TROPICAL
TEXAS BEHAVIORAL HEALTH

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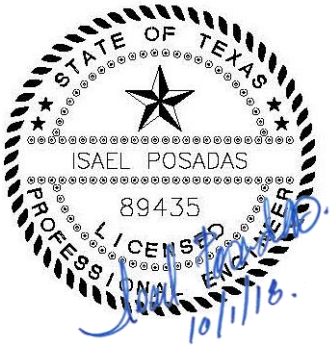
TROPICAL TEXAS BEHAVIORAL HEALTH

REQUEST FOR COMPETITIVE SEALED PROPOSAL FOR COMMERCIAL PARKING LOT IMPROVEMENTS FOR HARLINGEN VILLA LOCATION



Prepared By:

SDI ENGINEERING, LLC

Civil • Transportation • Planning • Stormwater

TROPICAL TEXAS BEHAVIORAL HEALTH

REQUEST FOR COMPETITIVE SEALED PROPOSALS FOR COMMERCIAL PARKING LOT IMPROVEMENTS FOR HARLINGEN VILLA LOCATION

TROPICAL TEXAS BEHAVIORAL HEALTH

QUALIFICATION SPECIFICATIONS

REQUEST FOR COMPETITIVE SEALED PROPOSALS FOR COMMERCIAL PARKING LOT IMPROVEMENTS FOR HARLINGEN VILLA LOCATION

I. INTRODUCTION

Tropical Texas Behavioral Health (TTBH) is a community center providing services to the Department of State Health Services designated Mental Health Authority established to plan, coordinate, develop policy, develop and allocate resources, supervise, and ensure the provision of community based mental health and Intellectual and Developmental Disabilities services for residents of Cameron, Hidalgo and Willacy Counties, Texas. TTBH was established under Article 534, Texas Health and Safety Code, V.T.C.A., and is operated through a nine-person Board of Trustees. TTBH does not pay Texas sales and/or use taxes and such taxes may not be passed on as a cost to TTBH.

Notice is hereby given that TTBH will receive competitive seal bids from all interested contractors for the Commercial Parking Lot Improvements needed for the Harlingen Villa location at 105 N. Loop 499, Harlingen, Texas 78550/Villa Community Center Revised Block 1 Lot 1, Acres 1.928, Cameron, County, Texas. Sealed bids in duplicate, subject to the terms and conditions of this invitation for bids and the accompanying specifications, such other contract provisions, drawings or other data as are attached or incorporated by reference in the specifications, will be received at the office of the Chief Financial Officer, Beatriz Trejo of TTBH until 4:00pm central time, Wednesday, October 24, 2018, and at that time publicly opened, for furnishing the supplies or services described in the accompanying specifications. All sealed proposals must be marked as "BID No. 2018-03 Commercial Parking Lot Improvements for Harlingen Villa."

Each proposal should specifically address each of the requirements described in the proposal requirements. Clarifying information is required on all proposed exceptions or alternatives should be provided in the proposal. The language in the requirements should not be construed so as to preclude a proposer from presenting alternative features (in detail) to the ones stated, whether in terms of providing improved service to TTBH, or more acceptable conditions to the contracting firm. All listed and described alternatives will be evaluated by TTBH.

The award of the contract for services will be made to the responsive proposal that is determined to be the highest qualified proposal. If TTBH is unable to reach an agreement with the highest qualified proposer, negotiations will cease. New negotiations will begin with the next most highly qualified proposal. This process will be repeated until an agreement is reached. A complete pre-contract audit will be required before execution of the contract.

II. CALENDAR OF EVENTS

Target Date	Description
October 07, 2018 October 14, 2018	Advertisement for Competitive Sealed Proposal for Commercial Parking Improvements for Harlingen Villa Location
October 23, 2018	Pre-Bid Conference at 10:00p.m. at 105 N. Loop 499, Harlingen, Texas (Not Mandatory)

November 01, 2018	Bid Submittal Deadline 4:00p.m. CST by Chief Financial Officer/Opening of Proposals
November 2018	Board of Trustees presentation for the award of the contract

III. PLANS AND SPECIFICATIONS

TTBH has prepared a request for competitive sealed proposals that includes project documents, selection criteria, project scope, schedule, form of construction contract, form of general conditions, and other information that interested parties will be required to respond to in their sealed proposals. This information may be obtained at:

TTBH Website: http://www.ttbh.org/en/about-tropical-texas-behavioral-health/public-notice-legals

or

May be picked up at with Belford Melvin, Safety Officer:
TTBH – Edinburg Location
1901 South 24th Avenue
Edinburg, Texas 78539
(956) 227-4183

IV. SCOPE OF PROJECT

For any questions concerning the project specifications you may contact the SDI Engineering representative, Isael Posadas, P.E. at iposadas@sdi-engineering.com. The scope of the project will include, the construction of a parking lot including all pertinent subsidiary items as shown on the Bid Proposal Form, Plans and Specifications.

