TECHNICAL SPECIFICATIONS

FOR

FABENS DAM IMPROVEMENTS

(TX01958)

100% SUBMITTAL

PREPARED BY:

PLANNING · ENGINEERING · PROJECT MANAGEMENT
Moreno Cardenas Inc.
EL PASO • SAN ANTONIO

MAY 2022

CIVIL TECHNICAL SPECIFICATIONS SECTIONS

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Moreno Cardenas Inc.
Texas Board of Professional Engineers Registration No. F-000554

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DIVISION 01

GENERAL REQUIREMENTS

SECTION 01 02 00

TPDES REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL

A. The Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit No. TXR 150000, was re-issued March 5, 2018 (Construction General Permit). The Construction General Permit allows operators to obtain permit coverage for storm water conveyance from Small and Large Construction Activities. The TPDES program implements the federal National Pollutant Discharge Elimination System (NPDES) program in the state of Texas, which requires that operators of Small or Large Construction Activities to obtain permit coverage prior to the commencement of construction activities.

B. The Engineer has estimated that the project will disturb approximately 5-acres of land and has prepared a Storm Water Pollution Prevention Plan (SW3P).

1.02 SECTION INCLUDES

A. Documentation to be prepared and signed by Contractor before conducting construction operations, in accordance with the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit Number TXR 150000, issued on March 5, 2018 (Construction General Permit).

B. Contractor is responsible for the implementation, maintenance inspection, and termination of storm water pollution prevention control measures including, but not limited to, erosion and sediment controls, storm water management plans, waste collection and disposal, and other applicable SW3P practices.

1.03 DEFINITIONS

A. Commencement of Construction Activities: The exposure of soil resulting from activities such as clearing, grading, and excavating.

B. **Large Construction Activity** is defined as a project that:

1. Disturbs five acres or more, or
2. Disturbs less than five acres but is part of a large common plan of development that will disturb five acres or more of land.

C. Operator is a person or persons who have day-to-day operational control of the construction activities, which are necessary to ensure compliance with the SW3P for the site.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 STORM WATER POLLUTION PREVENTION PLAN (SW3P)

A. The Contractor shall have an SW3P prepared in accordance with Part III of the Construction General Permit for Large Construction Activities. A professional engineer licensed in the state of Texas shall prepare the SW3P, in accordance with the County of El Paso ordinance and TPDES requirements.

B. Other items that must be incorporated into the SW3P Application Binder to be determined and provided by the Contractor upon commencement of construction activities and coordination with the County of El Paso, include but are not limited to:

1. Equipment Staging Areas
2. Material Storage yards
3. Material Borrow areas
4. Excavated material disposal areas
5. Concrete batch plants
6. Asphalt batch plants

Refer to Part II, Section A of the Construction General Permit for a description of Discharges Eligible for Authorization under the Construction General Permit.

C. The SW3P will be updated as needed during construction following Part III, Section E of the Construction General Permit.

D. The SW3P shall be implemented prior to commencement of construction activities and maintained through the duration of construction.

E. The SW3P shall be submitted to the Engineer 5-days after award of project for review.

F. The SW3P shall be submitted to the County of El Paso for review and approval seven (7) days prior to commencement of construction activities. Refer to Part 3.01, Section E and Part 3.02, Section B for additional submittal requirements for Large Construction Activities.

3.02 LARGE CONSTRUCTION ACTIVITY

STEPS TO TAKE BEFORE DISCHARGING

When you disturb 5 acres or more of land or are part of a larger common plan of development which will disturb 5 or more acres of land, you must follow these steps before discharging storm water to any surface water in the state of Texas:

1. Review your facility's compliance history ranking:
   - If your facility is new or has a ranking of "high" or "average," continue to Step 2.
   - If it is "poor," then your facility is not eligible for coverage under a general permit. You must apply for an individual permit instead.
2. Read the general permit (TXR150000) to make sure it applies to your situation.
3. Prepare and implement a Storm Water Pollution Prevention Plan. For more details, see Part III of General Permit TXR150000.

4. Submit an original completed Notice of Intent (NOI) form with an original signature and fee as noted on the NOI. You have three options:
    - both the NOI and fee payment electronically through STEERS.
    - the NOI on paper and the fee payment online via ePay.
    - the NOI on paper and the fee payment by check
5. Before starting construction, post a copy of the NOI and a copy of the Site Notice at the construction site. Leave these posted until construction is completed.
    - Site Notice for Primary Operators of Large Construction Activities
    - Site Notice for Secondary Operators of Large Construction Activities

PROVISIONAL COVERAGE

Provisional coverage under this general permit begins:

- Seven days after the completed NOI is postmarked for delivery to the Texas Commission on Environmental Quality (TCEQ)
- or immediately if the completed NOI is submitted electronically using STEERS.

AFTER TCEQ REVIEW

After TCEQ review, you will receive one of the following:

- an Acknowledgment Certificate acknowledging your coverage under this general permit.
- a Notice of Deficiency if there is insufficient information in your application, in which case you will have 30 days to respond.
- a Denial Letter informing you that coverage has been denied (usually the result of information requested in a Notice of Deficiency letter not being fully provided).

STEPS TO TAKE AFTER OBTAINING COVERAGE

After obtaining coverage under this permit:

1. Adhere to the requirements of General Permit TXR150000.
2. Submit a Notice of Termination (NOT) within 30 days after one or more of the following occurs:
    - final stabilization has occurred
    - another permitted operator has assumed control over all areas of the site that have not been finally stabilized and all silt fences and other temporary erosion control measures have either been removed, scheduled for removal, or transferred to a new operator as described in the Storm Water Pollution Prevention Plan
    - authorization was granted under an individual permit
3. If the operator changes, the new operator must submit a Notice of Intent (NOI) and then the existing operator must submit a Notice of Termination (NOT). The NOT and NOI must be submitted at least 10 days before the change.
4. If you are discharging to gutters, streets, channels, ditches or any other Municipal Separate Storm Water Sewer System (MS4) - which includes anything designed or used to collect or transport storm water - you must submit a copy of each of these items to the operator of that system at the same time you submit that item to the TCEQ:
    - Notice of Intent

- Notice of Change, which is used if the operator becomes aware of failing to submit any relevant information or submitting incorrect information.
- Notice of Termination

Even if the general permit described above applies to your situation, you may opt to request coverage under an individual permit.

You can view some of the relevant Rules for Storm Water Discharges from Construction Activities.

NOTICE OF CHANGE

A Notice of Change is required to be submitted for making updates, changes, or corrections to an NOI or Waiver as required in the general permit.

NOTICE OF TERMINATION

Notice of Termination can be submitted in one of the following ways:

- Electronic (STEERS) NOT - even if the NOI was submitted via paper
- Paper NOT

A. CONSTRUCTION SITE NOTICE

1. Fill out, sign, and date the Large Construction Site Notice, included at the end of this technical specification. Submit the signed copy of the Construction Site Notice to the Engineer at least two days before commencement of construction activities.
2. Post a signed copy of the Large Construction Site Notice near the main entrance of a construction site in a prominent place for viewing by the general public and local, state, and federal authorities prior to commencing construction activities, and maintain it in that location until completion of the construction. Post name and telephone number of Contractor's local contact person, brief project description and location of SW3P.
   If Project is a linear construction project (e.g.: road, utilities, etc), post notice in a publicly accessible location near active construction. Move notice as necessary.
3. The Contractor shall submit a signed copy of the Construction Site Notice to the County of El Paso.

3.03 CERTIFICATION REQUIREMENTS

A. Fill out Pollution Prevention Plan Certification Form to include the Operator's signature, name, title and organization.

B. Contractor and Subcontractors shall sign and date Contractor's/Subcontractor's Certification for TPDES Permitting included at the end of this technical specification to include Contractor's name, address, and telephone number, and the names of persons or firms responsible for maintenance and inspection of erosion and sediment control measures. Use multiple copies as required to document full information. Include this certification with other Project certification forms.

C. Submit properly completed certification forms to the engineer for review before commencing construction.

D. Conduct inspections in accordance with TCEQ requirements. Ensure persons or firms responsible for maintenance and inspection of erosion and sediment control measure read, fill out, sign, and date the Erosion Control Contractor's Certification for Inspection and Maintenance. Controls must be inspected once every fourteen (14) calendar days and within twenty-four (24) hours of the end of a storm event of 0.5 inches or greater, in accordance with Part III, Section F, of the Construction General Permit.

3.04 RETENTION OF RECORDS

A. Keep a copy of this document and the SW3P Binder in a readily accessible location at the construction site from Commencement of Construction Activity and maintain it in that location until completion of the construction. Contractors with day-to-day operational control over SW3P implementation shall have a copy of the SW3P available at a central location, on-site, for the use of all operators and those identified as having responsibilities under the SW3P.

3.05 ON-SITE WASTE MATERIAL STORAGE

A. On-site waste material storage shall be self-contained and shall satisfy appropriate local, state, and federal rules and regulations.

B. Prepare list of waste material to be stored on-site. Update list as necessary to include up-to-date information. Keep a copy of the updated list with the SW3P.

C. Prepare description of controls to reduce pollutants generated from on-site storage. Include storage practices necessary to minimize exposure of materials to storm water, and spill prevention and response measures consistent with best management practices. Keep a copy of the description with the SW3P.

END OF SECTION

CONTRACTOR'S / SUBCONTRACTOR'S
CERTIFICATION FOR TPDES PERMITTING

I certify under penalty of law that I understand the terms and conditions of TPDES General Permit No. TXR150000 and the Storm Water Pollution Prevention Plan for the construction site identified as part of this certification.

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Date: _____

SECTION 01 10 00

SUMMARY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Contract description.

B. Contractor's use of site and premises.

C. License agreement for Construction Access.

D. Damage to Private Property.

E. Contractor's Superintendence.

F. Emergency Communication.

G. Video Taping.

H. Geotechnical Engineering Report.

1.2 CONTRACT DESCRIPTION

A. The Texas Commission on Environmental Quality (TCEQ), during an inspection of the Fabens Dam performed in 2015, identified mostly maintenance deficiencies associated with the current condition of the dam. The purpose of this project is to address those deficiencies noted as well as improve the hydraulic inadequacies of the dam to bring it into compliance with TCEQ.

B. The contractor shall furnish all labor, materials, equipment, tools and incidentals and completely construct the work, so it is ready to use as shown on the Drawings and as described in the Specifications.

C. The proposed improvements consist of the following: increasing the size of the emergency earthen spillway to the east of the dam by regrading, removal of vegetation growth, removal of silt buildup, and repair of erosion scarps and holes at the edge of the crest and along the upstream and downstream slopes.

D. The project description, as shown above, is only a general overview of the project. Contractor shall refer to the project plans, contract documents and technical specifications for further information.

1.3 CONTRACTOR'S USE OF SITE AND PREMISES

A. Confine operations to areas within Contract limits indicated. The area beyond the construction limits shall be kept undisturbed. Areas disturbed beyond the construction limits will be repaired and restored to original or better condition at Contractor's expense.

B. The Contractor shall keep the construction disturbances to a minimum.

C. Always keep all driveways and entrances serving the premises clear and available. These areas are not to be used for the storage of materials, stockpile or parking. Contractor shall coordinate with the County of El Paso to provide vehicular and pedestrian access at all times during construction.

D. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

E. Contractor shall be responsible for obtaining an area to be used for staging. Contractor shall coordinate with the County of El Paso for possible locations near the project site.

F. The project area shall be swept within 24-hrs of completion of a rain event.

G. It will be the responsibility of the Contractor to schedule and perform the work to provide proper passage of any storm water during the course of the operations. All labor, tools, equipment and supervision required to assure such proper passage of runoff water and any removal or handling of water in order to maintain dry conditions shall be considered as incidental to the remainder of the work and shall be at the expense of the Contractor.

H. The Contractor shall coordinate the work with all utility companies having facilities within the area of work. Therefore, any work associated with the protection, relocation or by-passing of existing utility lines shall be reflected in the Contractor's project schedule so the work may be completed without delay to the project. All the requirements of the contract documents also apply to any subcontractors.

1.4 DAMAGE TO PRIVATE PROPERTY

A. The Contractor shall be responsible for any damage to private property caused by the construction project. The Contractor, upon receipt of a complaint of damage, shall within 5-days respond in writing with a proposal to repair said damage or a letter with reasons explaining why the damage was not caused by the construction. The damage shall be repaired completely within 7-days of the complaint.

1.5 CONTRACTOR'S SUPERINTENDENCE

A. Contractor shall always keep a qualified competent Project Superintendent, satisfactory to the Engineer. The Project Superintendent shall have the responsibility to coordinate all subcontractors and be capable of communicating with the Public, the Engineer, and the County of El Paso. The Project Superintendent shall be responsible for and shall coordinate all activities of the various crews, subcontractors and suppliers.

B. The Project Superintendent shall be cooperative and authorized to receive orders to act for the Contractor. In the event a competent Superintendent is not available the County of El Paso may suspend work until one is available. Changes of Superintendent require prior written approval by the Engineer and the County of El Paso.

C. All workers employed by the Contractor shall have such skill and experience as will enable them to properly perform the duties assigned. Any person employed by the Contractor or a subcontractor who, in the opinion of the Engineer, does not perform their

work in a proper and skillful manner, or is disrespectful, intemperate, disorderly or otherwise objectionable, shall at the written request of the Engineer be forthwith reassigned or discharged and shall not be deployed again on any portion of the work without written consent of the Engineer.

