in a coastal zone/coastal barrier area.
☐ Project is located in a coastal zone/coastal barrier area.
    ☐ No adverse impacts on coastal resources are anticipated.

Comments:

H. Clean Air Act

☐ Project will not result in permanent air emissions.
☐ Project will result in permanent air emissions.

Comments:

I. Hazardous and Toxic Waste

☐ A Toxic Waste/Hazardous Materials Site Review was conducted.
☐ Project site does not contain any known or observed hazardous or toxic material.
☐ Project site contains hazardous or toxic material.

Comments:

J. Farmland Protection Policy Act

☐ Project does not affect prime or unique farmland.
☐ Project affects prime or unique farmland.

Comments:

K. Other Relevant Laws and Environmental Regulations

Identify Law/Regulations, Issues, and Resolution

Comments:

II. Compliance Review for Executive Orders

A. E.O. 11988 - Floodplains

☐ Project is located outside the floodplain and has No Effect on floodplains.
☐ Project is located in the floodplain or affects floodplains/flood levels.
☐ Project has appropriate floodplain permit.

Comments:

B. E.O. 11990 - Wetlands

☐ Project is located outside a wetland and has No Effect on wetlands.
☐ Project is located in a wetland or has Effects on wetlands.

Comments:

D. E.O. 13093 – American Heritage Rivers

☐ Project is not on or near or has no affect on a designated river.
☐ Project is near or has an effect on a designated river.

Comments:

III. Other Environmental Issues

Identify other potential environmental concerns in the comment box not clearly falling under a law or executive order.

☐ Project does not impact significant habitats such as native prairie or bottomland hardwood
forests.
☐ Project does impact significant habitats.

Comments:

IV. Extraordinary Circumstances

Based on the review of compliance with other environmental laws and Executive Orders, and in consideration of other environmental factors, review the project for extraordinary circumstances.

YES	NO		
☐	☐	(i)	Greater scope or size than normally experienced for a particular category of action;
☐	☐	(ii)	Actions with a high level of public controversy;
☐	☐	(iii)	Potential for degradation, even though slight, of already existing poor environmental conditions;
☐	☐	(iv)	Employment of unproven technology with potential adverse effects or actions involving unique or unknown environmental risks;
☐	☐	(v)	Presence of hazardous or toxic substances at levels that exceed Federal, state or local regulations or standards requiring action or attention;
☐	☐	(vi)	Presence of endangered or threatened species or their critical habitat, or archeological, cultural, historical or other protected resources;
☐	☐	(vii)	Actions with the potential to affect special status areas adversely or other critical resources such as wetlands, coastal zones, wildlife refuge and wilderness areas, wild and scenic rivers, sole or principle drinking water aquifers:
☐	☐	(viii)	Potential for adverse effects on health or safety;
☐	☐	(ix)	Potential to violate a federal, state, local or tribal law or requirement imposed for the protection of the environment;
☐	☐	(x)	Potential for significant cumulative impact when the proposed action is combined with other past, present and reasonably foreseeable future actions, even though the impacts of the proposed action may not be significant by themselves.

Comments:

General Comments: (Examples- vegetation types, site conditions (debris), etc…)

SPECIAL PROVISION
TO
SECTION 02200

SITE PREPARATION AND RESTORATION

Replace Paragraph 1.2.B with the following:

Payment will be on 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, sanitary facilities, construction schedule per Section 01325 and, if required, temporary office and sanitary facilities for Engineer.
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 and submittal of record drawings per Section 01785.

END OF SPECIAL PROVISION

SPECIAL PROVISION
TO
SECTION 02241

CARE AND CONTROL OF WATER

Add Paragraphs 1.2 E & 1.2 F:

1.2 MEASUREMENT AND PAYMENT:

E. Where payment is made for a concrete channel, no separate measurement and payment is made for an earthen channel.
F. Where payment is made for an earthen channel, no separate measurement and payment is made for a concrete channel

Delete and Replace Paragraphs 1.3 B & 1.3 C & Add Paragraph 3.1 E:

1.3 SUBMITTALS

B. Submit a Contractor's Plan for Care and Control of Water for Engineers Review prior to the start of construction.
C. Contractor's Plan shall include the following, at a minimum:
    1. Drawings and type-written descriptions of how Contractor intends to implement and maintain care and control of ground and surface water.
    2. Planned work sequence: provide plan drawings to communicate intended work sequence. Drawings should identify work to be performed before, during, and after temporary diversion of normal flow.
    3. Protection of existing facilities and new construction against normal flow, high flow and potential flooding conditions.
    4. Materials, equipment and procedures contractor proposes to utilize to address surface water including normal channel flow (include information on proposed temporary diversion walls) and ground water including water from beneath adjacent concrete lining.
    5. If proposed, how contractor intends to prepare areas for placement of concrete; seal slab, channel lining, channel low-flow, and shelf.
    6. Products, materials, and equipment proposed for use, as well as proposed methods of installation, maintenance, and removal.
    7. Product manufacturer's descriptive literature, installation instructions, and specifications for any waterstop products, sealants, and pre-fabricated or manufactured temporary cutoff walls proposed for use.
    8. Special mix designs (containing anti-washout or other admixtures not covered in Section 03310) proposed for structural and/or non-structural concrete. Such mix designs shall be submitted with the plan and shall otherwise conform to requirements for submittals indicated in Section 01330 and Section 03310.

3.1 GENERAL

E. During concrete placing and finishing operations, the work area shall be kept free of surface water for a minimum of 3 hours, and free of flowing water for a minimum of 24 hours, after completion of concrete finishing work. The Contractor's Plan for Care and Control of Water may reduce these times, if the plan includes a special concrete mix design and related technical data supporting such time reduction.

END OF SPECIAL PROVISION

SPECIAL PROVISION
TO
SECTION 02315

EXCAVATING AND BACKFILLING

PART 1 - **GENERAL**

1.2 MEASUREMENT AND PAYMENT
Paragraph D. Replace Paragraph D with the following:

D. Measurement shall be based upon **pre-construction, intermediate,** and **final** topographic surveys, as required, conducted and approved by the Engineer.

Pre-construction earthwork quantity – The Engineer has obtained an aerial survey, supplemented or replaced by a ground-based topographic survey **in accordance with the latest land surveying guidelines**, to establish the pre-construction condition. The pre-construction survey may also include bathymetric data obtained through sonar-based or equivalent hydrographic methods to capture submerged features for wet stormwater detention basins or other areas with standing water. This pre-construction survey will be made available to the Contractor. Contractor shall have no more than ten (10) calendar days to dispute the Engineer's pre-construction survey from the receipt of CAD files.

Intermediate earthwork quantity – Intermediate quantity measurements for partial payments **may utilize multiple established survey means** as frequently as needed, as determined by the Engineer. Additionally, truck tickets and other field measurement methods **may be used** as supplemental verification tools to cross-check or support intermediate quantity tracking. The intermediate survey will be made available to the Contractor. The Contractor shall have no more than five (5) calendar days to dispute the Engineer's intermediate survey.