Note: Each item should be listed separately with the cost per linear foot/square foot or other measurement of quantities specified as listed on the Invitation for Bid and Award form. Proof of liability insurance will be required prior to start of work.

1. Evaluate the suitability of property at site locations.

2. The contract for the actual construction of the paving improvements on the commercial parking lot in the 104 N Loop 499, Harlingen, Texas location will be awarded by TTBH's Board of Trustees.

3. Implementation of requirements of the American with Disabilities Act and other federal, state and city requirements.

V. CRITERIA FOR EVALUATION

The award of the contract for services will be made to the responsive proposal that is determined to be the highest qualified proposal. If TTBH is unable to reach an agreement with the highest qualified proposer, negotiations will cease. New negotiations will begin with the next most highly qualified proposal. This process will be repeated until an agreement is reached. A complete pre-contract audit will be required before execution of the contract. The proposals will be evaluated on the following areas:

Ranking Criteria:

CONSTRUCTION EXPERIENCES: (0 to 4 points each item)

1. Please list the health care/office building renovation projects constructed of similar size, type, and complexity to this project. Please provide in chronological sequence beginning with the recent. The list should include the name and location, owner project cost, a description of services the contractor provided for the project description, and project manager.
2. Has your firm had direct experience with Tropical Texas Behavioral Health (-2 to 2 points)
3. Has your firm had direct experience with the architect on this project? (-2 to 2 points)
4. How long has your firm been in the construction business? Is your firm incorporated? Please list all of the assumed names the firm has operated under. (-2 to 2 points)

PAST PERFORMANCES: (0 to 4 points each item)

5. Provide three (3) letters of reference from OWNERS listed on item 1, which specifically address the following points. Ensure letters specifically address ALL points listed and are dated within three years. The letters will not count if not dated. (More than three letters may be provided less than three will result in one-point deduction for each letter missing – no positive points awarded for this item).
6. The quality of the work provided by proposer.
7. The proposer's history of providing warranty documents.
8. The proposer's history of timeliness in completing warranty work.
9. The proposer's history of staying on schedule.
10. The proposer's cooperative attitude when working with the owner and its architect in resolving construction issues.
11. The proposer's history of providing detailed documentation and a fair assessment of change (order pricing).
12. Provide six (6) letters of reference from three (3) major suppliers and three (3) subcontractors which specifically address the following point. Ensure letters are dated within (3) three years. The letters will not count if not dated (More than three letters may be provided, less than six will result in one-point deduction for each letter missing – no positive points will be awarded for this item)
13. The proposer's history of paying sub-contractors and material providers on time.
14. Please provide a recent example of an executed change order.

CHANGE ORDER PROCEDURES: (0 to 4 points each item)

15. Please provide a letter of reference from an Architectural firm addressing the following points. Ensure letter specifically address ALL points listed and are dated within three years. If not dated the letter will not be awarded any points.
16. The proposer's history of providing detailed documentation and a fair assessment of change order pricing.

PERSONNEL: (0 to 4 points each item)

17. Please provide the names and complete resume of key supervisory personnel to be assigned to the project. Key personnel should have demonstrated experience on projects of similar size and complexity.

REPUTATION: (0 to 4 points each item)

Please provide relevant information addressing the following:

18. Has the proposer demonstrated a presence in the South Texas market?
19. Have past clients expressed a willingness to work with proposer again?
20. Has the proposer maintained a positive and professional reputation with past clients and architects?

FINANCIAL STRENGTH: (0 to 4 points each item)

Please provide the documents addressing each of the following:

21. Provide a copy of the most recent audited financial statements.
22. Provide a bank letter of reference with regard to the company's financial strength.
23. Please provide information from your performance and Payment Bonding Company with regards to your bonding capacity.
24. Provide a statement attesting if the company and/or company's principal(s) have ever filed for bankruptcy.