D. Persons assigned to this project and identified by the Contractor during Pre-Award requirements as Key Personnel shall not be replaced without prior consent and approval of a substitute by the Owner. Contractor will not be allowed to commence or continue any work until Key Personnel is approved by the Engineer. Prior to replacing any Key Personnel after initial acceptance by the Owner, a resume and work history shall be submitted to the Engineer for review and recommendation for approval.

1.6 EMERGENCY COMMUNICATION

A. The Contractor shall always maintain during construction, a local telephone number where responsible supervisory personnel may be contacted twenty-four hours a day for the full duration of the project. The telephone number shall be given to the County of El Paso's Project Manager, Engineer and to everyone requiring this information so that contact can be made in the event of any emergency.

1.7 VIDEO TAPING

A. Prior to any construction, the project site shall be videotaped by the Contractor accompanied by the Engineer or representative, to show existing conditions of the adjacent properties, easements, structures, utilities, drainage structures, channels, and other existing improvements. After completion of the project, the site shall be videotaped by the Contractor accompanied by the Engineer or representative to show the condition of the finished construction of adjacent properties, easements, structures, utilities, drainage structures, channels and other completed improvements under this project. Two copies in DVD format shall be furnished to the Engineer prior to and after construction and shall include labels including project title, bid no., and date recorded.

1.8 GEOTECHNICAL ENGINEERING REPORT

A. The Geotechnical Engineering Report is available for the Contractor's use, however, it is not part of the contract documents.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

PART 4 PAYMENT

4.1 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

END OF SECTION

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Schedule of Values.

B. Applications for Payment.

C. Change procedures.

D. Defect assessment.

E. Lump Sum Bid.

1.2 SCHEDULE OF VALUES

A. Contractor shall submit a schedule of values on Owner's Standard Form for Engineer's review and approval. Schedule of values shall be submitted prior to the first Application of Payment.

B. Schedule of Values shall match the bid proposal for listing items in Application for Payment.

1.3 APPLICATIONS FOR PAYMENT

A. Submit five copies of each application on Owner's Standard Form.

B. Content and Format: Utilize bid proposal for listing items in Application for Payment.

C. Submit updated monthly construction schedule with each Application for Payment.

D. Payment Period: Submit at intervals stipulated in the Agreement.

E. Submit with transmittal letter as specified for Submittals in Section 01 33 00 - Submittal Procedures.

1.4 CHANGE PROCEDURES

A. Submittals: Submit name of individual authorized to receive change documents and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. The Engineer/Owner will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions.

C. The Engineer/Owner may issue a Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change and the period of time during which the

requested price will be considered valid. Contractor will prepare and submit estimate within 5-days.

D. Stipulated Sum/Price Change Order: Based on Notice of Change and Contractor's estimated price quotation as approved by Engineer/Owner.

E. Force Account Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Engineer/Owner will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.

F. Maintain detailed records of work done on Force Account basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

G. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.

H. Execution of Change Orders: Engineer/Owner will issue Change Orders for signatures of parties as provided in Conditions of the Contract.

I. Correlation of Contractor Submittals:

1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.

2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

3. Promptly enter changes in Project Record Documents.

1.5 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Engineer/Owner, it is not practical to remove and replace the Work, the Engineer/Owner will direct appropriate remedy or adjust payment.

C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Engineer/Owner.

D. Defective Work will be partially repaired to instructions of Engineer/Owner, and unit sum/price will be adjusted to new sum/price at discretion of Engineer/Owner.

E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.

F. Authority of Engineer/Owner to assess defects and identify payment adjustments is final.

G. Non-Payment for Rejected Products: Payment will not be made for rejected products for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.
3. Products not completely unloaded from transporting vehicle.
4. Products placed beyond lines and levels of required Work.
5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected products.

1.6 LUMP SUM BID

A. Payment shall include: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application or installation of item of the Work; overhead and profit.

B. Provisions for Earthwork Items: Contractor shall submit certified earthwork volume quantities along with the corresponding monthly pay application. Earthwork quantities shall be certified by a Professional Registered Land Surveyor (RPLS) registered in the State of Texas. Refer to Section 01 30 00 – Administrative Requirements.

1.7 PAYMENT PROCEDURES

1. MOBILIZATION, DEMOBILIZATION, INSURANCE, BONDS, AND TPDES REQUIREMENTS NOT TO EXCEED 5% OF BASE BID I (ITEMS 2 THROUGH 11)

A. Payment: This price is full compensation for mobilization, demobilization, insurance, bonds, all activities and associated costs for transportation of contractor's personnel, equipment, operating supplies to the site, establishment of offices, buildings, job trailers, or other necessary general facilities for the contractor's operations at the site, utilities to the office, building, or job trailers including power, construction permits and fees, site administration expenses, temporary fencing, potholing of utilities, telephone, videotaping requirements, TPDES requirements, and TPDES fees. Payment shall also include all activities and costs for demobilization to include transportation of personnel, equipment, and supplies from the site, disassembly, removal, and site cleanup of offices, buildings, job trailers, or other facilities assembled on the site, contract closeout, as-built drawings and specifications, and all other incidentals associated with contractor's demobilization from the site. This item shall be limited to five (5) percent of the total bid price for Base Bid I, Items 2-11 and shall be paid 50% at the beginning of the project and 50% at closeout on a lump sum basis.

2. EXCAVATION AND PROPER DISPOSAL OF UNCLASSIFIED MATERIAL (CUT TO WASTE) FOR EMERGENCY SPILLWAY GRADING EXPANSION

A. Payment: Price is full compensation for roadway excavation and shall include excavation of areas as shown on the plans or as directed, removal and disposal of excavated spoil materials, testing, equipment, materials, labor, tools, temporary excavation support systems, shoring, bracing and incidentals. Materials being excavated are unclassified. Materials shall be considered unclassified throughout the entire project limits. Removal and proper disposal of unclassified materials encountered during excavation such as lumped soil, boulders, rock, andesite rock, debris, asphalt, and concrete of any type and

size will not be paid directly but will be subsidiary to this item. Contractor shall be responsible of the repair of damages or distress to adjacent properties, structures and utilities caused by these operations. All costs for this work shall be compensated under this pay item and will be paid by cubic yard based on work performed and completed.

3. EXCAVATION AND RE-GRADING OF UNCLASSIFIED MATERIAL (CUT TO FILL) FOR EMERGENCY SPILLWAY GRADING EXPANSION

A. Payment: Price is full compensation for roadway excavation and shall include excavation of areas as shown on the plans or as directed, removal and disposal of excavated spoil materials, testing, equipment, materials, labor, tools, temporary excavation support systems, shoring, bracing and incidentals. Materials being excavated are unclassified. Materials shall be considered unclassified throughout the entire project limits. Removal and proper disposal of unclassified materials encountered during excavation such as lumped soil, boulders, rock, andesite rock, debris, asphalt, and concrete of any type and size will not be paid directly but will be subsidiary to this item. Contractor shall be responsible of the repair of damages or distress to adjacent properties, structures and utilities caused by these operations. All costs for this work shall be compensated under this pay item and will be paid by cubic yard based on work performed and completed.

4. REMOVAL AND PROPER DISPOSAL OF SILT BUILD-UP IN CONCRETE SERVICE SPILLWAY

A. Payment: Price is full compensation for silt material removal and shall include excavation of areas as shown on the plans or as directed, removal and disposal of excavated spoil materials, testing, equipment, materials, labor, tools, temporary excavation support systems, shoring, bracing and incidentals. Materials being excavated are unclassified. Materials shall be considered unclassified throughout the entire project limits. Removal and proper disposal of unclassified materials encountered during excavation such as lumped soil, boulders, rock, andesite rock, debris, asphalt, and concrete of any type and size will not be paid directly but will be subsidiary to this item. Contractor shall be responsible of the repair of damages or distress to adjacent properties, structures and utilities caused by these operations. All costs for this work shall be compensated under this pay item and will be paid on a lump sum basis based on work performed and completed.

5. REMOVAL AND PROPER DISPOSAL OF VEGETATION GROWTH IN AND AROUND SPILLWAYS, UPSTREAM AND DOWNSTREAM SLOPES AND @ EDGE OF CREST

A. Payment: Price is full compensation for vegetation removal and shall include excavation of areas as shown on the plans or as directed, removal and disposal of excavated spoil materials, testing, equipment, materials, labor, tools, temporary excavation support systems, shoring, bracing and incidentals. Materials being excavated are unclassified. Materials shall be considered unclassified throughout the entire project limits. Removal and proper disposal of unclassified materials encountered during excavation such as lumped soil, boulders, rock, andesite rock, debris, asphalt, and concrete of any type and size will not be paid directly but will be subsidiary to this item. Contractor shall be responsible of the repair of damages or distress to adjacent properties, structures and utilities caused by these operations. All costs for this work shall be compensated under this pay item and will be paid on a lump sum basis based on work performed and completed.

6. REPAIR / RECOMPACTION OF EROSION SCARPS, GULLIES, AND/OR HOLES ALONG UPSTREAM AND DOWNSTREAM SLOPES AND @ EDGE OF CREST

A. Payment: Price is full compensation for all erosion repair and shall include excavation of areas as shown on the plans or as directed, removal and disposal of excavated spoil materials, testing, equipment, materials, labor, tools, temporary excavation support systems, shoring, bracing and incidentals. Materials being excavated are unclassified. Materials shall be considered unclassified throughout the entire project limits. Removal and proper disposal of unclassified materials encountered during excavation such as lumped soil, boulders, rock, andesite rock, debris, asphalt, and concrete of any type and size will not be paid directly but will be subsidiary to this item. Contractor shall be responsible of the repair of damages or distress to adjacent properties, structures and utilities caused by these operations. All costs for this work shall be compensated under this pay item and will be paid on a lump sum basis based on work performed and completed.

7. FURNISH, INSTALL, AND PROPERLY COMPACT GRAVEL / RAP MILLINGS ALONG ENTIRE SURFACE OF CREST TRAVEL PATH (20' WIDTH BY 1200' LENGTH) (2-INCH THICK)

A. Payment: Price is full compensation for furnishing and installing gravel / RAP millings and scarified, moisture conditioned and compacted suitable native soils and shall include: base coarse, compaction as specified, equipment, testing, labor, tools, prime coat placement, preparation of subgrade scarification/preparation, blended and compacted subgrade materials, testing for subgrade compaction and incidentals. Contractor shall be responsible for the repair of damages or distress to adjacent properties, structures, and utilities caused by these operations. All costs for this work shall be compensated under this pay item and will be paid by square yard based on work performed and completed.

8. FURNISH AND INSTALL LOOSE ROCK RIP-RAP ALONG EMERGENCY SPILLWAY EXPANSION SIDE SLOPES (6" TO 8" ROCK SIZE) (12-INCH DEPTH)

A. Payment: Price is full compensation for the import and proper placement of rock material to the limits and depths as specified and shown on the drawings, preparation of subgrade material, equipment, labor, tools, and incidentals. All costs for this work shall be compensated under this pay item and will be paid by cubic yard based on work performed and completed.

9. FURNISH AND INSTALL LOOSE ROCK RIP-RAP ALONG DAM UPSTREAM AND DOWNSTREAM SIDE SLOPES (6" TO 8" ROCK SIZE) (12-INCH DEPTH)

A. Payment: Price is full compensation for the import and proper placement of rock material to the limits and depths as specified and shown on the drawings, preparation of subgrade material, equipment, labor, tools, and incidentals. All costs for this work shall be compensated under this pay item and will be paid by cubic yard based on work performed and completed.

10. FURNISH AND INSTALL 3-INCH CRUSHED STONE COURSE (TYPE A GRADE 3)

A. Payment: Payment for furnishing and installing 3-inch crushed stone course (Type A Grade 3) shall include: suitable subgrade, base coarse, compaction as specified, equipment, testing, labor, tools, prime coat placement, preparation of 12-inch scarified,

blended and compacted subgrade materials, testing for subgrade compaction and incidentals. Contractor shall be responsible for the repair of damages or distress to adjacent properties, structures, and utilities caused by these operations. All costs for this work shall be compensated under this pay item and will be paid by the square yard based on work performed and completed.

11. IMPLEMENT STORM WATER POLLUTION PREVENTION BEST MANAGEMENT PRACTICES

A. Furnishing and installing silt fence, construction entrances/exits, and removing and properly disposing of silt fence and construction entrances/exits after completion of work. Furnishing, installing implementing, and removing traffic control plan. Performing site clearing and grubbing, demolition, removal and proper disposal of miscellaneous existing items including: concrete sidewalk, curbs, driveways, reinforced concrete, asphalt pavement and other incidentals to allow for the new construction; items to be removed as per plan. Implementation of drainage improvements including: excavation and proper disposal of unclassified material, embankment, furnishing and installing 8-inch to 12-inch loose rock riprap. Roadway improvements including: furnishing and installing new full reinforced concrete pavement, furnishing and installing 6-inch continuously reinforced concrete, 12-inch scarified, blended and compacted subgrade soils, monolithic concrete curbs, a metal w-beam guard fence, guardrail end treatments, metal guard posts, single arm gates, and new “no Trespassing” warning signs. The project description, as shown above is only a general overview of the project. Contractor shall refer to the project plans, contract documents, and technical specifications for further detailed information. All costs for this work shall be compensated under this pay item and will be paid on a lump sum basis based on work performed and completed.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination and project conditions.