Final earthwork quantity - A topographic survey will determine the final earthwork quantity (refer to the latest land surveying guidelines), typically conducted by the Engineer after seeding.

a) For **Channels**:

- The survey will consist of cross-sections taken at 50-foot intervals, including all breakpoints and supplemental elevations spaced no more than 25 feet apart. Refer to the latest land surveying guidelines for additional information.

b) For **Dry Stormwater Detention Basins**:

- The survey will include a high-resolution topographic surface generated through either ground-based topographic surveying or drone-based LiDAR, as appropriate for the site conditions. To ensure accurate earthwork and volume calculations, the survey must capture the full extent of the detention basin, including the top of the bank and the toe of the slope on both the interior and exterior sides. The entire pond footprint will be surveyed, encompassing the embankments, side slopes, and bottom.

- To support the development of an accurate surface model, elevation shots will be taken using a regular grid pattern, at 25-foot intervals or tighter spacing if required. Additional break lines will be collected to clearly define slope transitions and pond contours. All significant elevation features, such as high points, low points, inlets, outlets, control structures, and emergency spillways, will also be captured. These detailed data points will enable a surface-to-surface comparison to calculate final earthwork quantities and ensure compliance with design specifications.

c) For **Wet Stormwater Detention Basins**:

- Use the same approach as outlined for Dry Stormwater Detention Basins. However, bathymetric surveying methods must be used to capture underwater topography for basins that contain standing water (refer to the latest land surveying guidelines).

The Engineer will have up to fourteen (14) calendar days to review the survey after completion and verification of the field data. During this period, the Engineer may request additional information to resolve discrepancies or address missing elements. Final earthwork quantities will be calculated using the composite method.

The final topographic survey will be provided to the Contractor for review in a digital terrain model (DTM) or triangulated irregular network (TIN) format compatible with AutoCAD. Contractor shall have no more than 10 calendar days to dispute the Engineer's post-construction survey.

Paragraph J. Delete paragraph J and insert the following:

J. Partial pay quantities will be released at regular intervals, to be determined by the Engineer, and based on pre-construction and intermediate topography digital terrain models, plan quantity calculations to date, or field measurement data previously approved by the Engineer. Payment shall not exceed 90% of the planned quantity without submission and approval of an intermediate digital terrain model. Submittals shall include benchmark references, boundary limits, spot elevations, and both initial and current contours, delivered in PDF plot format to scale.

Add Paragraph L: insert the following:

L. Clay Liner - Testing of materials is incidental to excavation pay items included in the contract.

1.4 DEFINITIONS

Paragraph B Change by "Contractor" to "Engineer"
Paragraph C Change by "Contractor" to "Engineer"
Paragraph D Change by "Contractor" to "Engineer"

Add to Section 2.1 FILL MATERIAL:

B. Clay Liner – Clay Liner shall meet the requirements of HCFCD Specification 02314, Articles 2.1 and 2.2A. Clay material may be obtained on-site, provided it meets the specified requirements.

END OF SPECIAL PROVISION

SPECIAL PROVISION
TO
SECTION 02365

STABILIZED CONSTRUCTION ACCESS

Under Part 1 – General, Paragraph 1.1 Summary, add the following sentence:

2. Section includes requirements for installation, maintenance, and removal of stabilized construction access mat.

Under Part 1 – General, Paragraph 1.2 Measurement and Payment, replace 1.2A with the following sentence:

A. When there is not a separate item listed for work in this Section, no separate measurement and payment is made.

Under Part 1 – General, Paragraph 1.3 Submittals, add the following sentence:

B. Submit number of modules for stabilized construction access mat.

Under Part 2 – Products, add the following paragraph:

2.3 STABILIZED CONSTRUCTION ACCESS MAT

A. Provide a reusable, modular, stabilized construction access mat made of plastic resin or similar material that is U/V Stable, recyclable, and chemical resistant.
    a. Minimum thickness of 3.0 inches
    b. Elongation < 0.5 percent
    c. Puncture Strength ≥ 6000 psi
    d. Load bearing capacity ≥ 16,000 pounds per module
    e. UV stability (retained strength) ≥ 95 percent after 8,000 hours
B. Provide anchors to affix access mat to surface in four corners of each module, if necessary.
C. Provide hardware to attach modules directly to one another, if necessary.

Under Part 3 – Execution, Paragraph 3.2 Maintenance, add the following sentence:

E. Conduct maintenance on stabilized construction access mats if greater than 30% sedimentation occurs.
F. Maintain, repair, or replace modules if greater than 10% of the module is compacted to less than 3 inches in thickness.

Under Part 3 – Execution, add the following sentence:

3.3 STABILIZED CONSTRUCTION ACCESS MAT

A. Provide stabilized access and create an entrance that is no less than 20 feet wide and 48 feet long.
B. Utilize additional modules as needed to protect the turning radius for vehicle ingress and egress.
C. Furnish anchors that prevent tire punctures, place anchors for each module and attach each module to one another.
D. Work sub surface so construction access mats are flush with edge of pavement.

END OF SPECIAL PROVISION

SPECIAL PROVISION
TO
SECTION 02376

CONCRETE CHANNEL LINING

Delete paragraph 1.2 C.

Add the following paragraphs:

1.2 MEASUREMENT AND PAYMENT

C. Toewalls, seal slab, grade beams, joint materials, water stop, weep holes, nelson studs or other steel sheet piling connectors, saw cutting and appurtenances will not be measured separately, but are incidental to surface measurement.

Add the following paragraphs:

3.2 PREPARATION FOR CONCRETE PLACEMENT

A. The prepared subgrade or seal slab which forms the base of a concrete placement area should normally be dry at the time of concreting. If the concrete is placed in hot, dry conditions, the base should be lightly dampened with water in advance of concreting. There should be no free water standing on the base, nor water seeping into the placement area, nor should there be any muddy of soft spots when the concrete is placed.

End of Special Provision

SPECIAL PROVISION
TO
SECTION 02630

CONCRETE MANHOLES

Delete and Replace paragraphs 1.2 A, with the following paragraph:

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted in the unit price schedule. Payments for Bid items are considered equal for all entities referenced herein.