TIME FRAME: (0 to 5 points)

25. Number of days needed to complete project.

PRICE: (50 points)

26. Based on proposals submitted.

VI. PROPOSAL REQUIREMENTS

Qualifications proposals are required to address the following:

1. A brief profile of the firm's principal and staff to be assigned to the project.
2. A list of business references including the name, address, and the contact name and telephone number. A minimum of three (3) references are required.
3. Provide a sample of how services will be performed.
4. Outline a timeframe for completing construction and setting the appropriate deadlines.
5. Furnish TTBH with any additional information considered essential to the proposal.
6. Explain your plan for inspection of the work and assurance of quality workmanship by the construction contractor.
7. Complete the attached Conflict of Interest Questionnaire (CIQ) Form, Disclosure of Kinship and Notice of Felony of Conviction.

VII. BID FORM

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ _____ as Principal, and _____ _____ as Surety, are hereby held and firmly bound unto _____ as Owner in the penal sum of _____ _____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this _____day of _____, 20____.

The Condition of the above obligation is such that whereas the Principal has submitted to _____ _____ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the _____ _____. _____.

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____
Principal

_____
Surety

BY: _____

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

TROPICAL TEXAS BEHAVIORAL HEALTH
INVITATION FOR BID AND AWARD
HOP VILLA PARKING LOT IMPROVEMENTS
HARLINGEN, TEXAS

MS. BEATRIZ TREJO
CHIEF FINANCIAL OFFICER
TROPICAL TEXAS BEHAVIORAL HEALTH
1901 S. 24TH AVE.
EDINBURG, TEXAS 78539

The undersigned, as bidder(s), declares that the only person or parties interested in this proposal as principals are those named herein, that this proposal is made without collusion with any other person, firm or corporation; that he has carefully examined the Form of Contract, Notice to Bidders, General Conditions, Special Provisions, Measurement and Basis of Payment, specifications and the plans thereon referred to, and has carefully examined the locations, and conditions and classes of materials of the proposed work; and agrees that he will provide all the necessary labor, machinery, tools, and apparatus, and other items incidental to construction, and will do all the work and furnish all the materials called for in the contract and specifications in the manner prescribed therein and according to the requirements of the Engineer/Architect as therein set forth.

It is understood that the following quantities of work to be done at unit prices are approximate only and are intended principally to serve as a guide in evaluating bids.

It is further agreed that the quantities of work to be done at unit price and materials to be furnished, may be increased or diminished as may be considered necessary, in the opinion of the Engineer, to complete the work fully as planned and contemplated, and that all quantities of the work, whether increased or decreased, are to be performed at the unit prices set forth below except as provided for in the specifications.

It is further agreed that lump sum prices may be increased to cover additional work ordered by the Engineer, but not shown on the plans or required by the specifications, in accordance with the provisions of the General Conditions. Similarly, they may be decreased to cover deletion of work so ordered.

The 5% bid security accompanying this proposal shall be returned to the bidder, unless in case of the acceptance of the proposal the bidder shall fail to execute a contract and file a performance bond and payment bond within the ten (15) days after its acceptance, in which case the bid security shall become the property of the OWNER, and shall be considered as payment for damages due to delay and other inconveniences suffered by the Owner on account of such failure of the bidder. It is understood that the Owner reserves the right to reject any or all bids.

ORIGINAL BID PROPOSAL FORM MUST BE SUBMITTED ALONG WITH THE BID AND CONTRACT DOCUMENTS BOOKLET

BIDDERS BOND in the amount of $_____,(5%) of the greatest amount bid in compliance with the INSTRUCTION TO BIDDERS.

The above Cashiers Check or Bidder's Bond is to become the property of the OWNER, in the event the construction contract (when offered by the Owner) and bonds are not executed within the time set forth.

IMPORTANT NOTE:
For information regarding the method UNIT ITEMS are to be MEASURED AND PAID, please refer to the "MEASUREMENT AND BASIS OF PAYMENT" Section attached and made part of this Proposal.