B. Field engineering.

C. Preconstruction meeting.

D. Progress meetings.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various sections of Project Specifications to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify utility requirements and characteristics of operating equipment are compatible with site utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.

C. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

E. It will be the responsibility of the Contractor to schedule and perform their work to provide proper passage of any storm water during operations. All labor, tools, equipment and supervision required to assure such proper passage of runoff water and any removal or handling of water in order to maintain dry conditions shall be considered incidental to the remainder of the work and shall be at the expense of the Contractor.

1.3 FIELD ENGINEERING

A. Locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.

B. Control datum for survey is H-22 Found PK Nail (TxDOT Control). Topographic Survey was performed by Barragan & Associates, Inc. The survey was completed on June 10, 2020.

C. Verify setbacks and easements; confirm drawing dimensions and elevations.

D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

E. Submit copy of site drawing and certificate signed by Land Surveyor certifying elevations and locations of the Work are in conformance with Contract Documents. Maintain complete and accurate log of control and survey work as Work progresses.

F. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

G. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.

H. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

1.4 PRECONSTRUCTION MEETING

A. The County of El Paso will schedule meeting after Notice of Award and/or Notice to Proceed.

B. Attendance Required: County of El Paso, Engineer, and Contractor.

C. Agenda:
1. Provided by the Engineer.

D. Engineer will record minutes and distribute copies within two days after meeting to participants, with copies to Owner, and those affected by decisions made.

1.5 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work as required by the County of El Paso.

B. Contractor shall make arrangements to attend construction meetings. Engineer will prepare agenda and provide copies to participants.

C. Attendance Required: Job superintendent, major subcontractors and suppliers, the County of El Paso's Project Manager, and or the County of El Paso's representative, Engineer, and or Engineer's representative, as appropriate to agenda topics for each meeting.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.

10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.
14. Contractor shall provide look ahead schedule at Progress meeting (if Progress meetings are weekly, then look ahead schedule should be for two weeks).

E. Engineer will record minutes and distribute copies within two days after meeting to participants, with copies to the County of El Paso, Contractor, and those affected by decisions made.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

PART 4 PAYMENT

4.1 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

END OF SECTION

SECTION 01 30 01

PRE/POST CONSTRUCTION VIDEO

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all tools, qualitied labor, materials, equipment, qualified superintendence and all services, transportation, other incidentals, assurances and guarantees, assumptions of risk, and responsibility for the performance of all Pre/Post Construction Video operations as indicated on the Construction Drawings. Complete work as shown and specified herein.

1.2 SECTION INCLUDES

A. Pre-Construction and Post-Construction Video.

1.3 SUBMITTALS

A. Refer to *Section 01 33 00 – Submittal Procedures* and *Section 01 78 39 – Project Record Documents.*

B. The pre-construction video shall be submitted to the Engineer prior to mobilization.

C. The post-construction video shall be submitted to the Engineer once the punch-list items haven been completed.

D. Two copies in DVD format shall be furnished to the Project Inspector and Engineer prior to and after construction and shall include labels including project title, bid no., and date recorded.

1.4 RECORDING PROCEDURES

A. Prior to any construction, the project construction site shall be video recorded by the Contractor accompanied by the Project Inspector or his representative, to show existing conditions of:

1. Adjacent properties, including parkways, landscape, curbs, sidewalks, rock walls, trees;
2. Easements and structures;
3. Utilities and drainage structures;
4. Pavement, monuments, and other existing improvements.

B. The recording shall be in color and shall indicate item and date of the taping. A narrative dialogue of route shall be part of the recording. Image resolution shall be enough for clear high-resolution video. Minimum resolution shall be 1080i or 720 high definition (standard definition).

C. No work shall commence until the Engineer reviews and approves the pre-construction recording.

D. After completion of the project, the construction site shall be video recorded by the Contractor accompanied by the Project Inspector or his representative to show the condition of the finished construction of adjacent properties, easements, structures, utilities, drainage structures, and other completed improvements under this project.

1.5 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 GENERAL

1.1 PRECONSTRUCTION MEETING

A. A Preconstruction meeting shall be held in accordance with the General and Supplemental Conditions.

1.2 PROGRESS AND SPECIAL MEETINGS

A. Owner may request meetings with Contractor and its Subcontractors at any time during progress of Contract. It will be Contractor's responsibility to provide to Owner whatever information is requested by Engineer.

B. Contractor shall attend bi-weekly meetings called by Engineer. Owner's representatives will be invited to attend meetings.

1. It is generally intended that meetings will be complete within 2 hours; however, Contractor shall attend meeting until completion of all pertinent discussions.

2. Engineer will share all project meetings.

3. Agenda of project meetings:

a. Varies to include, but is not limited to, general progress discussions of work to be performed and maintenance of overall progress schedule.

b. Engineer will provide project meeting minutes to all meeting participants.

4. Construction work requiring shutdowns or major utility tie-ins shall be discussed by the Contractor at the meeting preceding such construction.

5. The Contractor shall provide a written 2-week look-ahead schedule showing planned activities and locations of planned work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 PAYMENT

4.1 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. References.

B. Quality assurance.

C. Format.

D. Schedules.

E. Submittals.

F. Updating schedules.

G. Distribution.

1.2 REFERENCES

A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. Neither the contractual relationships, duties, nor responsibilities of the parties in Contract nor those of the Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.3 QUALITY ASSURANCE

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in-sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.4 FORMAT

A. Listings: Reading from left to right, in ascending order for each activity. Identify each activity with applicable specification section number.

B. Diagram Sheet Size: 24 inches high x36 inches wide.

C. Scale and Spacing: To allow for notations and revisions.

1.5 SCHEDULES

A. Submit preliminary progress schedule.

B. After review and approval, revise and resubmit schedule to comply with revised Project Schedule.

C. During progress of work, revise and resubmit Project Schedule with Applications for Payment.

D. Contractor shall update the Project Schedule and provide a 2-week look ahead.

E. Contractor shall update the Project Schedule at least monthly and provide to Engineer.

F. Prepare sub-schedules for each stage of Work identified in *Section 01 10 00 - Summary*.

G. Coordinate contents with schedule of values in *Section 01 33 00 - Submittal Procedures*.

1.6 SUBMITTALS

A. Submit shop drawings, product data and samples in accordance with Section 01 33 00 for review and compliance with Contract Documents, for field dimensions and clearances, for relation to available space, and for relation to work of separate contracts. Revise and resubmit as required.

B. Shop drawings shall be prepared with enough detail and notation for field erection and installation. Shop drawings shall be separate drawings prepared by the supplier of materials. Photocopies of the contract documents for use as shop drawings will not be permitted.

C. Submittals which utilize electronic files on any of the drawings in the contract documents may not be used, unless a written agreement that stipulates the conditions under which these documents may be used, is executed between the user and the Engineer of record.

D. Submit requests for interpretation of Contract Documents and obtain instructions through the Engineer.

E. Process requests for substitutions, and change orders, through the County of El Paso or designated agent.

F. Deliver closeout submittals for review and preliminary inspection reports.

G. Submit under transmittal letter form specified in *Section 01 33 00 - Submittal Procedures*.

H. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents. Documents not having the stamp will be returned to the Contractor.

1.7 UPDATING SCHEDULES

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress of each activity to date of revision, with projected completion date of each activity update diagrams to graphically depict current status of Work.

C. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

D. Indicate changes required to maintain Date of Substantial Completion.

E. Submit sorts required to support recommended changes.

F. Prepare narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken or proposed and its effect including effects of changes on schedules of separate contractors.

1.8 DISTRIBUTION

A. Following joint review, distribute copies of updated schedules to Contractor's project site file, to Subcontractors, Suppliers, Engineer, and the County of El Paso.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

PART 4 PAYMENT

4.1 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submittal Procedures.

B. Proposed Products List.

C. Product Data.

D. Shop Drawings.

E. Test Reports.

F. Certificates.

G. Manufacturer's Instructions.

H. Video Taping.

I. Submittal/Shop Drawing List.

1.2 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor shall be responsible for:
1. The correctness of the drawings, fittings and field connections, and the results obtained by using such drawings;
2. Verification of catalog numbers, and similar data;
3. Determination and verification of field measurements and field construction criteria;
4. Checking and coordination information in the submittal requirements of the Work and Contraction Documents;
5. Accuracy and completeness of dimensions and quantities;
6. Confirmation and coordination of dimension and field conditions at the site;
7. Safety precautions;
8. Errors and omissions on submittals;
9. Coordination and performance of work of all trades; and
10. Identification of deviation (s) from Contract requirements.

B. The Contractor shall certify dimensional compatibility of the product with the space in which it is intended to be used and the review of submittals for compliance with Contract requirements.

C. Each submittal shall have affixed to it the following Certification Statement including the Contractor's Company name and stamp, initials or signature on the transmittal/submittal form:

"*Certification Statement: I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and similar data, and I have cheek and coordinated each item with other applicable approved submittals and all Contract requirements."*

1.3 PROPOSED PRODUCTS LIST

A. The Contractor shall submit, within 15 working days after date of Notice to Award, a list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.4 SUBMITTAL CATEGORIES

A. Submittals fall into four categories: Shop Drawings, Product Data, Samples, Tests Reports and Certifications.

B. <u>Shop Drawings:</u>

1. Submit newly prepared information, drawn to accurate scale. Highlight, circle, or otherwise indicate deviations from the Contract Documents. The Contractor **<u>SHALL NOT</u>** reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to Project is not considered Shop Drawings.
2. Shop drawings shall be prepared with sufficient detail and notation for field erection, fabrication, installation, setting diagrams, schedules, patterns, templates and similar drawings. Shop drawing shall also include dimensions, identification of products and materials included, compliance with specified standards, notation of coordination requirements, and notation of dimensions established by field measurements.
3. Submittals which utilize electronic files on any of the drawings in the contract documents **<u>SHALL NOT</u>** be used, unless a written agreement that stipulates the conditions, under which these documents may be used, is executed between the user and the Engineer of record.
4. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
5. After review, produce copies and distribute in accordance with this section and for record documents described in *Section 01 70 00 – Execution and Closeout Requirements*.

C. <u>Product Data:</u>

1. Submit number of copies Contractor requires, plus two copies Engineer will retain.
2. Supplement manufacturers' standard data to provide information specific to this Project.
3. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

4. After review, produce copies and distribute in accordance with article 1.2 of this section and for record documents described in *Section 01 70 00 - Execution and Closeout Requirements*.

D. Manufacturer's Certificates and Instructions:

1. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Engineer, in quantities specified for Product Data.
2. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
3. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.
4. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.
5. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

E. Samples:

1. Contractor shall submit product samples as specified under the technical specifications.
2. Contractor shall submit supplemental information related to product samples.

1.5 SUBMITTAL REQUIREMENTS

A. Schedule submittals to expedite Project, and deliver to Project Inspector. Coordinate submission of related items.

B. Submittal Delivery:

1. A total of **3-hard copies** are required for each submittal. Substitution of electronic copies in lieu of hard-copies **shall** be approved by Owner and/or determined by the use of a Construction Management software program.

C. Transmittal Form:

1. Transmit each submittal with AIA Form G810, or similar Engineer accepted form.
2. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
3. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal on transmittal form.
4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents
5. Allow space on submittals for Contractor and Engineer review stamps.
6. Mark each copy (**highlighter markings shall not be accepted**) to identify applicable products, models, options, and other data.

D. Submittal Review Period:
1. The Contractor **shall allow 10-working days** for each submittal review, excluding delivery time to and from Contractor.

E. Professional Seal Required:
1. Submittals involving engineering design services, when required by the Contract Documents or by governing codes and regulations, such as shoring and underpinning, excavation support structures, falsework or concrete, fire protection system design, and load and design calculations, shall be sealed and signed in blue/black ink by a professional engineer, currently registered in the State of Texas, for the discipline involved.
2. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
   a. Include signed and sealed calculations to support design.
   b. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
   c. Make revisions and provide additional information when required by authorities having jurisdiction.

F. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

G. When revised for resubmission, identify changes made since previous submission.

H. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

I. Submit requests for interpretation of Contract Documents, and obtain instructions through the Owner.

J. Process requests for substitutions, and change orders, through the Owner or his designated agent.

K. Deliver closeout submittals for review and preliminary inspection reports.

L. Submittals not requested will not be recognized or processed.

M. Changes in Approved Submittals:
1. Changes in approved submittals shall not be allowed unless those approved submittals with changes have been resubmitted and approved, in the same manner as the original submittal.

1.6 ENGINEER'S REVIEW OF SUBMITTALS

A. Submittals will be reviewed for general conformance with requirements of the Contract Documents.

B. Submittals shall be understood as being made for approval, unless otherwise specified, for example, as being made for Project Information Only, For Review, or For Review. The Engineer will indicate its reviews of the submittals and the action taken (approvals and

non-approvals) by means of its review stamp. The review stamp will be affixed by the Engineer, the action block will be marked, and the stamp will be signed in blue/black ink and dated.