Add Paragraphs 1.3 G, 1.3 H, & 1.3 I:

1.3 REFERENCES

G. City of Houston 2021 Standard Specifications; Specification 02081 – Cast-in-Place Concrete Manholes and all references therein
H. City of Houston 2021 Standard Specifications; Specification 02082 – Precast Concrete Manholes and all references therein
I. Harris County Standard Specifications for Construction and Maintenance of Roads and Bridges, Effective Date September 1, 2017; Item 471 – Precast Concrete Manholes and Junction Boxes and all references therein

Add Paragraphs 1.4 D & 1.4 E:

1.4 SUBMITTALS

D. For manholes located within City of Houston Right-of-Way, submit shop drawings and manufacturer's data per 1.04 B, C & D of City of Houston Standard Specification 02081 – Cast-in-Place Concrete Manholes or 1.04 B & C of City of Houston Standard Specification 02082 – Precast Concrete Manholes
E. For manholes located within Harris County Right-of-Way (not including Harris County Flood Control District Right-of-Way), submit product data, shop drawings and manufacturer's data per Paragraph 471.5 & 471.8 of Harris County Standard Specification Item 471 – Precast Concrete Manholes and Junction Boxes

Add paragraphs 2.0 A, 2.0 B, and 2.0 C:

PART 2 – PRODUCTS

2.0 GENERAL

A. For structures located within Harris County Flood Control District Right-of-Way, refer to product information located in this section.

B. For manholes located within City of Houston Right-of-Way, refer to PART 2 – Products of City of Houston 2021 Standard Specification 02081 – Cast-in-Place Concrete Manholes or Specification 02082 – Precast Concrete Manholes
C. For manholes located within Harris County Right-of-Way, refer to paragraph 471.3- Materials in Harris County 2017 Standard Specification Item 471 – Precast Concrete Manholes and Junction Boxes

Add paragraphs 3.0 A, 3.0 B, and 3.0 C:

PART 3 – EXECUTION

3.0 GENERAL

A. For structures located within Harris County Flood Control District Right-of-Way, refer to execution information located in this section.
B. For manholes located within City of Houston Right-of-Way, refer to PART 3 – Execution of City of Houston 2021 02081 – Cast-in-Place Concrete Manholes or Specification 02082 – Precast Concrete Manholes
C. For manholes located within Harris County Right-of-Way, refer to Paragraph 471.7- Installation and Paragraph 471.9 – Marking in Harris County 2017 Standard Specification Item 471 – Precast Concrete Manholes and Junction Boxes

END OF SPECIAL PROVISION

SPECIAL PROVISION
TO
SECTION 02921

TURF PLANTING ZONE PREPARATION

Delete Paragraph 3.2.A in its entirety and replace with the following:

A. Prepare the seedbed to support turf grass and/or sod placement prior to fertilizer/soil amendment application, broadcast seeding or sodding, and hydromulching activity.

Delete Paragraph 3.2.C in its entirety and replace with the following:

C. Apply fertilizer and soil amendment uniformly to seedbed as directed by a HCFCD representative and rake into the top 1-2” of soil. Fertilizer, soil amendment, seed, and hydromulch must all be applied separately. The HCFCD representative will determine which soil amendment will be used.

   a. Refer to Fertilizer and Soil Amendment Specification Section 02936

END OF SPECIAL PROVISION

SPECIAL PROVISION
TO
SECTION 02936

FERTILIZER AND SOIL AMENDMENTS

Add Paragraph 3.1 B:

B. Rake or lightly turn the soil over so that applied products are incorporated into the top 1-2” of soil prior to seeding.

Delete Paragraph 3.3.A in its entirety and replace with the following:

A. Apply soil amendments to the prepared seedbed prior to seeding. Refer to Section 02921 – Turf Planting Zone Preparation.

Delete Paragraph 3.3.B.2 in its entirety and replace with the following:

2. Elemental Sulfur – 300 lbs. per acre

Add Paragraph 3.3 C:

C. Products will be applied according to soil pH levels. In general, soils with pH below 5.5 will receive Lime application. Soils with pH between 5.5 and 7.4 will not require amendment. Soils with greater than 7.5 will receive Elemental Sulfur application. Gypsum will be used anytime sodium levels are elevated in the soils. The HCFCD representative will determine which soil amendment(s) will be used based on the soil testing information (Refer to Section 02911 TOPSOIL 1.4 SUBMITTALS).

END OF SPECIAL PROVISION

SECTION 01110

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY

A. The Taylor Gully Channel Improvements (G103-80-03.1-E002) and Woodridge Stormwater Detention Basin (G503-06-00-E003) are located in the San Jacinto Watershed in Harris County and Montgomery County, Texas. The project consists of the construction of a rectangular concrete channel within the existing Taylor Gully earthen channel and construction of a wet bottom detention pond upstream of the existing Taylor Gully channel. The channel improvement activities involve lowering the existing flowline by approximately 4 feet by excavating 54,085 cubic yards and installing 10,306 linear feet of a 20 foot by 4 foot concrete low flow channel. Work within the channel involves a concrete maintenance access ramp, a 156-foot-long drop structure at the upstream of the channel, a 100-foot-long drop structure at the downstream portion of the channel, and construction of the Rustling Elms Drive bridge. Local stormwater runoff enters the channel by way of approximately twenty-three outfall pipes with headwalls and thirty-nine interceptor structures. The 42-acre detention basin consists of excavating approximately 1,002,639 cubic yards. It is a wet bottom basin with 30 to 65 feet berm widths and backslope swales. Additionally, the detention basin involves the construction of a limestone aggregate maintenance access ramp, a 30-foot-wide bottom shelf, a 52-feet-wide vegetative shelf for wetlands planting, and a wet pool 6 feet deep. An adjacent wet bottom pond exists east of the proposed basin and allows stormwater runoff to enter the basin by way of two inflow-outflow culverts. The culverts shall be constructed with appropriately sized headwalls and installation of accompanying riprap as shown on the plans. Runoff flows out of the existing pond through a dual 9-feet by 6-feet outfall structure which drains directly into the Taylor Gully channel. A proposed emergency overflow weir set at the 100-yr water surface elevation shall be constructed over the existing berm and outfall into the channel to prevent overtopping. A 30-inch gas pipeline exists under the north-side berm of the proposed wet bottom detention pond. Temporary access matting is to be used to protect the pipeline during construction of the project site.

B. The objective of the work is to provide stormwater detention in the San Jacinto Watershed to reduce flood levels and the overall risk of flooding for nearby structures.

C. The “Time of Completion” of this construction contract will be 552 calendar days (defined as consecutive calendar days).

D. This project is sponsored by CDBG-MIT Funding. HUD Grant # B-18-DP-48-0002 and GLO Grant # 24-064-000-E151. All work by the Contractor and Subcontractors shall be in accordance with applicable HCFCD and CDBG-MIT regulations, and all other Required Federal Grant Contract Provisions.

E. The construction plans are advertisement set plans and are intended as a guide for project location, quantities, access map and standard details. A full set of Issued for Construction (IFC) plans will be provided after commissioners court award of the bid. Actual project limits will be determined in the field by the Engineer prior to construction activities. Due to dynamic conditions in the field, project scope, dimensions, and quantities may vary from the plans and/or cross-sections. HCFCD reserves the right to adjust plans and quantities as necessary in accordance with the contract.