A. PAVING IMPROVEMENTS

Item No.	Estimated Quantity	Unit	Item Description	Unit Price	Total
1.	1	LS	**Preparation of Project Limits/Demolition Plan**, Clearing, Demolition, grubbing, tree and shrub removal, structure removal including all appurtenances, fence removal and fine grading, including compaction, all necessary additional fills and cuts, hauling and spreading of select material to the limits indicated in the plans all complete in place per lump sum (LS) for	$_____	$_____
2.	3,600	SY	**6" Compacted Lime Treated Subgrade**, with lime (4% lime by weight), compacted as per plans and specifications, conforming to TX-DOT 2004 Standard Specification Item 260, complete and in place per square yard (SY) for	$_____	$_____
3.	3,600	SY	**8 " Compacted Flexible Base**, Type "E" Grade 4, compacted as per plans and specifications, conforming to TX-DOT 2004 Standard Specification Item 247, complete and in place per square yard (SY) for	$_____	$_____
4.	3,200	SY	**2" Compacted Hot-Mix Asphaltic Concrete**, Type "D" surface course conforming to TX-DOT 2004 Standard Specification Item 340, including MC-30 Prime Coat, and Tack Coat, all complete in place per square yard (SY) for	$_____	$_____
5.	1,010	LF	**18" Concrete Curb and Gutter,** as per plans and specifications, all complete and in place per linear foot (LF) for	$_____	$_____
6.	780	SF	**Reinforced Concrete 5' Sidewalks,** 4" thick, including handicap ramps, concrete curb at handicap ramps, joints and joint sealer, 2" sand base, grading, truncated domes according to ADA requirements, all as per the plans and specifications for the width shown, all complete in place per square foot (SF) for	$_____	$_____

7.	250	SF	**Reinforced Concrete 9' Sidewalks,** 4" thick, including handicap ramps, concrete curb at handicap ramps, joints and joint sealer, 2" sand base, grading, truncated domes according to ADA requirements, all as per the plans and specifications for the width shown, all complete in place per square foot (SF) for	$_____	$_____
8.	1	LS	**Thermoplastic Pavement Striping / Markings and Signage,** including directional arrows parking lot striping, new concrete wheel stops as indicated in the plans and specifications, all complete and in place per lump sum (LS)for	$_____	$_____
9.	1	LS	**Stormwater Pollution Prevention Plan (SWPPP) and Stormwater Permit (ALL AREAS)** as per City, State and Federal requirements, including required inspections, all complete for the term of the project for a lump sum (LS) for	$_____	$_____
10.	1	LS	**Erosion Control Devices,** as per the Plans and specifications for the entire Project, all complete in place including maintenance and removal after the Project for a lump sum (LS) for	$_____	$_____
11.	1	LS	**Traffic Control**, for entire project including roadway crossings, signage, detours, temporary drive installation, permits, Traffic Control Plan prepared by a Registered Professional Engineer, all in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD, latest edition), all complete in place per lump sum (LS) for	$_____	$_____

TOTAL PAVING IMPROVEMENTS: (Items 1-11)**$** _____

B. DRAINAGE IMPROVEMENTS

Item No.	Estimated Quantity	Unit	Item Description	Unit Price	Total
12.	1	EA	**48" Concrete Drainage Manhole**, grade rings, manhole ring, & cover. Per plans and specifications, all complete and in place per each (EA) for	$_____	$_____
13.	150	LF	**15" RCP, Class III,** all depths, "Rubber Gasket" joints, backfill, compaction, all connections, installed as per plans and specifications, all complete and in place per linear foot (LF) for	$_____	$_____
14.	2	EA	**Precast 4'x4' Grate Reinforced Inlet Type "C",** installed as per the plans and specifications, complete in place per each (EA) for	$_____	$_____

15.	150	LF	**Trench Safety System,** for Storm Sewer Lines/Excavations ad required, complete in place per linear foot (LF) for	$_____	$_____

TOTAL DRAINAGE IMPROVEMENTS: (Item 12-15) **$** _____

C. LIGHTING

Item No.	Estimated Quantity	Unit	Item Description	Unit Price	Total
16.	2	EA	**Lights,** including installation, electrical conduit and wiring, hardware, pole and foundation, light extension fees, service fees, transformers (if required), as per MEP plans and specifications, (color to be determined by owner from submittals) all complete and in place per each (EA)	$_____	$_____

TOTAL LIGHTING IMPROVEMENTS: (Item 16) **$** _____

TOTAL PARKING IMPROVEMENTS: (Items 1-16) **$**_____

The undersigned agrees, unless hereinafter stated otherwise to furnish all materials as shown and specified in the Plans and Specifications.