C. The review stamp action-blocks/codes will have the following meanings:

1. **CODE 1 – REVIEWED** is in acceptance, and means that the submittal appears to conform to the respective requirements of the Contract Documents. Fabrication, assembly, manufacture, installation, application, and erection of the described and illustrated product may proceed.

2. **CODE 2 – REJECTED** is a disapproval, and means that the submittal is deficient of the degree that the reviewer cannot correct the submittal with a reasonable degree of effort, hast not made a thorough review of the submittal, and that submittal needs revision and is to be corrected and resubmitted to meet the intent of the Contract Documents.

3. **CODE 3 – REVISE AND RESUBMIT** is a limited approval except for the work impacted by the notes and comments, and means that the submittal requires corrections to conform to the respective requirements of the Contract Documents. Fabrication, assembly, manufacture, installation, application, and erection of the described and illustrated product may proceed at the Contractor's risk for the elements of work not impacted by and changes required to incorporate the reviewer's corrections.

4. **CODE 4 – FURNISH AS CORRECTED** is an acceptance, and means that the submittal appears to conform to the respective requirements of the Contract Documents upon incorporation of the reviewer's corrections. Fabrication, assembly, manufacture, installation, application, and erection of the described and illustrated production may proceed. Submittals so marked need not be resubmitted unless the Contractor challenges the reviewer's exception within **5-calendar days**. All noted changes will be reflected in the as-built drawings by the Contractor.

D. Corrections or comments made on the shop drawings during this review do not relieve the Contractor from compliance with requirements of the drawings and specifications. This check is only for review of the general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimension, selection fabrication processes and techniques of construction; coordinating his/her work with that of all other trades and performing all work in a safe and satisfactory manner.

1.7 SUBMITTAL AND SHOP DRAWING LIST

A. Contractor shall be responsible for delivering submittals for the Engineer to review as specified in the previous sections.

B. The contractor is expected to submit at a minimum the submittals listed on Table 1.10.1 – Submittal and Shop Drawing Schedule. Submittals and shop drawings **SHALL include but are not limited** to those listed on Table 1.7.1.

Table 1.7.1 Submittal and Shop Drawing Schedule

Specification	Submittal Number	Required Items
01 02 00 TPDES Requirements	01 02 00 - 1	• NOI, Storm Water Pollution Prevention Plan, Contractor's, Subcontractor's Certification for TPDES permitting.
01 10 00 Summary	01 10 00 – 1	• Contractor's Key Personnel.
	01 10 00 – 2	• Emergency Contact Information.
	01 10 00 – 3	• Superintendent's Resume.
01 20 00 Price and Payment Procedures	01 20 00 – 1	• Schedule of Values.
01 30 00 Administrative Requirements	01 30 00 – 1	• Professional Land Surveyor Contact Information.
01 30 01 Pre/Post Construction Video	01 30 31 – 1	• Color Recording with Narrative.
01 31 19 Project Meetings	01 31 19 – 1	• Two-Week Look-Ahead Schedule.
01 32 16 Construction Progress Schedule	01 32 16 – 1	• Primary Baseline Schedule.
01 32 16 Construction Progress Schedule	01 32 16 - 2	• Construction Schedule.
01 33 00 Submittal Procedures	01 33 00 – 1	• Shop Drawings, Product Data, Samples, Test Reports and Certifications.
01 40 00 Quality Requirements	01 40 00 – 1	• Testing Agency Information.
01 50 00 Temporary Facilities and Controls	01 50 00 – 1	• Traffic Control Plan.
01 60 00 Product Requirements	01 60 00– 1	

Table 1.7.1 Submittal and Shop Drawing Schedule

Specification	Submittal Number	Required Items
01 70 00 Execution and Closeout Requirements	01 70 00 – 1	• Record of As-built Specifications.
01 70 00 Execution and Closeout Requirements	01 70 00 – 2	• Record of As-built Drawings and Shop Drawings.
01 78 39 Project Record Documents	01 78 39 – 1	• As-built Drawings and One CD.
02 41 19 Selective Structure Demolition	02 41 19 – 1	• Demolition Schedule.
31 05 13 Soils for Earthwork	31 05 13 – 1	• Product Data, Material's Source and Manufacturer's Certificate.
31 10 00 Site Clearing	31 10 00 – 1	• Product Data, Material's Source and Manufacturer's Certificate. Herbicide for weed control. • Video Recording.
31 22 13 Rough Grading	31 22 13 – 1 31 22 13 - 2	• Hauling Routes. • Record of As-built Drawings (Existing Utilities).
31 23 16 Excavation	31 23 16 – 1	• Excavation Protection Plan and Shop Drawings.
31 23 23 Select Fill	31 23 23 – 1	• Product Data, Materials Source and Manufacturer's Certificate.
31 37 00 Riprap	31 37 00 – 1	• Product Data, Material's Source and Manufacturer's Certificate.
32 11 23 Aggregate Base Courses	32 11 23– 1	• Product Data, Material's Source and Manufacturer's Certificate.

1.8 MEASUREMENT AND PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality Control and Control of Installation.

B. Tolerances.

C. References.

D. Testing and Inspection Services.

E. Costs Paid by the Contractor.

F. Contractor's Responsibilities.

G. Manufacturer's Field Services and Reports.

H. Examination.

I. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, the Contractor **shall request clarification** from Engineer before proceeding.

C. Adjust products to appropriate dimensions and position before securing products in place.

1.4 REFERENCES

A. For products or workmanship specified by association, trades, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

E. Neither contractual relationships, duties, nor responsibilities of parties in Contract, nor those of Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

F. Document: Geotechnical report is available at Moreno Cardenas Inc.'s office for **Contractor's information only**. The Geotechnical report is not part of the contract documents. Moreno Cardenas Inc. office information: 2505 E. Missouri Ave., El Paso Texas 79903. Hours of operation: (Monday thru Thursday 7:30 am to 5:30 pm, Friday 8:00 am to 12:00 pm.)

1.5 TESTING AND INSPECTION SERVICES

A. Owner **shall employ and pay** for specified services of an independent laboratory to perform testing and inspection.

B. The independent laboratory will perform tests, inspections and other services specified in individual specification sections and as required by Project Inspector and Engineer.

C. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Project Inspector or Engineer.

D. Reports will be submitted by independent laboratory to Project Inspector and Engineer, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
   1. Submit final report indicating correction of Work previously reported as non-compliant.

E. Cooperate with independent laboratory; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
   1. Notify Project Inspector and independent laboratory 24-hours prior to expected time for operations requiring services.
   2. Make arrangements with independent laboratory and pay for additional samples and tests required for Contractor's use.

F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent laboratory as directed by the Project Inspector. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

H. Agency Responsibilities:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Project Inspector and Contractor in performance of services.
   3. Perform specified sampling and testing of products in accordance with specified standards.
   4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Project Inspector and Contractor of observed irregularities or non-conformance of Work or products.
   6. Perform additional tests required by Project Inspector/Engineer.
   7. Attend preconstruction meetings and progress meetings.

I. Agency Reports: After each test, promptly submit two copies of report to Project Inspector and Engineer, Contractor, and authority having jurisdiction. When requested by Project Inspector or Engineer, provide interpretation of test results. Include the following:
   1. Date issued.
   2. Project title and number.
   3. Name of inspector.
   4. Date and time of sampling or inspection.
   5. Identification of product and specifications section.
   6. Location in Project.
   7. Type of inspection or test.
   8. Date of test.
   9. Results of tests.
   10. Conformance with Contract Documents.

J. Limits on Testing Authority:
   1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency or laboratory may not approve or accept any portion of the Work.
   3. Agency or laboratory may not assume duties of Contractor.
   4. Agency or laboratory has no authority to stop the Work.

K. The testing laboratory shall e-mail copies of all test reports and results directly to the Project Inspector and Engineer on the same day the results are available.

L. The Owner may conduct independent inspection and QA/QC testing of construction, materials and equipment throughout the duration of construction.

1.6 COSTS PAID BY THE CONTRACTOR

A. Re-tests and re-inspections by the laboratory for all testing required due to defective work and testing, will be back-charged to Contractor (overtime and standby time).

1.7 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel; provide access to the work and to manufacturer's operations. Provide samples of materials to be tested, in the required quantities, to the laboratory representative at the Contractor's expense. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce work specified quality. Comply fully with manufacturer's instructions, including performing each step-in sequence.

B. Should manufacturer's instructions conflict with Contract Documents, request clarification from Project Inspector before proceeding. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship. Perform work by persons qualified to produce workmanship of specified quality. Furnish copies of mill test reports to the laboratory.

C. Furnish labor and facilities:
   1. Access to work to be tested.
   2. To obtain and handle test samples at the site.
   3. To facilitate inspections and tests.
   4. For laboratory's exclusive use for storage and curing of test samples until removed to the laboratory.
   5. To repair any test holes in order to match original conditions.

D. Testing shall not be cause for claims for delay by the Contractor, and all expenses accruing there from, shall be deemed to be incidental to the Contract.

1.8 MANUFACTURER'S FIELD SERVICES AND REPORTS

A. When specified in individual specifications sections, suppliers or manufacturers shall provide qualified personnel to observe site conditions, installations and quality of workmanship, as applicable and to initiate instructions when necessary. Submit report to the Engineer for review within seven days of observations.

1.9 GEOTECHNICAL ENGINEERING REPORT

A. The Geotechnical Engineering Report is available for the Contractor's use, however, it is not part of the contract documents.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

A. Existing pavement, topsoil, vegetation, roots, and any soft soils in the construction areas shall be stripped from the site and hauled away from the site as it is generated.

3.3 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Construction Facilities:
1. Field offices and sheds.
2. Vehicular access.
3. Parking.
4. Progress cleaning and waste removal.
5. Project identification.
6. Traffic regulation.
7. Fire prevention facilities.

B. Temporary Controls:
1. Barriers.
2. Enclosures and fencing.
3. Security.
4. Water control.
5. Dust control.
6. Erosion and sediment control.
7. Protection of Streams, Laterals and Canals.
8. Noise control.
9. Pest control.
10. Pollution control.
11. Rodent control.

C. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

A. Provide and pay for power service required from utility source as needed for construction operation.

B. Provide temporary electric feeder from electrical service at location as directed by the El Paso County. Do not disrupt El Paso County's use of service.

C. Complement existing power service capacity and characteristics as required for construction operations.

D. Provide power outlets, with branch wiring and distribution boxes located as required for construction operations. Provide flexible power cords as required for portable construction tools and equipment.

E. Permanent convenience receptacles may not be utilized during construction.

1.3 TELEPHONE SERVICE

A. Provide, maintain, and pay for telephone service at time of project mobilization.

1.4 FACSIMILE SERVICE

A. Provide, maintain and pay for facsimile service and dedicated telephone line at time of project mobilization.

1.5 TEMPORARY WATER SERVICE

A. Provide and pay for suitable quality water service as needed to maintain specified conditions for construction operations. Connect to existing water source

B. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

1.6 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Local businesses facility use is not permitted. Provide facilities at time of project mobilization.

1.7 VEHICULAR ACCESS

A. Construct temporary all-weather access roads from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.

B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.

C. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.

D. Provide unimpeded access for emergency vehicles. Maintain 20 feet wide driveways with turning space between and around combustible materials.

E. Provide and maintain access to fire hydrants and control valves free of obstructions.

F. Provide means of removing mud from vehicle wheels before entering streets.

1.8 PARKING

A. Arrange for temporary surface parking areas to accommodate construction personnel.

B. Locate Contractor personnel parking as approved by El Paso County.

C. When site space is not adequate, provide additional off-site parking.

D. Use of existing on-site streets and driveways for construction traffic is not permitted. Tracked vehicles not allowed on paved areas.

E. Use of existing parking facilities by construction personnel is not permitted.

F. Do not allow heavy vehicles or construction equipment in parking areas.

G. Do not allow vehicle parking on existing pavement.

H. Maintenance:
1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

I. Removal, Repair:
1. Repair existing facilities damaged by use, to original specified condition.

J. Mud from Site Vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.9 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

B. Remove debris and rubbish from pipe chases, inlets, other closed or remote spaces, prior to enclosing spaces.

C. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

1.10 PROJECT IDENTIFICATION

A. Design sign and structure to withstand 60 miles/hr wind velocity.

B. Sign shall include the Project Name, Construction Duration, Contractor's Name, and shall have all applicable permits displayed.

C. Maintenance: Maintain signs and supports clean, repair deterioration and damage.

D. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

1.11 TRAFFIC REGULATION

A. Signs, Signals, And Devices:
1. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by authority having jurisdiction.

2. Traffic Control Signals: As approved by the County of El Paso and the Texas Department of Transportation.
3. Traffic Cones and Drums, Flares and Lights: As approved by the County of El Paso and the Texas Department of Transportation.
4. Flag person Equipment: As required by the County of El Paso and the Texas Department of Transportation.

B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

D. Haul Routes:
1. Shall be approved by the owner. Establish public thoroughfares to be used for haul routes and site access.

E. Traffic control for all areas of the project shall be the responsibility of the Contractor. The traffic control plan (TCP) shall conform to the specifications and principles given in the "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", latest edition and version issued by the Texas Department of Transportation (TxDOT). The TCP shall be sealed by a licensed professional engineer in the State of Texas. The Contractor shall prepare a TCP acceptable to and approved by the County of El Paso and Texas Department of Transportation. Contractor shall maintain permit active. All traffic control plans shall include an electronic traffic message board that is programmable and is to be strategically placed at the site.