1.2 CONTRACTOR’S USE OF RIGHT-OF-WAY

A. Access: The Contractor will be responsible for all items to establish, maintain, and repair the access route. The seeding of staging and access areas is incidental to and included in Specification Section Number 02200, Site Preparation and Restoration. The Contractor will visit the known project sites prior to bidding to understand the scope and magnitude of the Work. Water crossings needed for access will be included in the project plans issued to the contract. Barricades and/or Metal Beam Guard Fence may need to be removed and replaced/reinstalled for access and will be included in the project plans issued for the project. The removal and installation will be paid under 2840-06 Remove and Re-Install Metal Beam Guard Fence. The HCFCD has adequate right-of-way for access to the job. Refer to the Plans for location of the right-of-way limits and access points. The Contractor may access the project from other than HCFCD ROW if the Contractor submits copies of the agreements to the Engineer.

B. Work Area: The Work Area is defined as the right-of-way available to work within to construct the project. Encroachments will be removed to utilize all of the right-of-way as directed by the District’s Director or his/her designee. In cases where fence and/or other encroachments are called to be removed, all of the fence and/or other encroachments should be removed prior to undertaking any construction activities on site and placed neatly on the adjacent property. Unless shown elsewhere on the plans, the removal of encroachments is incidental to site preparation and restoration. Where the

encroachments are not directed to be removed, the Contractor will be expected to utilize the open right-of-way.

C. Use of Private Property: Do not enter private property without proper authority from the owner and HCFCD.

D. Where there are pipelines crossing the project area in this contract, the Contractor shall mat and/or otherwise protect the utilities as directed by the utility owner and as agreed and directed by the District's Director or his/her designee. Payment for pipeline and utility protection is incidental to 01141-04, 01531-01, and 01531-02.

1.3 DISTRICT FURNISHED ITEMS

A. COE Permits: The Project Plan Set has been investigated for environmental impacts. The proposed work was determined to be eligible for coverage under USACE Nationwide Permit (NWP) 13. The Contractor must follow all applicable provisions of the project permits in accordance with the USACE Permit conditions.

B. Geotechnical Information: The geotechnical reports utilized by the Engineer was prepared by Geotest Engineering, Inc. dated April 2025, and Cibor Geoconsultants dated October 2022. The geotechnical reports will be available to bidders. The Contractor may rely upon the accuracy of the "technical data" contained in the reports, but not upon nontechnical data, interpretations, or opinions contained therein or for the completeness thereof for the Contractor's purposes. Except as indicated in the immediately preceding sentence, the Contractor shall have full responsibility with respect to subsurface conditions at the site.

C. TPDES: The filing of a Notice of Intent (NOI) per the Texas Pollution Discharge Elimination System (TPDES) and Storm Water Pollution Prevention Plan (SWPPP) are required for this project. This will require the Contractor to complete weekly Inspection and Maintenance Report forms for each site and other documentation necessary to be in compliance with TPDES. Payment for all inspections and associated paperwork and documentation necessary for compliance with TPDES is incidental to and included in Specification Section Number 02200, Site Preparation and Restoration.

1. The Contractor may submit alternatives to the SWPPP to reflect means, methods, and sequence of work. The SWPPP may be modified during construction to reflect the site-specific nature of the Project. The sequencing of major erosion and sediment control activities and updating and storage of maintenance records shall be

adhered to in accordance with the SWPPP certified by the Contractor. At a minimum, plan forms will be required to be submitted weekly.

2. The Contractor shall become the co-permittee under the TPDES General Permit and will be required to have their authorized representative sign the Contractor/Inspector Certification who is responsible for implementation, modification, and compliance with the terms and conditions of the SWPPP.
3. If applicable, send a copy of the Construction Site Notice to the operator of the appropriate Municipal Separate Storm Sewer System (MS4) and post a copy of the notice on the Project site.
4. Fees: An application fee of $225 will be required and shall be paid by the Contractor with the electronic NOI submittal and $325 for paper NOI submittal.

D. The Harris County Flood Control District 2020 Standard Construction Specifications and Details Book is available at https://harriscountytx.bonfirehub.com, or may be downloaded from the District website at www.hcfcd.org. The Texas Department of Transportation's, "Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges", dated November 1, 2014, and the 2023 City of Houston specifications, are also referenced on this project.

E. Identify any reports or other project related information available for download at https://harriscountytx.bonfirehub.com or upon request, such as environmental investigations, right-of-entry agreements, letters from pipeline companies, etc.

F. AutoCAD Civil 3D files containing the 3D surfaces of the design will be provided to the contractor.

G. Project signs (two signs to be provided by the district for contractor to install)

1.4 WORK SEQUENCE

A. The Contractor will be required to provide sufficient equipment, manpower, and resources necessary to perform work at multiple sites, as required to adhere to the schedule established by the NRCS funding agreements.

B. The sequence of erosion and sediment control activities is as follows:
   1. Install stabilized construction access at all entries.
   2. SWPPP installation along access road and along work area limits as
   3. designated on the SWPPP layouts in the construction drawings.

4. Install Sod per turf establishment specification 02921, as excavation is being completed to prevent erosion issues.
5. Perform final grading of the site in preparation for turf establishment by other HCFCD contractor(s) unless work is shown on Plans.

C. The sequence of major work activities is as follows:
1. Set TBMs for survey control.
2. Perform construction surveying.
3. Set up storm water pollution prevention plan and post NOI.
4. Implement Traffic Control Plan and install stabilized construction entrances at each access location.
5. Install construction fence around protected areas such as wetlands and protective fence around Tree Preservation Zone.
6. Provide protection as required for Williams Gas Pipeline.
7. Clear and grub designated areas.
8. Demo existing concrete per plans.
9. Remove encroachments as noted on the IFC Project Plan Set.
10. Excavate basin and construct outfall pipes.
11. Establish the proposed flowline of the channel and construct rectangular concrete channel lining, side slopes, and buried Grade #1 Riprap along the channel as noted on the IFC Project Plan Set
12. Construct bridge.
13. Install outfalls and related repairs as noted on the IFC Project Plan Set
14. Grade backslope swale drainage swales and dress the berms/project site as noted on the IFC Project Plan Set.
15. Install access ramp as noted on the IFC Project Plan Set.
16. Turn over completed sections of the project site for HCFCD to establish vegetation as noted in the General Notes of the IFC Project Plan Set.
17. Finalize grading and conduct surveys and inspections as necessary to confirm design finish grading has been achieved.
18. Upon approval by HCFCD inspectors, remove silt fence and construction fence, and clean up and haul off all debris, including streets and street access locations.
19. Remove traffic control devices.

D. Variances to this sequence of conducting work on the project sites may be allowed by the Engineer per their review and approval by written request from the Contractor.

1.5 GENERAL NOTES

See General Notes provided in Construction Drawings.

1.6 ENVIRONMENTAL MITIGATION MEASURES

ENVIRONMENTAL MITIGATION MEASURES

PART 1 – GENERAL

1.1 SUMMARY

A. These notes supplement the Environmental Mitigation Measures Plan Sheet by providing guidance to the construction contractors and HCFCD Construction Division staff when environmental resources, habitat, and/or protected species may be present. Topics included are species-specific Mitigation Measures, the Migratory Bird Treaty Act, Endangered Species Act, Clean Water Act, Cultural Resources, and other sensitive areas. Below is a complete summary of the Environmental Mitigation Measures required for this project.