Bidder hereby agrees to commence work under this contract within 10 days after "NOTICE TO PROCEED" is issued, and to complete all the work in the Contract within **75 Calendar Days.**

The undersigned bidder acknowledges the receipt of the following addenda:

ADDENDUM NO.	DATE	BY
ADDENDUM No. 1		
ADDENDUM No. 2		
ADDENDUM No. 3		
ADDENDUM No. 4		

DATE: _____

BY: _____
(Signature)

_____
(Type or Print Name)

_____
(Title)

_____
(Company)

_____
(Address)

_____

(City, State, Zip)

_____

(Phone Number)

_____

(Fax Number)

(Seal – If Bidder is a Corporation)

MEASUREMENT AND BASIS OF PAYMENT

1.00 GENERAL

IT IS THE INTENT OF THIS CONTRACT TO COVER ALL THE WORK TO BE PERFORMED SUBSIDIARY TO ALL THE ITEMS INCLUDED IN THE BID AND SUCH PRICES SHALL BE BALANCED INDIVIDUALLY AND SHALL INCLUDE FURNISHING ALL MATERIALS, SUPERINTENDENCY, SUPERVISION, CONSTRUCTION SURVEYING AND LAYOUT, LABOR, INSURANCE, BONDS, BENEFITS, MACHINERY, FUEL, VEHICLES, SAFETY EQUIPMENT, ADMINISTRATIVE COSTS, QUALITY CONTROL, GUARANTEES AND WARRANTIES, OVERHEAD, AND ALL INCIDENTALS FOR COMPLETING THE ASSIGNED WORK IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS COMPLETE IN PLACE. ***IN CASE THE FOLLOWING MEASUREMENT AND BASIS OF PAYMENT DESCRIPTIONS CONFLICT WITH THE CORRESPONDING DESCRIPTIONS CONTAINED WITHIN THE TECHNICAL SPECIFICATIONS FOR THIS PROJECT, THE FOLLOWING DESCRIPTIONS SHALL GOVERN.***

THE FOLLOWING APPLICABLE ITEMS SHALL BE CONSIDERED AS PAY ITEMS. ALL OTHER WORK NOT SPECIFICALLY LISTED OR INDICATED BELOW SHALL BE SUBSIDIARY TO THE OVERALL COST OF THE PROJECT. ALL EXCAVATION IS UNCLASSIFIED. COST FOR DEWATERING AND TRENCH STABILIZATION, IF REQUIRED FOR INSTALLATION OF DRAINAGE/STORM SEWER LINES, SHALL BE SUBSIDIARY TO THE VARIOUS ITEMS OF THIS SECTION.

A. PAVING IMPROVEMENTS

1. **SITE PREPARATION/DEMOLITION PLAN:** When called for in the proposal, shall be measured and paid for within THE PROJECT LIMITS per LUMP SUM (L.S.) and shall include all clearing and grubbing, demolition, removal of fence, conduit, and any other appurtenances, removal and disposal of unsuitable material such as asphalt, organic materials, and shall include stripping of underlying soil, excavation, and fine grading, filling and compaction, cutting down to subgrade depth, disposal of debris and other material deemed not suitable for filling, hauling in fill material as required, all complete in place. Any material deemed salvageable by the Owner or Engineer shall be carefully removed and hauled to a designated location as directed by the Owner or Engineer, with such cost being subsidiary to this item.

2. **LIME OR PORTLAND CEMENT STABILIZED SUBGRADE:** When called for in the proposal, shall be measured and paid from BACK OF CURB TO BACK OF CURB per SQUARE YARD (S.Y.) for the **constructed length and width laid in accordance with Typical Details** for the TYPE AND COMPACTED THICKNESS SPECIFIED and shall include all necessary excavation, compaction as shown, working of lime or Portland cement material to the strength specified (Calculated from unit weight of subgrade material), clearing and grubbing, demolition, removal and disposal of unsuitable material such organic materials, removal of material deemed unsuitable for filling, hauling in fill material as required, all complete in place in accordance with plans and specifications.

3. **COMPACTED FLEXIBLE BASE:** When called for in the proposal, shall be measured and paid from BACK OF CURB TO BACK OF CURB per SQUARE YARD (S.Y.) for the **constructed length and width laid in accordance with Typical Details** for the TYPE AND COMPACTED THICKNESS SPECIFIED and shall include furnishing all new material, working of Lime (if required), spreading, watering, fine grading and compacting as shown in the plans and specifications, all complete in place in accordance with

plans and specifications. Proof Rolling may be required in certain locations as determined by the Owner's Representative, and the cost for such work shall be considered subsidiary to the Paving Improvement Items of the Proposal.