F. The Contractor shall erect portable message signs for a period of six (6) days prior to commencement of staging construction activities. Signs shall display message notifying traveling public of upcoming construction. Contact the County of El Paso and Texas Department of Transportation representatives for exact message to be displayed and location of signs.

G. Businesses, emergency facilities, schools, and E.M.S. shall be advised and/or consulted prior to the start of construction. Access to the public and private property – local access shall be maintained to all surrounding properties at all times during construction and maintenance activities. The TCP shall show the hours of the day and the tentative total number of days it will be in effect.

1.12 FIRE PREVENTION FACILITIES

A. Designate area on site where smoking is permitted. Provide approved ashtrays in designated smoking areas.

B. Establish fire watch for cutting and welding and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.

C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
1. Provide minimum one fire extinguisher in every construction trailer and storage shed.

1.13 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing building.

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.14 ENCLOSURES AND FENCING

A. Construction: Contractor's option.

B. Provide protection.

1.15 SECURITY

A. Security Program:
1. Protect Work existing premises from theft, vandalism, and unauthorized entry.
2. Initiate program at project mobilization.
3. Maintain program throughout construction period until Owner acceptance.

B. Entry Control:
1. Restrict entrance of persons and vehicles into Project site and existing facilities.
2. Allow entrance only to authorized persons with proper identification.
3. Maintain log of workers and visitors, make available to Owner on request.
4. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.

1.16 WATER CONTROL

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

C. It will be the responsibility of the Contractor to schedule and perform the work to provide proper passage of any storm water during the course of the operations. All labor, tools, equipment and supervision required to assure such proper passage of runoff water and any removal or handling of water in order to maintain dry conditions shall be considered as incidental to the remainder of the work and shall be at the expense of the Contractor.

1.17 DUST CONTROL

A. Execute Work by methods to minimize raising dust from construction operations.

B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

C. Water as needed to prevent air-borne dust; a minimum of twice a day.

1.18 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize surface area of bare soil exposed at one time.

C. Provide temporary measures including berms, dikes, and drains, and other devices to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.19 PROTECTION OF POND AND DRAINAGE STRUCTURES

A. Care shall be taken to prevent any damage to the pond and drainage structures from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near the structures. Water that has been used for washing or processing, or that contains oil that may reduce the quality of the pond shall be removed from the site.

B. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with local and state agency regulations.

1.20 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise and noise produced by construction operations.

B. Working hours to comply with the County of El Paso's work hours within residential areas.

1.21 PEST CONTROL

A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work.

1.22 POLLUTION CONTROL

A. Comply with pollution and environmental control requirements of authorities having jurisdiction.

B. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

C. The control of environmental pollution requires consideration of air, water, land, and involves management of noise and solid waste, as well as other pollutants.

D. During the life of this Contract, maintain all facilities constructed for pollution control if the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

1.23 RODENT CONTROL

A. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.24 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.25 STORMWATER MANAGEMENT

A. It will be the responsibility of the Contractor to schedule and perform the work to provide proper passage of any storm water during the operations. All labor, tools, equipment and supervision required to assure such proper passage of runoff water and any removal or handling of water in order to maintain dry conditions shall be considered as incidental to the remainder of the work and shall be at the expense of the Contractor.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

PART 4 PAYMENT

4.1 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

1.2 PRODUCTS

A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

C. Furnish interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products in accordance with manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

D. For exterior storage of fabricated products, place on sloped supports above ground.

E. Provide off-site storage and protection when site does not permit on-site storage or protection.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

H. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

PART 4 PAYMENT

4.1 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items.

END OF SECTION

SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Protecting installed construction.

D. Project record documents.

E. Product warranties and product bonds.

1.2 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.

B. Provide submittals to Engineer and the County of El Paso required by authorities having jurisdiction.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, sum remaining due, and in accordance with the County of El Paso's requirements.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.

C. Clean debris from the drainage system.

D. Clean site; sweep paved areas, rake clean landscaped surfaces.

E. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.4 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Prohibit traffic from landscaped areas.

1.5 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, Product Data, and Samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
2. Field changes of dimension and detail.
3. Details not on original Contract drawings.

G. Submit documents to owner with claim for final Application for Payment.

1.6 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.

F. Submit prior to final Application for Payment.

G. Time of Submittals:
1. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
2. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

PART 4 PAYMENT

4.1 PAYMENT

A. The work performed, and materials furnished as this bid items requires will not be paid for directly but will be subsidiary to its associated bid items.

END OF SECTION

SECTION 01 78 39
PROJECT RECORD DRAWINGS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all tools, qualified superintendence and all services for the recording of all As-built Contract Drawings and As-built Specifications as required by the Contract Documents. Complete work as shown and specified herein.

1.2 SECTION INCLUDES

A. As-built Contract Drawings.

B. As-built Specifications.

1.3 DEFINITIONS

A. Record Documents: As-built Contract Drawings and As-built Specifications completed by the Contractor.

B. As-built Contract Drawings or Contract Specifications: Drawings or specification section of the Contract Documents marked-up (a.k.a. "red-lined") by Contractors to indicate work as completed that deviates from work as designed, and changes from Addendum, Change Orders, Requests for Information, Shop Drawings, Submittals, Architect's Supplemental Instructions, or Requests for Proposals.

C. Record Drawings or Contract Specifications: Drawings or specification section of the Contract Documents showing work as completed, compiled (incorporating all Contractor As-built Drawings) by the Engineer.

1.4 SUBMITTALS

A. Refer to *Section 01 33 00 – Submittal Procedures*.

B. Within ten (10) working days of completion of site improvements, the Contractor shall submit to the Engineer the original As-built Drawings and one (1) CD with scanned color copies of each As-built Contract Drawing.

C. Submit Project Record Documents to Project Inspector and/or Engineer with claim for Final Application of Payment.

1.5 AS-BUILT CONTRACT DRAWINGS

A. During construction, the Contractor shall maintain a set of As-built Documents specifically for the sole purpose of creating As-built documents, separate from the set used for construction. The Contractor shall not use the Record Documents for construction purposes. Maintain As-built Documents in good order.

B. The Contractor shall mark As-built Contract Drawings to show the actual installation where the installation varies from the installation shown originally. Give attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to, the following:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
2. Horizontal locations shall be recorded with northing and easting coordinates. Refer to *Section 01 30 00 – Administrative Requirements.*
3. Vertical locations shall be recorded as the distance between the finished grades to the actual soffit of the utility line/pipe.
4. Locations of concealed internal utilities and appurtenances.
5. Actual equipment locations.
6. Revisions to routing of piping and conduits.
7. Depths of foundations.
8. Dimensional changes to the Drawings.
9. Revisions to details on the Drawings.
10. Details not on original Contract Drawings
11. Changes made by Addendum, Change Orders, Requests for Information (RFIs), Architect's Supplemental Instructions (ASIs), or Requests for Proposals (RFPs).

1.6 AS-BUILT SPECIFICATIONS

A. Mark As-built Specifications to show Addendum, Change Orders, Requests for Information (RFIs), Architect's Supplemental Instructions (ASIs), or Requests for Proposals (RFPs).

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 RECORDING

A. During construction, the Contractor shall maintain a set of As-built Documents specifically for the purpose of creating As-built documents, separate from the set used for construction. The Contractor shall not use the Record Documents for construction purposes. Maintain As-built Documents in good order and in a clean, dry, legible condition.

B. The Contractor shall mark As-built Documents to indicate actual work done that deviates from the Contract Drawings.

C. The Contractor shall mark important additional information that was either shown schematically or omitted from Contract Documents. The As-built Documents shall be marked completely and accurately.

D. The Contractor shall use colors to distinguish between changes for different categories of the Work at the same location. As-built Documents shall be marked with an erasable colored pencil conforming to the following color code:

1. Additions – Green
2. Deletions – Red

3. **Comments** – **Blue**
4. **Dimensions** – **Graphite**

E. All marks shall be photo-reproducible.

F. Reference any changes to the Contract, including but not limited to Addenda, Change Orders, Change Directives, Supplemental Instructions, and other issued modifications. Use specific document numbers.

G. Make all documents and samples available at all times for the Owner's and Engineer's inspections.

3.2 RESPONSIBILITY FOR MARKUP

A. The individual or entity who obtained as-built data, whether the individual or entity is the installer, contractor, subcontractor, or similar entity, shall record the markup.

B. The Contractor shall record changes and modifications daily.

C. The Contractor shall record and check the markup prior to enclosing concealed installations.

3.3 PAYMENT

A. The work performed, and materials furnished as this bid item requires will not be paid for directly but will be subsidiary to its associated bid items. Record keeping activities will be reviewed at the end of each month by the Owner's representative and requests for payment will be withheld if they are not kept current, and until corrected.

END OF SECTION

DIVISION 02

EXISTING CONDITIONS

SECTION 02 41 19

SELECTIVE STRUCTURE DEMOLITION

PART 1 GENERAL

SCOPE OF WORK

A. Furnish materials, labor, transportation, services, and equipment necessary to perform all site demolition work as indicated in the Construction Drawings. Complete work as shown and specified herein.

1.2 SECTION INCLUDES

A. Demolition of roadway pavement structure, curb and gutter, sidewalks and all other items indicated in the Construction Drawings.

B. Demolition of designated items for reuse and Owner's retention.

C. Protection of items designated to remain undisturbed.

D. Removal and proper disposal of demolished materials.

1.3 RELATED SECTIONS

A. Section 01 32 16 – Construction Progress Schedule.

B. Section 01 50 00 – Temporary Facilities and Controls.

1.4 SUBMITTALS

A. Refer to Section 01 33 00 – Submittal Procedures.

B. Demolition Schedule: Indicate overall schedule and interruptions required for utility and building services. Refer to Section 01 32 16 – Construction Progress Schedule.

1.5 CLOSEOUT SUBMITTALS

A. Refer to Section 01 70 00 – Execution and Closeout Requirements.

B. Project Record Documents: Accurately record actual locations of capped utilities, concealed utilities discovered during demolition, subsurface obstructions, and changes in the drawings.

1.6 QUALITY ASSURANCE

A. Conform with the County of El Paso code for demolition work, products requiring electrical disconnection, and dust control.

B. Conform to the County of El Paso and Texas Commission of Environmental Quality (TCEQ) code for procedures when hazardous or contaminated materials are discovered.

C. Obtain required permits from authorities having jurisdiction.

D. Perform Work in accordance with the County of El Paso's requirements.

1.7 SCHEDULING

A. Contractor shall schedule Work to coincide with new construction and construction by others.

B. Contractor shall cooperate with Owner in scheduling noisy operations and waste removal that may impact Owners operation and in adjoining spaces.

C. Contractor shall abide to the proposed construction phasing plan as specified in the Construction Drawings.

D. Contractor shall coordinate utility service interruptions with Owner and utility companies.

1.8 PROJECT CONDITIONS

A. Conduct demolition to minimize interference with adjacent building areas.

B. Cease operations immediately if structure appears to be in danger and notify Owner and Engineer. Do not resume operations until directed.

1.9 ASBESTOS REMOVAL AND DISPOSAL

A. **Cutting of Asbestos Cement (AC) Pipe:** Whenever it is necessary to cut AC pipe it shall be done with the asbestos cement pipe cutter or tools recommended by the manufacturer. The use of abrasive saws will not be permitted. The cut end of the pipe shall be beveled, smooth, and free of excessive chipping.

B. **ONLY** the "wet-cut" method shall be applied with special emphasis on all applicable OSHA Regulations.

C. **ONLY** a Certified Contractor shall be given authority to cut asbestos cement pipe.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 PREPARATION

A. Notify affected utility companies before starting work and comply with their requirements.

B. Mark location and termination of utilities.

C. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the public and existing improvements indicated to remain.

D. Prevent movement of structures. Provide temporary bracing and shoring required to ensure safety of existing structures.

E. Provide appropriate temporary signage.

F. Identify limits of demolition as shown on the Construction Drawings and maintain all demolition work within.

3.2 SALVAGE REQUIREMENTS

A. Coordinate with Owner to identify items and components required to be removed and delivered to Owner.

B. Tag components and equipment Owner designates for salvage.

C. Protect designated salvage items from demolition operations until items can be removed.

D. Carefully remove items and components indicated to be salvaged.

E. Package small and loose parts to avoid loss.

F. Deliver salvaged items to Owner. Obtain signed receipt from Owner.

3.3 DEMOLITION

A. Conduct demolition to minimize interference with adjacent building areas.

B. Do not close or obstruct roadways, sidewalks unless specifically called out in the Construction Drawings.

C. Disconnect and remove designated utilities within demolition areas.

D. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.

E. Capping and disconnecting of utility must be in accordance with the regulations of the utility company affected.

F. Demolish in orderly and careful manner. Protect existing improvements.

G. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.

H. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.

I. Remove temporary Work.

- END OF SECTION 02 41 19 -

DIVISION 31

EARTHWORK

SECTION 31 05 13

SOILS FOR EARTHWORK

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish materials, labor, transportation, services, and equipment necessary to perform all earthwork operations as indicated on the Construction Drawings. Complete work as shown and as specified herein.