1.2 ACRONYMS

- Best Management Practices (BMP)
- Endangered Species Act (ESA)
- Migratory Bird Treaty Act (MBTA)
- Ordinary-High Water Mark (OHWM)
- Right-of-Way (ROW)
- Texas Parks and Wildlife (TPWD)
- Tricolored Bat (TCB)
- United States Fish and Wildlife Service (USFWS)

1.3 GENERAL BMPs

A. The onsite wetlands and the associated buffer zone, shown on the plans, must be clearly marked with construction fencing prior to construction activities beginning, and must be maintained throughout the duration of construction.

B. Construction activities may not take place within the protected wetlands buffer zone and/or protected stream segments, as called out on the plans, unless written consent is given by HCFCD and appropriate protections including mats are used.

C. Contractor must use silt fencing around all active construction, as shown on plans. HCFCD's standard details for reinforced silt fence require burial at 6" depth and a height of 24".

D. Silt fencing in flood prone areas must be removed when a major storm event is anticipated and must be replaced after the storm passes.

E. Final stabilization of all disturbed project limits should be achieved via hydromulch (not containing microplastics) with seeding according to specifications in the plans, unless alternative stabilization measures are specified on the plans.

F. All contract employees (excluding material disposal truck drivers), who operate any form of on-site equipment or conduct ground-disturbing or vegetation-clearing activities that will be working on-site for more than 1 day, must take the Environmental Awareness Training prior to beginning work on-site and notify the HCFCD Construction Project Manager if any protected species are identified on-site during construction.

G. Construction activities are prohibited when there is a rain even that releases more than 2

inches of precipitation over a 24-hour period, after which, construction may resume.

H. Trash, food, containers, and food waste must be secured at all times or placed in animal-proof trash containers onsite. The contents of the trash containers must be transferred from the work site at the end of each day.

I. Contractor must notify HCFCD Environmental a minimum of 7 calendar days prior to work below the OHWM and within a jurisdictional wetland.

J. Construction will take place during daylight hours between 7am and 7pm to minimize lighting and noise effects. Exceptions must be made in writing to HCFCD.

PART 2 – SPECIES SPECIFIC MITIGATION MEASURES

2.4 PROTECTED BAT SPECIES

2.2.1 TREE CLEARING

A. Rafinesque's big eared bat is a state-protected species that may occur within the project limits. As such, it is afforded protections under state law and harm to bats and their pups is prohibited. This bat forms maternal roosts with a pupping season that occurs between May 1-Sept.15th. If impacts to trees cannot be avoided during this timeframe, prior to any tree clearing, a roost survey must be conducted by HCFCD-provided biologists to inspect tree cavities and crevices for Rafinesque's big eared bat. The contractor must submit a written request to HCFCD for this survey within 5 days of tree removal. This request may be made in combination with the required nest habitat survey, under a single request. Do not proceed until HCFCD has conducted a roost survey to verify protected bat species are not present. HCFCD must provide written authorization to proceed.

B. Tree clearing must only include the number of trees necessary to implement the project construction activities safely during all phases or aspects of the project.

C. Tree removal must be limited to the areas specified in the project plans and clearing limits marked in the field (e.g. Install brightly colored flagging/fencing prior to any tree clearing to ensure workers stay within clearing limits). All contractor personnel are directed to stay out of protected areas.

2.2.2 DISTURBANCE MINIMIZATION - LIGHTING AND NOISE

A. Lighting must be downcast and pointed away from sensitive areas where the project crosses potential bat habitat (i.e. trees, culverts, and bridges).

B. If impact hammers are utilized, then to minimize noise, the "ramp up" technique will be implemented to avoid sudden loud sounds.

2.2.3 MINIMIZE DISTURBANCE OF ROOSTING HABITAT IN STRUCTURES

A. Prior to any project related structural (bridge/culvert/building) modification, a HCFCD-provided biological monitor must conduct a survey to identify the presence or absence of hibernating or roosting bats. If bats are found, then the contractor must notify HCFCD immediately and work must cease within 100 feet of the structure until HCFCD can notify and coordinate with the appropriate state/federal agencies.

B. The contractor may not exclude protected bat species from roosting in existing structures in the project work area.
C. Roost surveys are required prior to structural removal and disturbance if temperatures fall below 40 degrees, as bats may be hibernating and unable to flee without harm prior to demolition.

2.2.4 ACTION UPON DISCOVERY

D. If a protected bat species is observed within the work area, the roosting habitat (tree/culvert/bridge) will be buffered until the pups have been confirmed no longer present or the bats can be relocated. HCFCD will contact Bob Gottfried at TPWD for further coordination and submit findings to the TXNDD at: https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/submit.phtml.

2.2.4 ACTION UPON FEDERAL LISTING

A. The tricolored bat (TCB) is a species proposed for federal listing under section 9 of the ESA. Habitat for TCB is present within the project limits. The aforementioned mitigation measures will help to conserve the species until a listing decision is made. However, should TCB become listed during construction, HCFCD will begin consultation with USFWS, during which the contractor must follow this protocol:

- All culvert and bridge removals will be suspended until the completion of consultation with USFWS
- All tree removal occurring between May 1-July 15th will be suspended until the completion of consultation with USFWS
- Tree clearing between March 15-May 1 will only be permitted after a negative finding acoustic survey, coordinated with USFWS
- All tree clearing activities will stop when temperatures fall below 40°f for 3 consecutive days. They will not resume until temperatures remain above 40°f for a 24-hour period after the initial drop.
- The contractor shall immediately contact HCFCD to report any sightings or encounters between TCB and on-site workers or equipment that result in harm/injury, harassment, or death of TCB.

PART 3 – MIGRATORY BIRD TREATY ACT AND BALD & GOLDEN EAGLE PROTECTION ACT

3.1 NEST PROTECTIONS AND BIOLOGICAL MONITORING PROCESSES

A. Activities that disturb bird habitat, including but not limited to clearing, grubbing, and impacts to structures where migratory birds and bald eagles might nest require a nest habitat survey. Do not proceed until HCFCD has conducted a nest habitat survey to verify active migratory bird nests and bald eagle nests are not present. HCFCD must provide written authorization to proceed.
B. A bird nest survey must be conducted within 5 days of any vegetation disturbance, regardless of time of year. Any nests found will receive a species-specific buffer, biweekly monitoring, and must be avoided until the nest is no longer occupied.
C. Written authorization to proceed with clearing will include a 5-day time limit to complete the clearing and if clearing is not completed in this time limit, then a follow-up re-survey of nest habitat will be required to re-authorize clearing for a new 5-day time limit.

Clearing should be phased and planned accordingly based on these requirements. The day of the survey is day 1 of the 5 total days.