4. **COMPACTED HOT-MIX ASPHALTIC CONCRETE:** When called for in the proposal, shall be measured and paid from LIP OF CURB (OR EDGE OF PAVEMENT) TO LIP OF CURB (OR EDGE OF PAVEMENT), per SQUARE YARD (S.Y.) for the **constructed length and width laid in accordance with Typical Details**, for the TYPE AND COMPACTED THICKNESS SPECIFIED, and shall include PRIME COAT as shown in the plans and specifications, all complete in place. Tamping and Proof Rolling may be required in certain locations of the roadway as determined by the Owner's Representative, and the cost for such work shall be considered subsidiary to the Paving Improvement Items of the Proposal.

5. **HOT-MIX ASPHALTIC CONCRETE OVERLAY:** When called for in the proposal, shall be measured and paid from LIP OF CURB (OR EDGE OF PAVEMENT) TO LIP OF CURB (OR EDGE OF PAVEMENT), per SQUARE YARD (S.Y.) for the **constructed length and width laid in accordance with Typical Details,** for the TYPE AND COMPACTED THICKNESS SPECIFIED, and shall include all cleaning, sweeping, removal and disposal of unsuitable material such organic materials, tack coat application, hauling, placement, and compacting new HMAC material as required, all complete in place in accordance with plans and specifications. Tamping and Proof Rolling may be required in certain locations of the roadway as determined by the Owner's Representative, and the cost for such work shall be considered subsidiary to the Paving Improvement Items of the Proposal. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ADDITIONAL REPAIRS RESULTING FROM UNEVEN EDGES CAUSED BY CONTRACTOR, REQUIRING SQUARED EDGES.

6. **CONCRETE CURB AND GUTTER/LAY DOWN CURB**: When called for in the proposal, shall be measured and paid along the gutter line for catch, laydown or spills section, per LINEAL FOOT (L.F.), for the **constructed length in accordance with Typical Details**, for all Types indicated in the plans and specifications, and shall include all necessary labor, excavation, membrane curing compound, joints, backfilling, reinforcement, concrete of thickness and strength specified, as shown in the plans and specifications, all complete in place. ***(Concrete Curb and Gutter shall be laid over prepared base and subgrade as indicated in the typical sections. The prepared base and subgrade shall be considered subsidiary to this item).***

7. **REINFORCED CONCRETE SIDEWALKS/CONCRETE WALKWAY:** When called for in the proposal, shall be measured and paid per SQUARE FOOT (S.F.) for the **constructed length and width laid in accordance with Typical Details**, for the TYPE AND THICKNESS SPECIFIED, and shall include handicap ramps, and all necessary labor, excavation, backfilling, reinforcement, concrete of the strength specified, Compacted Subgrade as shown, Sand Cushion, seal-tight jointing material, concrete finish specified, as shown in the plans and specifications, including pre-fabricated truncated domes, ADA required color, all complete in place. ***(Wings and connections to sidewalk ramps must comply with Texas Accessibility Standards (TAS) Requirements)***.

8. **PAVEMENT STRIPING/MARKINGS (THERMOPLASTIC) AND SIGNAGE:** When called for in the proposal, shall be paid for LUMP SUM (L.S.) for the length, width and color specified in the plans and shall include all necessary materials, labor, equipment, paint as specified, pre-fabricated pavement markers, handicap markings, **installation**

of new concrete wheel stops, including raised pavement markers of type and class specified, truncated domes, regulatory signs, in accordance with plans and specifications, all complete in place.

9. **ASPHALT & DRIVEWAY:** When called for in the proposal, shall be measured and paid from LIP OF CURB (OR EDGE OF PAVEMENT) TO LIP OF CURB (OR EDGE OF PAVEMENT), per SQUARE YARD (S.Y.) for the **constructed length and width laid in accordance with Typical Details**, measured with a surveyor's flat steel chain, for the TYPE AND COMPACTED THICKNESS SPECIFIED, and shall include sawcut, removal of existing asphalt section, compaction of existing flexible base material if deemed suitable by the Engineer, hauling and replacement of flexible base material as necessary, prime coat, compacting new HMAC material as required including curb and gutter (if required) as shown on plans, all complete in place in accordance with plans and specifications. ***Tamping and Proof Rolling may be required in certain locations as determined by the Engineer, and the cost for such work shall be considered subsidiary to this item***. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ADDITIONAL REPAIRS RESULTING FROM UNEVEN EDGES CAUSED BY CONTRACTOR, REQUIRING SQUARED EDGES.