1.2 SECTION INCLUDES

A. Subsoil and fill materials.

1.3 RELATED SECTIONS

A. Section 31 22 13 – Rough Grading

B. Section 31 23 16 – Excavation

C. Section 31 23 17 – Trenching

D. Section 31 23 23 – Select Fill

1.4 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):

1. AASHTO T180 – Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.

B. American Society of Testing Materials International (ASTM):

1. ASTM D698 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).
2. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).
3. ASTM D2487 – Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
4. ASTM D6938 – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
5. ASTM D1556 – Standard Test Method for Density of Soil in Place by the Sand-Cone Method.

1.5 SUBMITTALS

A. Refer to Section 01 33 00 – Submittal Procedures.

B. Materials Source: Submit name of imported materials source.

C. Manufacturer's Certificate: Certify products meet or exceed the specified requirements.

1.6 QUALITY ASSURANCE

A. Furnish all materials from single source throughout the Work.

B. Perform work in accordance with the County of El Paso's requirements.

PART 2 PRODUCTS

2.1 SUBSOIL AND FILL MATERIALS

A. Subsoil and fill materials shall be granular cohesion-less soils, free of organic material, vegetation, clay lumps, deleterious materials, cobbles or boulders over 4 inches in nominal size.

B. Subsoil and fill materials shall be classified in accordance with ASTM D 2487.

C. The following soils classified in accordance with the Unified Soil Classification System (USCS) shall be considered satisfactory for use as structural fill: GM, GC, GW-GM, GW-GC, GP, GP-GM, and GP-GC, SM, SC, SW-SM, SW-SC, SP-SM, SW-SC, and SC-SM.

D. The following soils classified in accordance with the USCS **SHALL NOT** be considered satisfactory for use as structural fill: CH, CL, MH, ML, OH, OL and PT, or soils that exceed a liquid limit of 40 and a plasticity index of 18.

E. Existing soils encountered **SHALL NOT** be considered suitable as structural fill material.

F. Structural fill materials shall be placed in uniform layers not exceeding 6 inches in compacted thickness, and shall be moisture-conditioned to add the amount of moisture required for optimum compaction and compacted to a minimum of 95 percent of maximum dry density in accordance with ASTM D-1557 (modified Proctor) procedures.

G. The moisture content shall be at plus or minus 3 percent of optimum moisture content in accordance with ASTM D-1557.

2.2 SOURCE QUALITY CONTROL

A. Refer to Section 01 40 00 – Quality Requirements.

B. Testing and analysis of Subsoil Material shall perform in accordance with AASHTO T180, ASTM D698, ASTM D1557, and ASTM D2487.

C. If tests indicate materials do not meet specified requirements, change material and retest.

D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 SOIL REMOVAL AND EXCAVATION

A. Excavate subsoil and subgrade from areas designated on the Construction Drawings.

B. Remove lumped soil, boulders, debris and rock.

C. Remove excavated materials not meeting requirements for fill materials from site.

3.2 STOCKPILING

A. Stockpile materials on site at locations indicated by City inspector.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Prevent intermixing of soil types or contamination.

E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

F. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching until disposed of.

3.3 STOCKPILE CLEANUP

A. Remove stockpile from designated area. Area shall be left in clean and neat condition. Grade site surface to prevent free standing surface water.

B. If a borrow area is indicated, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.

3.4 SITE PREPARATION

A. Initial earthwork operations shall consist of clearing and grubbing the site of all non-suitable materials, vegetation, organic material, roots and any debris or as required by the Construction Drawings. Refer to *Section 31 10 00 – Site Clearing.*

B. Existing native soils that will support Native Fill materials, Select Fill materials, Pavement structures, Drainage structures and Sitework structures shall be cleared of all vegetation, organic matter, topsoil, construction debris, and/or any foreign matter and compacted as specified on the Construction Documents.

C. The cleared subgrade elevation shall be scarified to a minimum depth of 8 inches and be thoroughly proof rolled in order to locate and densify any weak, compressible zones. Subgrade shall be moisture conditioned and recompacted to 95 percent per ASTM D 1557 at 3 percentage points above and 3 percentage points below the optimum moisture content (±3% of OMC).

D. Cohesive subgrade soils or clays (i.e., soils with a PI greater than 18) shall be compacted to at least 90 percent of maximum dry density per ASTM D 1557 with water content within 0 to 3 percentage points above the optimum moisture content.

E. Prior to placement of Native Fill materials, Select Fill materials, Pavement structures, Drainage structures and Sitework structures, the subgrade soil shall be proof rolled in order to densify any weak compressible zones.

F. Proof rolling operations shall be observed by the Geotechnical Engineer or his representative to document subgrade condition and preparation.

G. Weak or soft areas identified during proof rolling shall be removed and replaced with suitable, compacted fill materials as specified on *Section 31 23 23 – Select Fill*.

H. Soils which are observed to rut or deflect excessively (greater than 1 inch) under the moving load should be undercut and replaced with properly compacted fill materials as specified on *Section 31 23 23 – Select Fill*.

I. If loose or soft soil/rock deposits are encountered in some areas throughout the foundation footprint, the exposed subgrade shall be scarified just prior to fill placement to a minimum depth of 8-inches and re-compacted to a minimum of 95 percent of maximum dry density as determined by ASTM D 1557 (modified Proctor) procedures.

J. Subgrade soil compacted to more than 3 percentage points above optimum moisture content may be accepted only after observation and approval by the project Geotechnical Engineer.

K. If voids or soft pockets of rock are encountered, they shall be removed and replaced/filled with a compacted non-expansive fill material or lean concrete up to the design foundation bearing elevations.

L. In areas where Select Fill will be required to raise the existing grades to the finished grade elevations, the Select Fill shall be placed in loose lifts not exceeding 8 inches in thickness and compacted to at least 95 percent of maximum dry density as determined by the ASTM D 1557. The moisture content of the fill shall be maintained within a range of ±3 percentage points of the optimum moisture content until permanently covered. The Select Fill shall be texted for compaction and verification as required per *Section 31 23 23 – Select Fill* or as directed by the Geotechnical Engineer.

M. Compaction of the select fill material and subgrade soils shall be conducted with approved types of pneumatic, power or tamping equipment. Determination of density in the field shall be conducted in accordance with ASTM D-2922 or D-1556.

3.5 FIELD QUALITY CONTROL AND TESTING

A. Request inspection prior to placing Native Fill materials, Select Fill materials, Pavement structures, Drainage structures and Sitework structures.

B. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Testing on supporting soils shall be performed to ensure conformance with specified requirements. Testing shall conform with the minimum frequency and in accordance to ASTM as described below:

Table 3.5.1 – Quality Control for Soils for Earthwork

Test Type	Applicable Standard
At least **one (1)** Laboratory Compaction Characteristics of Soil using Modified Effort (Proctor) for each type of material encountered or import material used.	ASTM D 1557 and/or ASTM D 698
At least **one (1)** Soil Classification (Sieve Analysis and Atterberg Limits Test) for each type of material encountered or import material used. **NOTE:** Additional soil classification shall be requested by the general contractor during the earthwork operations to further evaluate that the fill materials are maintained within the specified requirements for the applicable fill soil material.	ASTM D 6938 And/or ASTM D 4318
A minimum of **two (2)** density tests per each lift of subgrade preparation and/or fill placement.	ASTM D 1556 and/or ASTM D 6938

- END OF SECTION 31 05 13 -

SECTION 31 10 00

SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removing surface debris and trash regardless of type.

B. Removing designated trees, shrubs, and other plant life.

C. Removing abandoned utilities.

D. Removing large loose rocks.

1.2 SUBMITTALS

A. Requirements for submittals: Refer to *Section 01 33 00 - Submittal Procedures*.

B. Product Data: Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with County of El Paso standards.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. *Section 01 30 00 - Administrative Requirements*: Verification of existing conditions before starting work.

B. Verify existing plant life designated to remain is tagged or identified.

3.2 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.

3.3 PROTECTION

A. Locate, identify, and protect utilities indicated to remain, from damage.

B. Protect trees, plant growth, and features designated to remain.

C. Protect benchmarks, survey control points, and existing structures from damage or displacement.

3.4 CLEARING

A. Clear areas required for access to site and execution of Work to minimum depth of 36 inches.

B. Remove trees and shrubs within marked areas. Remove stumps, root system to depth of 36 inches, surface rock, and debris.

C. Clear undergrowth and deadwood, without disturbing subsoil.

D. Remove and dispose of large loose rock, debris, and trash regardless of type within the project limits.

E. Apply herbicide to remaining stumps to inhibit growth.

3.5 REMOVAL

A. Remove debris, rock (regardless of size), and extracted plant life from site.

B. Partially remove paving, curbs, as indicated on Drawings. Neatly saw cut edges at right angle to surface.

C. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.

D. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.

E. Do not burn or bury materials on site. Leave site in clean condition.

END OF SECTION

SECTION 31 22 13

ROUGH GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Rough grading for the site improvements.

B. Cutting, grading, filling, rough contouring and compacting the site for site structures.

1.2 RELATED SECTIONS

A. Section 31 10 00 – Site Clearing.

B. Section 31 05 13 – Soils for Earthwork.

C. Section 31 23 16 – Excavation.

D. Section 31 23 23 – Select Fill.

1.3 REGULATORY REQUIREMENTS

A. Obtain required permits from authorities.

B. Conform to applicable codes for grading.

1.4 REFERENCES

A. American Association of State Highway and Transportation Officials (AASTHO):
1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.

B. American Society of Testing Materials (ASTM International):
1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).
3. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
4. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).
5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).

8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.1 MATERIALS

A. Section 31 23 23 – Select Fill.

B. Section 31 05 13 – Soils for Earthwork.

.PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that survey benchmark and intended elevations for the Work are as indicated.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect utilities that remain, from damage.

D. Notify utility field locators to identify existing utilities and depths.

E. Protect above and below grade utilities that remain.

F. Protect plant life, lawns and other features remaining as a portion of final landscaping.

G. Protect benchmarks, survey control point, existing structures, fences, sidewalks, paving, and curbs to remain from excavating equipment and vehicular traffic.

3.3 BASE MATERIAL EXCAVATION

A. Contractor shall not contaminate base material with subgrade.

B. If the base material becomes contaminated, the Contractor shall remove the contaminated material and perform Work as indicated on these Specifications.

C. The subgrade preparation and filling shall conform to *Section 31 05 13 - Soils for Earthwork* and *Section 31 23 23 - Select Fill*.

3.4 SUBSOIL EXCAVATION

A. Excavate subsoil from areas to be further excavated or re-graded.

B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.

C. When excavating through roots, perform work by hand and cut roots with sharp axe.

D. Remove subsoil from site.

E. Stability: Replace damaged or displaced subsoil to same requirements as for specified select fill.

3.5 FILLING

A. Installed select fill shall be in accordance with *Section 31 23 23 – Select Fill*.

B. Fill areas to contours and elevations with unfrozen materials.

C. Place fill material on continuous layers and compact per *Section 31 23 23 – Select Fill*.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Slope grade away from building surface platform.

F. Make grade changes gradual. Blend slope into level areas.

G. Remove surplus fill materials from site.

3.6 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

3.7 FIELD QUALITY CONTROL

A. Testing: In accordance with AASHTO T180, ASTM C136, ASTM D698, ASTM D1556, ASTM D1557, ASTM D2167, ASTM D2419, ASTM D2434, ASTM D2922 and ASTM D3017.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Frequency of Tests: As recommended by the testing laboratory and agreed to by the Owner.

END OF SECTION

SECTION 31 23 16

EXCAVATION

PART 1 GENERAL

1.1 SECTION INCLUDE

A. Excavating for site structures.

B. Excavating for ponding areas.

1.2 RELATED SECTIONS

A. Section 31 23 17 –Trenching.

B. Section 31 23 23 - Select Fill.

C. The Geotechnical report depicting bore hole locations and findings of subsurface materials is available at the Engineer's offices for Contractor's information only. The Geotechnical report is not part of the contract documents. The Engineer's office is located at 2505 E. Missouri Ave., El Paso, TX 79903. Office hours are Monday thru Thursday 7:30 am to 5:30 pm and Friday from 8:00 am to 12:00 noon.

1.3 REFERENCES

A. American Society for Testing Materials International (ASTM):
   1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft-lbf/ft3.
   2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
   3. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
   4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

B. Local utility standards when working within 24 inches of utility lines.

1.4 SUBMITTALS

A. Requirements for submittals: Refer to *Section 01 33 00 - Submittal Procedures*.

B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

C. Shop Drawings: Indicate soil densification grid for each size and configuration footing requiring soils densification.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with the County of El Paso standards.

1.6 QUALIFICATIONS

A. Prepare trench excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of Texas.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 PREPARATION

A. Call Local Utility Line Information service at not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Notify utility company to remove and relocate utilities.

D. Located, identify and protect utilities indicated to remain from damage.

E. Protect plant life, lawns, rock outcroppings and other features remaining as portion of final landscaping.

F. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

G. Remove subsoil and subgrade from areas designated.

H. Remove lumped soil, boulders, debris and rock.

I. Remove excavated material from site.

3.2 EXCAVATION

A. Materials being excavated are unclassified. Material shall be considered unclassified throughout the entire project limits. Removal of unclassified materials encountered during excavation such as lumped soil, boulders, rock, debris and concrete, of any type and size will not be paid for directly but will be subsidiary to the excavation bid item.