D. Biological monitors will be present during construction activities to assist construction contractors in avoiding the "take" of migratory birds. Active nests are recorded on a GPS map and given to contractors so that all personnel are aware of buffered areas to be avoided. Nests will be classified as active on the contractor map until it is no longer considered active by the biological monitor.

PART 4 – CLEAN WATER ACT

4.1 WATER QUALITY BEST MANAGEMENT PRACTICES

A. Nationwide permit 7 and 43 authorizes the execution of proposed project activities provided that the resulting conditions would not result in violation of the Texas Surface Water Quality Standards as required by section 401 of the CWA and 16 Texas Administrative Code 3.93. This includes implementation of BMPs to avoid and minimize erosion and sedimentation of waters during construction and post-Construction BMPs to avoid and minimize augmentation of total suspended solids loading in waters. BMPs are described in detail in the Railroad Commission of Texas letter to the USACE below. (https://www.swg.usace.army.mil/portals/26/docs/regulatory/2021nwp/swd_texas_wqc_txrrc_2021%20nwp_dec%2018-2020_complete.pdf?ver=tgoiqm_dux6vu1l4_i0gfw%3d%3d.)

PART 5 – CULTURAL RESOURCES AND SENSITIVE AREAS

5.1 ACTION UPON ENCOUNTER

A. If cultural resources (i.e., artifacts or human remains) are encountered during project construction, then the contractor should utilize the unanticipated discoveries plan that HCFCD has in place for each of its projects to make sure appropriate protocols are followed with regard to the protection of previously unrecorded cultural resources.

END OF SECTION

SECTION 01141

UTILITY COORDINATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for coordination with Utility Companies (Private and Public Utility Companies and Pipeline Companies) when work by the Contractor will be performed upon, under, or over Utilities and Utility Company Right-of-Way that may impact current or future operations.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment will be an allowance as noted on the Unit Price Schedule.
B. Refer to Section 01270 – Measurement and Payment for Unit Price Procedures.
C. This pay item is an allowance amount to reimburse the Contractor for actual cost of Utility Company fees which include but are not limited to the following: costs of insurance required by the Utility Company, costs of Temporary Access Agreement, costs to temporarily brace power poles, costs of providing temporary 24-hour access if necessary, and all other costs of coordination with the Utility Company.
D. Payment will be based on the cost incurred by the Utility Company to make the relocation, bracing, or other temporary or permanent measure or modification to their facility, plus a five (5) percent markup fee for coordination with the Contractor. Payment will be made on the following schedule:
E. Payment of the full amount agreed to by the Engineer will be made upon completion of the work by the Utility Company and submittal of a copy of the paid invoice to the Utility Company.

1.3 SUBMITTALS

A. Refer to Section 01330 – Submittal Procedures.
B. All submittals and work shall be completed in accordance with the Utility Company Designated Representative.
C. Contractor must submit the Utility Company proposal to conduct the work to the Engineer for review and approval prior to notifying the Utility Company to move ahead with the work.

1.4 COORDINATION

A. The Contractor shall afford the same cooperation with the Utility Company as it does with the District and will coordinate work activities with the Utility Company and receive approval prior to performing the work.
B. When working near pipelines, Contractors should conform to the most stringent pipeline company guidelines.
C. Use of Pipeline Representatives will be determined by the Pipeline Owner. The contractor shall contact all pipeline owners before start of construction, to arrange for Pipeline Representatives as needed.

1.1 AGREEMENT

A. Prior to beginning work, the Contractor may be required to execute a Temporary Access Agreement with the Utility Company to work within the Utility company Right-of-Way.

PART 2 – PRODUCTS - Not Used.

PART 3 – EXECUTION

3.1 WORK

A. All work performed by the Contractor when working on or adjacent to the pipelines shall be performed in a manner satisfactory to the representative of the pipeline or his authorized representative (hereinafter the Pipeline Representative).
B. Pipeline guidelines can be found below. Guidelines are subject to change based on revisions by the Utility Company to their policies/procedures. Contract must abide by current Utility Company guidelines.
C. No additional payment will be provided due to delays of the pipeline owner or Pipeline Representative.

END OF SECTION

SECTION 01531

TEMPORARY ACCESS MATS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for installation, maintenance, replacement during construction, and removal and disposal of Temporary Access Mats.

1.2 MEASUREMENT AND PAYMENT

A. Measurement and payment is as noted on the Unit Price Schedule.
B. Payment for pipeline and utility protection is incidental to and included in Specification Section Number 02200, Site Preparation and Restoration.
C. Refer to Section 01270 - Measurement and Payment for unit price procedures.

PART 2 – PRODUCTS

2.1 TEMPORARY ACCESS MATS

A. Provide Temporary Access Mats that are wooden and have a minimum dimension of 8 foot by 16 foot by 3 ply of 2-inch x 8-inch wooden members.
B. When directed by the Project Plans, or the Private Utility Owner to provide Temporary Access Mats that meet a specific type, composition, size, dimension, or thickness, provide Temporary Access Mats, and any associated earthen fill and appurtenances that meet these requirements.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install Temporary Access Mats flat on the ground/surface that cover the full surface area designated for matting.
B. Temporary Access Mats should be butted up firmly against one another to ensure no gaps in coverage and should be interlocked and connected together per the manufacturer's recommendations.
C. When installation measures are directed by the Project Plans, or the Private Utility Owner, install the Temporary Access Mats and any associated work such as additional earthen fill, bridging measures, and appurtenance per these installation procedures.

3.2 MAINTENANCE

A. Contractor shall inspect Temporary Access Mats installed on site weekly to ensure they have remained firmly against one another and are interlocked and connected per the manufacturer's recommendations. Issues noted during use or following the weekly inspection should be addressed immediately.
B. Repair loose or missing mat boards with new boards when necessary. Temporary Access Mats found to be damaged beyond repair shall be removed and replaced at no additional cost to the District.
C. When maintenance measures are directed by the Project Plans, or the Private Utility Owner, maintain or replace the Temporary Access Mats per these maintenance procedures.

3.3 REMOVAL AND DISPOSAL

A. Refer to Section 02120 – Material Disposal.
B. Upon completion of the Project remove and dispose of all Temporary Access Mats and appurtenances and restore the designated area to its preconstruction condition.

END OF SECTION

SECTION 02210

LOW WATER CROSSINGS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for installation, maintenance, and removal of Low Water Crossings.

1.2 MEASUREMENT AND PAYMENT

A. No separate payment is made under this Section. Include cost for work under this Section in the related items listed on the Unit Price Schedule
B. 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 SUBMITTALS

A. Refer to Section 01330 - Submittal Procedures.
B. Submit a plan to the Engineer prior to the start of construction.
C. Plan shall include drawings and descriptions of Low Water Crossing. Plan shall cover the protection of existing facilities and proposed Work with normal flow, high flow, and potential flooding conditions.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION

3.1 INSTALLATION

A. Select the means, methods, and techniques to install Low Water Crossing and maintain flow of the channel.
B. Low Water Crossing shall be installed in a manner that will preserve the strength of the subgrade and backfill, not cause instability of slopes, will protect the proposed Work and not result in damage to existing facilities or contamination of water.
C. When installation measures are directed by the Project Plans, install the Low Water Crossing and any associated Work per these installation procedures.