10. **TRAFFIC CONTROL:** When called for in the proposal, shall be measured and paid per LUMP SUM (L.S.), and shall include all necessary materials, labor, barricades, flagmen and construction signs as required in the Traffic Control Plan including all necessary regular inspection and maintenance of barricades and signage all in accordance with the plans and in conformance with Permit Instructions as applicable, and TRAFFIC CONTROL PLAN (as prepared by a Registered Professional Engineer and approved by the Project Engineer, which cost is subsidiary to this Item), including all necessary traffic control for temporary road closures, detours, as approved by the Project Engineer, all in accordance with the TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD, latest edition).

B. DRAINAGE IMPROVEMENTS

11. **CONCRETE STORM DRAINAGE MANHOLES:** When called for in the proposal, shall be measured and paid per EACH (EA.) for the diameter and Type specified, **all depths**, trench safety, and shall include all reinforced concrete pre-cast sections, cast iron ring and cover, connections, all to the finish grade specified and complete in place.

12. **REINFORCED CONCRETE PIPE (RCP):** When called for in the proposal, shall be measured and paid per LINEAL FOOT (L.F.) **for the constructed length**, FOR THE DIAMETER AND CLASS SPECIFIED and as shown on the plans, **all depths**, and shall include all necessary labor, excavation, backfilling, reinforced concrete pipe of the class specified, RUBBER GASKET JOINTS, connections, all complete in place.

13. **REINFORCED CONCRETE STORM SEWER INLETS:** When called for in the proposal, shall be measured and paid per EACH (EA.) for the size and type specified, **all depths**, and shall include all necessary connections, grouting, concrete aprons (when called for in the Plans), excavation, backfilling, all complete in place.

14. **TRENCH SAFETY SYSTEM FOR STORM SEWER LINES**: When called for in the proposal shall be measured and paid for per LINEAL FOOT (L.F.), measured with a flat surveyors chain along the centerline of the pipe laid with laying depths over 5 feet and shall

include all shoring, bracing, materials, equipment, daily maintenance and inspection of equipment, safety instructions to installers and laborers, slope backs, safety equipment, ladders, barricades, etc., and the requirements in the Trench Safety System Specifications, all to accomplish a safe and secure trench opening during installation, all complete in place.

15. **EROSION CONTROL DEVICES:** When called for in the proposal, shall be measured and paid per LUMP SUM (L.S.), and shall include all necessary installation of devices such as construction Entrances/Exits, silt fences, inlet sediment control screens as required and in accordance with requirements under the Stormwater Pollution Prevention Plan (SWPPP), all complete in place.

16. **STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND STORMWATER PERMIT:** When called for in the proposal, shall be measured and paid per LUMP SUM (L.S.), and shall include all necessary plan preparation as required by the City, County, State and Federal guidelines. Plan shall include, but not be limited to, Site Evaluation, Assessment, Planning, Erosion and Sediment Control Best Management Practices (BMPs), Post Construction BMPs, Inspections, Recordkeeping and Training and Final Stabilization. Plan must be submitted and approved by appropriate regulatory agency and shall include preparation and filings of Notice of Intent (NOI), Notice of Change (NOC) and Notice of Termination (NOT), all complete in place.

C. LIGHTING

17. **LIGHTING INSTALLATION:** When called for in the proposal, shall be paid for EACH (EA.) for the height, brand and type specified in the plans and shall include all necessary materials, labor, equipment for installation, including foundation installation, conduit installation including trenching and pavement repair, wiring, light fixtures, connection to existing lighting control panel, service meter, panel board, verification and coordination with existing infrastructure and power company, equipment, transformer and associated fees, relocation and reinstallation of existing equipment, in accordance with plans and specifications, all complete in place.