B. Underpin adjacent structures which may be damaged by excavation work.

C. Excavate subsoil to accommodate foundations, slabs-on-grade, paving, site structures, and construction operations.

D. Excavate to working elevation for piling work.

E. Excavation shall be depicted as shown on drawings and shall not exceed the limits and elevations as portrayed on plans.

F. Over excavation shall be required for sloped areas where filling materials are needed. See drawings for details.

G. Slope banks with machine to angle of repose or less until shored.

H. Do not interfere with 45 degree bearing splay of foundations.

I. Grade top perimeter of excavation to prevent surface water from draining into excavation.

J. Trim excavation. Remove loose matter.

K. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. Remove larger material as specified in *Section 31 23 23 – Select Fill*.

L. Notify Engineer of unexpected subsurface conditions.

M. Correct areas over excavated with select fill specified in *Section 31 23 23 – Select Fill*.

N. Remove excess and unsuitable material from site.

O. Stockpile subsoil in area designated on site to depth not exceeding 8 feet and protect from erosion.

P. If excavations extend to or below a depth of 5 feet below construction grade, the Contractor or others shall be required to develop a trench safety plan to protect personnel entering the trench or trench vicinity as specified in *Section 31 23 17 - Trenching*.

Q. Items indicated to remain damaged by excavation will have to be repaired or replaced by Contractor at no cost to Owner.

3.3 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements

B. *Section 01 70 00 - Execution and Closeout Requirements*: Field inspecting, testing, adjusting, and balancing.

C. Testing and Analysis of Subsoil Materials: Perform in accordance with AASHTO T180, ASTM D698, ASTM D1557, and ASTM D2487.

D. If tests indicate materials do not meet specified requirements, change material and retest.

E. Provide materials of each type from same source throughout the project.

3.4 PROTECTION

A. In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". The document was issued to better ensure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, be constructed in accordance with the new OSHA guidelines.

B. The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, shall evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case shall slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

END OF SECTION

SECTION 31 23 23

SELECT FILL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Backfilling site structures to subgrade elevations.

B. Fill under paving.

C. Fill for over-excavation.

1.2 RELATED SECTIONS

A. Section 31 05 13 – Soils for Earthwork.

B. Section 31 23 16 – Excavation.

C. Section 31 23 17 – Trenching.

D. The Geotechnical report depicting bore hole locations and findings of subsurface materials is available at the Engineer's offices for Contractor's information only. The Geotechnical report is not part of the contract documents. The Engineer's office is located at 2505 E. Missouri Ave., El Paso, TX 79903. Office hours are Monday thru Thursday 7:30 am to 5:30 pm and Friday from 8:00 am to 12:00 noon.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.

B. American Society for Testing Materials International (ASTM):
   1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft-lbf/ft3.

   2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.

   3. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort 6,000 ft-lbf/ft3.

   4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

   5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

7. ASTM D4253 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

1.4 SUBMITTALS

A. Requirements for submittals: Refer to *Section 01 33 00 - Submittal Procedures*.

B. Product Data: Submit data for geotextile fabric indicating fabric and construction.

C. Materials Source: Submit name of imported fill materials suppliers.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with County of El Paso standards.

PART 2 PRODUCTS

2.1 SELECT FILL MATERIALS

A. Select Fill should consist of granular clayey, silty sands or sandy clayey, silty gravel mixtures, free of clay lumps, deleterious materials, organic material, vegetation, roots, cobbles over 3 inches in nominal size. The Select Fill should have a liquid limit less than 35 and a plasticity index ranging from 4 to 15. The Select Fill shall exhibit an optimum dry density of at least 125 pcf determined in accordance with ASTM D-1557. Select Fill soils should meet the gradation requirements below.

Select Fill Gradation Requirements

Sieve Size (square opening)	% Passing by Weight
3-inch	100
3/4-inch	75 – 100
No. 4	45 – 100
No. 200	20 – 45

B. Select Fill soils should classify as SC, SC-SM, GC, GC-GM, and GP-GC in accordance with the Unified Soil Classification System (USCS).

C. In general, approved Select Fill shall not be placed in loose lifts greater than 8 inches. Select Fill shall be compacted to at least 95 percent of maximum dry density determined per ASTM D-1557. The moisture content of Select Fill shall be maintained within +/- 3 percent of optimum moisture content until finally covered.

D. In general, excavations shall be backfilled with suitable Select Fill to the specified finished grade elevations.

2.2 NATIVE FILL SOILS (EXISTING ON-SITE SOILS)

A. Native soils should consist of granular clayey, silty sands or sandy gravel mixtures, free of clay lumps, clay balls, deleterious materials, vegetation, organic material, roots, cobbles or boulders over 3 inches in nominal size. Native Fill soils are not considered suitable Select Fill soils unless approved by the Engineer of record. The Native Fill soils shall have a liquid limit less than 40 and a plasticity index of 15 or less. Suitable Native Fill soils should meet the gradation requirements below. Native Fill soils are not considered specified imported Select Fill soils unless they strictly meet the requirements of Select Fill specified above.

Native Fill Soil Gradation Requirements

Sieve Size (square opening)	% Passing by Weight
3-inch	100
3/4-inch	70 – 100
No. 4	45 – 100
No. 200	12 – 45

B. Native Fill soils classified in the following list according to the USCS may be considered satisfactory for use Native Fill soils: SM, SW, SC, SP-SM, SP-SC, SC-SM, GW, GP, GM, GC, GP-GM and GP-GC, provided that these soils also meet the requirements above.

C. It is recommended that on-site soils classified as SP be blended with low-plasticity clayey sands or as appropriate to mitigate potential soil sloughing during excavations in these types of soils and to create a relatively stable blended soil material that exhibits adequate bearing capacity. The blended soils should meet the requirements of Native Fill above.

D. Soils classified as CH, MH, OH, OL and PT or a combination of these under the USCS classification and soils that exhibit a plasticity index greater than 15 are not considered suitable for use as Native Fill and Select Fill soil materials.

2.3 EXAMINATION

A. *Section 01 30 00 - Administrative Requirements*: Coordination and project conditions.

B. Verify sub-drainage, damp-proofing, or waterproofing installation has been inspected.

C. Verify structural ability of unsupported walls to support loads imposed by fill.

2.4 SITE PREPARATION

A. In order to mitigate erosion of encountered sands within the proposed site, it is recommended that slopes be protected from localized erosion.

B. The owner should consider placing loose rock rip-rap along the slopes to reduce erosion within select areas. Surface water flows are anticipated to run down slope sections. It is recommended that the stone be angular, durable (exhibit an LA Abrasion not greater than 40 and chemically sound), non-weathered, and uniform in size (i.e., 6 to 8 inches). The slope angle should also be considered in the final design to ensure that the loose rock rip-rap shall be stable. A commercially available geo-textile fabric should be placed between the finished slope surface and placed rock rip-rap.

2.5 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Employ placement method that does not disturb or damage other work.

D. Maintain optimum moisture content of backfill materials to attain required compaction density.

E. Backfill against supported foundation walls and. Do not backfill against unsupported foundation walls.

F. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

G. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.

H. Make gradual grade changes. Blend slope into level areas.

I. Remove surplus backfill materials from site.

J. Leave fill material stockpile areas free of excess fill materials.

2.6 TOLERANCES

A. Tolerances: Refer to *Section 01 40 00 - Quality Requirements*.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

C. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

2.7 FIELD QUALITY CONTROL

A. Testing will be performed in accordance with ASTM D-2922 or D-1556.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Frequency of Tests:

1. Earthwork: At least one (1) moisture-density (Proctor) test, Atterberg limits test and percent finer #200 sieve test shall be performed per soil type for subgrade, backfill, and fill materials.

2.8 PROTECTION OF FINISHED WORK

A. *Section 01 70 00 - Execution and Closeout Requirements*: Protecting finished work.

B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

SECTION 31 37 00

RIP RAP

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish and place concrete, stone, cement-stabilized, or special riprap.

PART 2 PRODUCTS

2.1 MISCELLANEOUS MATERIALS

Furnish materials in accordance with the following Items.
Item 03 31 00, "Structural Concrete"

A. Concrete Riprap. Use Class B Concrete unless otherwise shown on the plans.

B. Stone Riprap. Use durable natural stone with a bulk specific gravity of at least 2.50 as determined by Procedure Tex-403-A unless otherwise shown on the plans. Provide stone that, when tested in accordance with Procedure Tex-411-A, has weight loss of no more than 18% after 5 cycles of magnesium sulfate solution.

Perform a size verification test on the first 5,000 sq. yd. of finished riprap stone for all types of stone riprap at a location determined by the Engineer. Test the riprap stone in accordance with ASTM D5519. Additional tests may be required. Do not place additional riprap until the initial 5,000 sq. yd. of riprap has been approved.

Provide grout or mortar in accordance with Item 03 31 00, "Structural Concrete" when specified. Provide grout with a consistency that will flow into and fill all voids.

Provide filter fabric in accordance with Current DMS-6200, "Filter Fabric." Provide Type 2 filter fabric for protection stone riprap unless otherwise shown on the plans. Provide Type 2 filter fabric for Type R, F, or Common stone riprap when shown on the plans.

i. Type R. Use stones between 50 and 250 lb. with at least 50% of the stones heavier than 100 lb.

ii. Type F. Use stones between 50 and 250 lb. with at least 40% of the stones heavier than 100 lb. Use stones with at least 1 broad flat surface.

iii. Common. Use stones between 50 and 250 lb. Use stones that are at least 3 in. in their least dimension. Use stones that are at least twice as wide as they are thick. When shown on the plans or approved, material may consist of broken concrete removed under the Contract or from other approved sources. Cut exposed reinforcement flush with all surfaces before placement of each piece of broken concrete.

iv. Protection. Use boulders or quarried rock that meets the gradation requirements of Table 1. Both the width and the thickness of each piece of riprap must be at least 1/3 of the length. When shown on the plans or as approved, material may consist of broken concrete removed under the Contract or from other approved sources. Cut exposed reinforcement flush with all surfaces before placement of each piece of

broken concrete. Determine gradation of the finished, in-place, riprap stone under the direct supervision of the Engineer in accordance with ASTM D5519.

Table 1 In-Place Protection Riprap Gradation Requirements

Size	Maximum Size (lb.)	90% Size[1] (lb.)	50% Size[2] (lb.)	8% Size[3] Minimum (lb.)
12 in.	200	80–180	30–75	3
15 in.	320	170–300	60–165	20
18 in.	530	290–475	105–220	22
21 in.	800	460–720	175–300	25
24 in.	1,000	550–850	200–325	30
30 in.	2,600	1,150–2,250	400–900	40

1. Defined as that size such that 10% of the total riprap stone, by weight, is larger and 90% is smaller.
2. Defined as that size such that 50% of the total riprap stone, by weight, is larger and 50% is smaller.
3. Defined as that size such that 92% of the total riprap stone, by weight, is larger and 8% is smaller.

The Engineer may require in-place verification of the stone size. Determine the in-place size of the riprap stone by taking linear transects along the riprap and measuring the intermediate axis of the stone at select intervals. Place a tape measure along the riprap and determine the intermediate axis size of the stone at 2 ft. intervals. Measure a minimum of 100 stones, either in a single transect or in multiple transects, then follow ASTM D5519 Test Procedure Part B to determine the gradation. Table 2 is a guide for comparing the stone size in inches to the stone weight shown in Table 1.

Table 2
Protection Riprap Stone Size[1]

Size	Dmax (in.)	D90 (in.)	D50 (in.)	D8 (in.)
12 in.	13.76	10.14–13.29	7.31–9.92	3.39
15 in.	16.10	13.04–15.75	9.21–12.91	6.39
18 in.	19.04	15.58–18.36	11.10–14.21	6.59

21 in.	21.85	18.17–21.09	13.16–15.75	6.88
24 in.	23.53	19.28–22.29	13.76–16.18	7.31
30 in.	32.36	24.65–30.84	17.34–22.72	8.05

1. Based on a Specific Gravity of 2.5 and using the following equation for the intermediate axis diameter
$D = \{(12*W)/(Gs*62.4*0.85)\}^{1/3}$

where:
D = intermediate axis diameter in in.; W = weight of stone in lbs.; Gs = Specific Gravity of stone.
Note—If the Specific Gravity of the stone is different than 2.5, then the above equation can be used to determine the appropriate size using the actual Specific Gravity.

☐ If required, provide bedding stone that, in-place, meets the gradation requirements shown in Table 3 or as otherwise shown on the plans. Determine the size distribution in Table 3 in accordance with ASTM D6913.

Table 3
Protection Riprap Bedding Material Gradation Requirements

Sieve Size (Sq. Mesh)	% by Weight Passing
3"	100
1-1/2"	50–80
3/4"	20–60
#4	0–15
#10	0–5

C. Cement-Stabilized Riprap. Provide aggregate that meets Specification 337, “Flexible Base,” for the type and grade shown on the plans. Use cement-stabilized riprap with 7% hydraulic cement by dry weight of the aggregate.