3.2 MAINTENANCE

A. Repair or replace damage caused by water at no cost to the District.

B. Contractor shall inspect installed Low Water Crossing on site weekly to ensure stability and safety. Issues noted during use or following the weekly inspection should be addressed immediately.
C. Contractor shall ensure that channel is open to flow at all times. At no cost to the District, remove Low Water Crossing as directed by the Engineer when needed to protect the public and public infrastructure and reinstall after event.

3.3 REMOVAL AND DISPOSAL

A. Refer to Section 02120 – Material Disposal.
B. Upon completion of the project remove and dispose of Low Water Crossing and restore the designated area to its preconstruction condition.

END OF SECTION

SECTION 02366

INLET PROTECTION BARRIER

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for furnishing, installation, maintenance and removal of inlet protection barrier devices. Inlet protection barrier devices shall be used on all existing and proposed inlets where infiltration can occur from project storm water runoff.

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. No separate measurement and payment will be made for maintenance, entire replacement or removal of inlet protection barrier devices. No separate measurement and payment will be made for removal of accumulated sediment around inlet protection barrier devices. Final removal of the inlet protection barrier is incidental to the cost of the inlet protection barrier.

1.3 SUBMITTALS

A. Refer to Section 01330 – Submittals.
B. Designate inlet protection barrier devices to be used.
C. Submit for approval product specifications of protection barrier devices to be used.

PART 2 – PRODUCTS

2.1 INLET PROTECTION BARRIERS

A. The inlet protection barrier shall be capable of covering inlet openings of three (3) feet minimum and eighteen (18) feet maximum.
B. The inlet protection device shall extend a minimum of twenty four (24) inches beyond both sides of the inlet opening.
C. The inlet protection barrier shall be a minimum of seven (7) inches tall and shall be weighted for secure placement and minimize potential floating.
D. The inlet protection barrier shall have adequate tie downs to securely fix the device over the inlet opening and prevent sliding.
E. The inlet protection barrier shall be easy to clean and maintain.

F. The inlet protection barrier devices shall be “GutterGator” by ACF Environmental, Inc. or equivalent quality.

PART 3 – EXECUTION

3.1 PLACEMENT

A. Place inlet protection barriers at all existing and proposed inlets which could receive project storm water runoff within and immediately adjacent to the project limits.
B. Placements of inlet protection barriers shall in no way block or impede driveways or sidewalks at any time.

3.2 CONSTRUCTION

A. Install inlet protection barriers in front of the curb inlet opening.
B. Provide adequate weighting to the device to minimize potential floating or uplift. The weighting system shall not impede upstream gutter flow.
C. Provide adequate tie-back to minimize sliding or lateral movement.

3.3 MAINTENANCE

A. Inlet protection barrier devices shall be visually inspected at a minimum of once a month or immediately after each rain event of one half (1/2) inch or more.
B. Inlet protection barriers and adjacent gutters shall be cleaned if a visual inspection shows sediment and debris build up around the device.
C. Inlet protection barriers shall be cleaned if ponding is occurring around device.
D. Inlet protection barriers shall be cleaned in periods of no runoff. Inlet protection barriers shall not be cleaned during a wet weather event.
E. If evidence of significant sediment is seen within inlet box during scheduled visual inspections the placement of the inlet protection barrier shall be adjusted or replaced in whole.

3.4 REMOVAL OF INLET PROTECTION BARRIERS

A. Inlet protection barriers shall remain in place for the duration of the project and removed upon final project completion and HCFCD project acceptance.

3.5 MATERIAL DISPOSAL

A. Refer to Section 02120 – Material Disposal.
B. Clean inlet protection barriers in a location approved by the Engineer.

3.6 SITE RESTORATION

A. Clean all gutters of sediment and debris adjacent to inlet openings upon final removal of inlet protection barrier devices.
B. Clean all inlet boxes of sediment and debris upon final removal of inlet protection barrier devices.

END OF SECTION

SECTION 02820

FENCES AND BARRICADES

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes requirements for removal and replacement of Type III Barricades.
B. Section includes requirements for removal of Fence Encroachments.

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. No separate payment for temporary Barricades. Temporary Barricades shall be paid in accordance with Section 01555 - Traffic Control and Regulation.

1.3 REFERENCES

A. Texas Manual on Uniform Traffic Control Devices (TMUTCD), Latest Edition.

PART 2 – PRODUCTS

2.1 BARRICADES

A. All Barricades shall be in accordance with the requirements of the “Texas Manual on Uniform Traffic Control Devices” (TMUTCD).
B. Markings for permanent Type III Barricade rails shall be alternating red and white chevron striping sloping downward at an angle of 45 degrees in the direction traffic is to pass. All parts of the Barricade not striped shall be painted white.
C. Markings for temporary Type III Barricade rails shall be alternating orange and white chevron striping sloping downward at an angle of 45 degrees in the direction traffic is to pass. All parts of the Barricade not striped shall be painted white.
D. Where a Type III Barricade extends entirely across a roadway, the stripes shall slope downward in the direction toward which traffic must turn when detouring. Where both right and left turns are provided for, the chevron striping shall slope downward in both directions from the center of the Barricade.
E. Reflectorized sheeting used for the chevron striping on both permanent and temporary Barricades shall be, as a minimum, in accordance with Harris County Standard Specification Item 649 “Wide Angle Prismatic Retroreflective Sheeting for Traffic Control Signs (Diamond Grade)”.
F. Re-use of Barricade shall be allowed if found satisfactory in good condition

and shall be subject to approval by the Engineer.

PART 3 – EXECUTION

3.1 BARRICADES

A. Remove and Dispose of Existing Barricades, as directed in the plans, in accordance with Section 02120 – Material Disposal.
B. All Barricades shall be installed in accordance with the drawings, the TMUTCD and Section 01555 – Traffic Control and Regulation.

3.2 FENCES

A. Contractor may remove Fence Encroachments only as called out in the Plans. Where the Encroachments are not directed to be removed, the Contractor will be expected to utilize the open right-of-way, and not disturb the existing fencing.
B. In cases where Fence Encroachments are called to be removed in the Plans, they should be removed prior to undertaking any construction activities on site.
C. Place removed fencing neatly on the adjacent property.

END OF SECTION

FOR PROJECTS INITIATED
AFTER MAY 1, 2016
REVISION 5

ITEM 230

CRUSHED AGGREGATE BASE COURSE

230.1 Description. This Item shall govern for a foundation course for a surface course or for other base courses and shall be composed of crushed aggregate materials; and shall be constructed as herein specified in one or more courses in conformity with the typical sections shown on the plans and to the lines and grades as established by the Engineer.

230.2 Materials. The materials shall be obtained from approved sources, shall be crushed, and shall consist of durable particles of crushed aggregate, mixed with approved binding material. The crushed material shall have a minimum compressive strength of 45 psi at 0 psi lateral pressure and 175 psi at 15 psi lateral pressure using triaxial testing procedures. The crushed aggregate shall meet the following gradation when tested in accordance with ASTM C136 " Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates."

TABLE 1

RETAINED ON SIEVE CONFORMING TO ASTM E11	% RETAINED, BY WEIGHT
1-3/4 Inch	0
7/8 Inch	10 – 35
3/8 Inch	30 – 50
No. 4	45 – 65
No. 40	70 – 85

The material passing the No. 40 sieve shall meet the following requirements when tested in accordance with ASTM D4318 "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils."

A. The liquid limit shall not exceed 35

B. The plasticity index shall not exceed 10

All material retained on the No. 40 sieve shall have a Los Angeles Abrasion percent of wear not exceeding 40 when tested in accordance with ASTM C131 "Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine."

With prior written permission of the Engineer, additives may be used to meet the above requirements.

230.3 Construction Methods. The subgrade shall be prepared in accordance with the pertinent item for subgrade. Immediately before placing the base material, the subgrade shall be checked as to conformity with the grade and section. Any deviation in excess of 1/2 inch in cross-section and in a length of 16 feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and compacting by sprinkling and rolling. Sufficient subgrade shall be prepared in advance to insure satisfactory prosecution of the work.

The material for the first course shall be deposited on the subgrade in a lift not to exceed 6 inches in thickness. Material deposited upon the subgrade shall be spread and shaped the same day unless otherwise directed by the Engineer. The material shall be sprinkled, if directed and shall then be bladed, dragged and shaped to the typical sections as shown on the plans. All areas and most of segregated coarse or fine material shall be corrected or removed and replaced with well graded material as directed by the Engineer. If additional binder is considered desirable or necessary after the material is spread and shaped, it shall be furnished and applied in the amount directed by the Engineer. Such binder material shall be carefully and evenly incorporated with the material in-place by scarifying harrowing, brooming or by other approved methods.

The course shall be sprinkled as required and compacted to the extent necessary to provide not less than 95 percent of modified proctor density (ASTM D1557 “Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))”) at a moisture content ranging from optimum to 3 percent above optimum. In addition to the requirements specified for density, the full depth of the flexible base shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section of flexible base is completed, tests as necessary will be made by the Engineer. If the material fails to meet the density requirements, it shall be reworked as necessary to meet these requirements. Throughout this entire operation the shape of the course shall be maintained by blading, and the surface upon completion shall be smooth and in conformity with the typical sections shown on the plans and to the established lines and grades. In that area on which pavement is to be placed, any deviation in excess of 1/4 inch in cross-section and in length of 16 feet measured longitudinally shall be corrected by loosening, adding or removing material as required, reshaping and recompacting by sprinkling and rolling. Should the base course, due to any reason or cause, lose the required stability, density or finish before the surface is

completed, it shall be recompacted and refinished at the sole expense of the Contractor.

Construction methods for succeeding courses shall be the same as prescribed for the first course. Prior to placing the surfacing on the completed base, the base shall be dry cured to the extent directed by the Engineer.

230.4 Quality Assurance. The Materials Engineer will determine the Moisture-Density Relationship in accordance with ASTM D1557 on material secured from the source of supply, or the Contractor.

The Materials Engineer will determine the in-place density in accordance with ASTM D6938 “Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)” or ASTM D1556 “Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.” The minimum level of testing will consist of at least three tests for each 500 feet per lift per lane of roadway, or 4,000 square feet of completed base.

230.5 Acceptance Requirements. The completed base course shall be checked for determining acceptance as provided herein.

Upon completion of compaction operations, the density of the completed course will be determined in accordance with ASTM D6938 or ASTM D1556. A minimum of one density test will be taken per 1,000 linear feet per roadway. The location of the test will be chosen randomly. If any density test is below requirements, two additional tests will be taken within 5 feet of the failing test location and the average of the three tests will be used as the value for the 1,000 foot location.

The density requirements as based on ASTM D1557, will be 95 percent of the maximum density.

If the density test value per 1,000 foot section is below 95 percent, a price adjustment will be supplied as follows:

DENSITY TEST VALUE	% OF CONTRACT UNIT PRICE
95.0 and above	100
93.0 to 94.9	90
90.0 to 92.9	75
Below 90	50 or remove*

* At the option of the Engineer

The completed base course will not vary from plan thickness in excess of the following tolerances. Base course thickness deficiencies in excess of these tolerances shall be corrected, as specified herein, at the Contractor's expense.

UNDERTHICKNESS	OVERTHICKNESS
1 inch	1-1/2 inches

If an individual test exceeds allowable tolerances, two additional tests will be taken within 5 feet of the failing test location and the average of the three tests (rounded off to the nearest 1/4 inch) will be used as the value for that location. Any failing areas will be isolated for purposes of correction. Base course thickness deficiencies in excess of the foregoing tolerances shall be corrected as follows.

If no grade adjustments are permitted, thickness deficiencies shall be corrected by removing and replacing the full depth of base course in deficient areas with one of the following materials:

A. Item 231 “Cement Stabilized Crushed Aggregate Base Course“

B. Item 250 “Hot Mix Asphaltic Concrete Base Course (Black Base)”

If grade adjustments are permitted, the Contractor shall have the option of correcting thickness deficiencies by furnishing and placing a supplemental layer of asphaltic concrete conforming to Item 250, for the full width of the base course, in lieu of removing and replacing deficient base course. The thickness of the supplemental layer of asphaltic concrete shall be as follows:

BASE COURSE THICKNESS CORRECTION

UNDERTHICKNESS INCHES	MINIMUM THICKNESS OF SUPPLEMENTAL ASPHALTIC CONCRETE INCHES
1-1/4 to 1-1/2	1
1-3/4 to 2	1-1/2
2-1/4 to 2-1/2	2
Over 2-1/2	Remove and replace

230.6 Measurement. Crushed Aggregate Base shall be measured by the square yard of material, furnished and compacted in place and to the thickness specified, or as shown on the plans.

230.7 Payment. Payment for Crushed Aggregate Base, complete and in-place, shall be at the contract unit price per square yard of the specified thickness, which unit price shall include all costs of materials furnished, hauled, dumped, spread, shaped and compacted in maximum 6 inch lifts, including water for sprinkling. If necessary, adjustments will be made in the payment for this Item as outlined in Section 230.5 above.

There are line code(s), description(s), and unit(s) for this Item.

NOTE: This Item requires other Standard Specifications

Item 231 “Cement Stabilized Crushed Aggregate Base Course”
Item 250 “Hot Mix Asphaltic Concrete Base Course (Black Base)”

END OF ITEM 230