D. Special Riprap. Furnish materials for special riprap according to the plans.

PART 3 CONSTRUCTION

3.1 CONSTRUCTION

Dress slopes and protected areas to the line and grade shown on the plans before the placement of riprap. Place riprap and toe walls according to details and dimensions shown on the plans or as directed.

A. Concrete Riprap. Reinforce concrete riprap with 6 × 6 – W2.9 × W2.9 welded wire fabric or with No. 3 or No. 4 reinforcing bars spaced at a maximum of 18 in. in each direction unless otherwise shown. Alternative styles of welded wire fabric that provide at least 0.058 sq. in. of steel per foot in both directions may be used if approved. A combination of welded wire fabric and reinforcing bars may be provided when both are permitted. Provide a minimum 6-in. lap at all splices. Provide horizontal cover of at least 1 in. and no more than 3 in. at the edge of the riprap. Place the first parallel bar no more than 6 in. from the edge of concrete. Use approved supports to hold the reinforcement approximately equidistant from the top and bottom surface of the slab. Adjust reinforcement during concrete placement to maintain correct position.

Sprinkle or sprinkle and consolidate the subgrade before the concrete is placed as directed. All surfaces must be moist when concrete is placed.

Compact and shape the concrete once it has been placed to conform to the dimensions shown on the plans. Finish the surface with a wood float after it has set sufficiently to avoid slumping to secure a smooth surface or broom finish as approved.

Cure the riprap immediately after the finishing operation according to Specification 220, "Concrete Substructures."

B. Stone Riprap. Provide the following types of stone riprap when shown on the plans:
Dry Riprap. Stone riprap with voids filled with only spalls or small stones.
Grouted Riprap. Type R, F, or Common stone riprap with voids grouted after all the stones are in place.
Mortared Riprap. Type F stone riprap laid and mortared as each stone is placed.

Use spalls and small stones lighter than 25 lb. to fill open joints and voids in stone riprap, and place to a tight fit.

Place mortar or grout only when the air temperature is above 35°F. Protect work from rapid drying for at least 3 days after placement.

Place filter fabric with the length running up and down the slope unless otherwise approved. Ensure fabric has a minimum overlap of 2 ft. Secure fabric with nails or pins. Use nails at least 2 in. long with washers or U-shaped pins with legs at least 9 in. long. Space nails or pins at a maximum of 10 ft. in each direction and 5 ft. along the seams. Alternative anchorage and spacing may be used when approved.

i. Type R. Construct riprap as shown in Figure 1 on the Stone Riprap Standard and as shown on the plans. Place stones in a single layer with close joints so most of their weight is carried by the earth and not the adjacent stones. Place the upright axis of the stones at an angle of approximately 90° to the embankment slope. Place each course from the bottom of the embankment upward with the larger stones in the lower courses.

Fill open joints between stones with spalls. Place stones to create a uniform finished top surface. Do not exceed a 6-in. variation between the tops of adjacent stones.

Replace, embed deeper, or chip away stones that project more than the allowable amount above the finished surface.

Prevent earth, sand, or foreign material from filling the spaces between the stones when the plans require Type R stone riprap to be grouted. Wet the stones thoroughly after they are in place, fill the spaces between the stones with grout, and pack. Sweep the surface of the riprap with a stiff broom after grouting.

ii. Type F.

1) Dry Placement. Construct riprap as shown in Figure 2 on the Stone Riprap Standard. Set the flat surface on a prepared horizontal earth bed, and overlap the underlying course to secure a lapped surface. Place the large stones first, roughly arranged in close contact. Fill the spaces between the large stones with suitably sized stones placed to leave the surface evenly stepped and conforming to the contour required. Place stone to drain water down the face of the slope.

2) Grouting. Construct riprap as shown in Figure 3 on the Stone Riprap Standard. Size, shape, and lay large flat-surfaced stones to produce an even surface with minimal voids. Place stones with the flat surface facing upward parallel to the slope. Place the largest stones near the base of the slope. Fill spaces between the larger stones with stones of suitable size, leaving the surface smooth, tight, and conforming to the contour required. Place the stones to create a plane surface with a variation no more than 6 in. in 10 ft. from true plane. Provide the same degree of accuracy for warped and curved surfaces. Prevent earth, sand, or foreign material from filling the spaces between the stones. Wet the stones thoroughly after they are in place, fill the spaces between them with grout, and pack. Sweep the surface with a stiff broom after grouting.

3) Mortaring. Construct riprap as shown in Figure 2 on the Stone Riprap Standard. Lap courses as described for dry placement. Wet the stones thoroughly before placing mortar. Bed the larger stones in fresh mortar as they are being place and shove adjacent stones into contact with one another.
Spread excess mortar forced out during placement of the stones uniformly over them to fill all voids completely. Point up all joints roughly either with flush joints or shallow, smooth-raked joints as directed.

iii. Common. Construct riprap as shown in Figure 4 on the Stone Riprap Standard. Place stones on a bed excavated for the base course. Bed the base course of stone well into the ground with the edges in contact. Bed and place each succeeding course in even contact with the preceding course. Use spalls and small stones to fill any open joints and voids in the riprap. Ensure the finished surface presents an even, tight surface, true to the line and grades of the typical sections.

Prevent earth, sand, or foreign material from filling the spaces between the stones when the plans require grouting common stone riprap. Wet the stones thoroughly after they are in place; fill the spaces between them with grout; and pack. Sweep the surface with a stiff broom after grouting.

iv. Protection. Construct riprap as shown in Figure 5 on the Stone Riprap Standard. Place riprap stone on the slopes within the limits shown on the plans. Place stone for riprap on the filter fabric to produce a reasonably well-graded mass of riprap with the minimum practicable percentage of voids. Construct the riprap to the lines and grades shown on the plans or staked in the field. A tolerance of +6 in. and −0 in. from the slope line and grades shown on the plans is allowed in the finished surface of the riprap. Place riprap to its full thickness in a single operation. Avoid displacing the filter fabric. Ensure the entire mass of stones in their final position is free from objectionable pockets of small stones and clusters of larger stones. Do not place riprap in layers, and do not place it by dumping it into chutes, dumping it from the top of the slope, pushing it from the top of the slope, or any method likely to cause segregation of the

various sizes. Obtain the desired distribution of the various sizes of stones throughout the mass by selective loading of material at the quarry or other source or by other methods of placement that will produce the specified results. Rearrange individual stones by mechanical equipment or by hand if necessary to obtain a reasonably wellgraded distribution of stone sizes. Use the bedding thickness shown and place stone for riprap on the bedding material to produce a reasonably well-graded mass of riprap with the minimum practicable percentage of voids if required on the plans.

C. Cement-Stabilized Riprap. Follow the requirements of the plans and the provisions for concrete riprap except when reinforcement is not required. The Engineer will approve the design and mixing of the cement-stabilized riprap.

D. Special Riprap. Construct special riprap according to the plans.

PART 4 MEASUREMENT

4.1 MEASUREMENT

This Item will be measured by the cubic yard of material complete in place. Volume will be computed on the basis of the measured area in place and the thickness and toe wall width shown on the plans.

If required on the plans, the pay quantity of the bedding material for stone riprap for protection to be paid for will be measured by the cubic yard as computed from the measured area in place and the bedding thickness shown on the plans.

5.1 PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Riprap” of the type, thickness, and void-filling technique (Dry, Grout, Mortar) specified, as applicable. This price is full compensation for furnishing, hauling, and placing riprap and for filter fabric, expansion joint material, concrete and reinforcing steel, grout and mortar, scales, test weights, equipment, labor, tools, and incidentals.

Payment for excavation of toe wall trenches, for all necessary excavation below natural ground or bottom of excavated channel, and for shaping of slopes for riprap will be included in the unit price bid per cubic yard of riprap.

When bedding is required for protection stone riprap, payment will be made at the unit price for "Bedding Material" of the thickness specified. This price is full compensation for furnishing, hauling, placing, and maintaining the bedding material until placement of the riprap cover is completed and accepted; excavation required for placement of bedding material; and equipment, scales, test weights, labor, tools, and incidentals. No payment will be made for excess thickness of bedding nor for material required to replace embankment material lost by rain wash, wind erosion, or otherwise.

- END OF SECTION 31 37 00-

DIVISION 32

EXTERIOR IMPROVEMENTS

SECTION 32 11 23

AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all tools, qualified labor, materials, equipment, qualified superintendence and all services, transportation, other incidentals, assurances and guarantees, assumptions of risk, and responsibility for the performance of all Aggregate Base Course operations as indicated on the Construction Drawings. Complete work as shown and specified herein.

1.2 SECTION INCLUDES

A. Aggregate base course.

B. Aggregate subbase.

C. Prime coat.

1.3 RELATED SECTIONS

A. Section 31 22 13 – Rough Grading.

B. Section 31 23 23 – Select Fill.

C. Section 32 12 16 – Asphalt Paving.

D. Section 32 13 13 – Concrete Paving.

1.4 REFERENCES

A. American Association of State Highway and Transportation Officials (AASTHO):

1. AASHTO M288 – Standard Specification for Geotextile Specification for Highway Applications.
2. AASHTO T180 – Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.
3. AASHTO T210 – Standard Method of Test for Aggregate Durability Index.

B. American Society of Testing Materials International (ASTM):

1. ASTM D698 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).
2. ASTM D1556 – Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft$_3$).
4. ASTM D2167 – Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 – Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

6. ASTM D2940 – Standard Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.
7. ASTM D3017 – Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
8. ASTM C88 – Test of Soundness of Aggregate Using Sodium Sulfate or Magnesium Sulfate.
9. ASTM C131 – Standard Test Methods for Resistance to Degradation of Small Size Course Aggregate by Abrasion and Impact in the Los Angeles Machine.

1.5 SUBMITTALS

A. Refer to Section 01 33 00 – Submittal Procedures.

B. Product Data:

1. Submit aggregate gradation of materials to be used.
2. Submit prime coat data as specified.
3. Submit herbicide data (if required).

C. Materials Source: Submit name of aggregate materials suppliers.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout the Work.

B. Perform Work in accordance with the County of El Paso's requirements.

PART 2 PRODUCTS

2.1 MATERIALS

A. Flexible base course shall be Crushed Stone Base Course (CSBC) Type A, Grade 3 conforming to the Texas Department of Transportation (TxDOT) Standard Specifications for Construction Maintenance of Highways 2014, Item 247 – Flexible Base.

B. Prime coat shall be a MC-30, AE-P, EAP&T, or PCE conforming to the Texas Department of Transportation (TxDOT) Standard Specifications for Construction and Maintenance of Highways 2014, Item 310 – Prime Coat or Item 314 – Emulsified Asphalt Treatment as well as Item 300 – Asphalts, Oils or Emulsions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted subgrade is dry and ready to support paving and imposed loads.

1. Remove soft subgrade and replace with compacted select fill as specified in *Section 31 23 23 – Select Fill*.

B. Verify subgrade has been inspected, gradients and elevations are correct.

3.2 PREPARATION

A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place select fill on soft, muddy, or frozen surfaces.

3.3 AGGREGATE PLACEMENT

A. Flexible base course shall be placed in lifts with a maximum thickness of 8-inches and compacted to a minimum 100-percent of the maximum dry density at a moisture content range 2-percentage points below and 2 percentage points above the optimum moisture content as determined by ASTM D-1557.

B. Level and contour surfaces to elevations, profiles, and gradients indicated.

C. Add small quantities of fine aggregate to coarse aggregate when required to assist compaction.

D. Maintain optimum moisture content of fill materials to attain specified compaction density.

E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 PRIME COAT PLACEMENT

A. Apply prime coat in accordance with manufacturer's instructions and in accordance with the County of El Paso's requirements.

B. Prime coat application rates are typically between 0.15 to 0.20 gal/sy and are generally dependent upon the absorption rate of the granular base and other environmental conditions at the time of placement.

C. Apply primer to contact surfaces of curbs, gutters, and site structures.

D. Use clean sand to blot excess prime coat.

3.5 TOLERANCES

A. Maximum Variation from Flat Surface: 1/4 inch measured with 10-foot straight edge.

B. Maximum Variation from Thickness: 1/4 inch.

C. Maximum Variation from Elevation: 1/2 inch.

3.6 FIELD QUALITY CONTROL AND TESTING

A. Request inspection prior to placing prime coat over aggregate base course.

B. When testing indicate Work does not meet specified requirements, Contractor shall remove Work, replace and retest.

C. Testing on aggregate base shall be performed to ensure conformance with specified requirements. Testing shall conform with the minimum frequency in accordance to ASTM and as described below:

Table 3.6.1 – Quality Control for Aggregate Base Courses

Test Type	Applicable Standard
At least **one (1)** Laboratory Compaction Characteristics of Soil using Modified Effort (Proctor) for each type of material encountered or import material used.	ASTM D 1557 and/or ASTM D 698
At least **one (1)** Soil Classification (Sieve Analysis and Atterberg Limits Test) for each type of material encountered or import material used. **NOTE:** Additional soil classification shall be requested by the general contractor during the earthwork operations to further evaluate that the fill materials are maintained within the specified requirements for the applicable fill soil material.	ASTM D 6938 And/or ASTM D 4318
A minimum of **one (1)** density tests for every 2500 square feet of each aggregate compacted layer.	ASTM D 1556 and/or ASTM D 6938

- END OF SECTION 32 11 23 -