VI. GENERAL CONDITIONS

The following conditions and information applies to all proposals:

a. Bidders shall thoroughly examine the drawings, specifications, schedules, instruction and all other contract documents.

b. Bidders shall make all investigations necessary to thoroughly inform themselves regarding the facilities for delivery of materials and equipment as required by the bid conditions. No plea of ignorance by the bidder of conditions that exist or that may hereafter exist as a result of failure or omission on the part of the bidder to make the necessary examinations and investigations, or f failure to fulfill in every detail the requirements of the contract documents, will be accepted as a basis for varying the requirements of Tropical Texas Behavioral Health or the compensation to the vendor.

c. Bidders are advised that all Tropical Texas Behavioral Health contracts are subject to all legal requirements provided by state and federal statutes, rules and regulations.

1. Preparation of Bids. Bids will be prepared in accordance with the following:
   a. All information required by the bid form shall be furnished. The bidder shall print or type his/her name and manually sign the specifications and each continuation sheet on which an entry is made.
   b. Unit prices shall be shown, and where there is an error in extension of price, the unit price shall govern.
   c. Alternate bids will not be considered unless authorized by the invitation for bids.
   d. Propose delivery tie must be shown and shall include Sundays and Holidays.
   e. Tropical Texas Behavioral Health is exempt from payment of federal taxes; State of Texas limited sales excise and use taxes. Bidders will not include such taxes in bid prices. An exemption certificate will be signed where applicable upon request.

2. Description of Supplies. Any catalog or manufacturer's reference used in describing an item is merely descriptive and not restrictive, unless otherwise noted, and is used only to indicate type and quality of material. Bidders ae required to state exactly what they intend to furnish, otherwise they shall be required to furnish the items specified.

3. Submission of Bids.
   a. Bids and changes thereto shall be enclosed in sealed envelopes addressed to the Chief Financial Officer, 1901 South 24th Avenue, Edinburg, TX. The name and address of bidder, the date and hour of the bid opening and the material or services bid on shall be placed on the outside of the envelope. Tropical Texas Behavioral Health is not responsible for the lateness of mail, courier, etc.
   b. Bids must be submitted on the forms furnished.
   c. Samples, when required, must be submitted within the time specified, at no expense to Tropical Texas Behavioral Health. If not destroyed or completely used during testing, samples will be returned upon request at the bidder's expense.

4. Right to Accept or Reject Any/Or All Proposals. TTBH reserves the right to accept or reject any or all proposals submitted and to waive any informality in proposals received. TTBH also reserves the right to request additional information from proposers. TTBH may reject if the bidder misstates or conceals any material fact in the bid or the Bid does not strictly conform to the law or requirements of the bid. No bid submitted herein shall be considered unless the bidder warrants that upon execution of a contract with TTBH, he will not engage in employment practices which have the effect of discrimination against employees or prospective employees because of race, color sex, creed, or national origin and will submit such reports as TTBH may thereafter require to assure compliance. TTBH may also waive any minor informalities or irregularities in any bid. The award will be made to the firm which, in the opinion of TTBH, is the best qualified and is in the best interest of TTBH.

5. Withdrawal of Bids. Bids may not be withdrawn after time set for the bid opening, unless approved by the Board of Trustees.

6. Late Proposals. Proposals received after the submission deadline shall be unopened and will be considered VOID AND UNACCEPTABLE. TTBH is not responsible for the lateness of mail, courier, etc.

7. Altering Proposal. Proposals *cannot be altered* after the submission deadline. Any interlineations, alteration, or erasure made before the opening must be initialed by the signer of the proposal.

8. Clarification or Objection to Bid Specifications. If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of the specifications or other bid documents, or any part thereof, he may submit to the Chief Financial Officer on or before five (5) days prior to scheduled opening a request for clarification. All such requests for information shall be made in writing and the person submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed bid, if made, will be made only by Addendum duly issued. A copy of such Addendum will be mailed or delivered to each person receiving a set of bids. TTBH will not be responsible for any other explanation or interpretation of the proposed bid made or given prior to the award of the contract. Any objections to the specifications and requirements as set forth in this bid must be filed in writing with the Chief Financial Officer on or before five (5) days prior to scheduled opening.

9. Discounts. Prompt payment discounts will be considered in making the award provided the period of the discount offered is sufficient to permit payment within such period in the regular course of business. In connection with any discount offered, time will be computed form the date of receipt or supplies or services or from the date a correct invoice is received, whichever is the later date. Payment is deemed to be made on the date of mailing of the check.

10. Addenda. Any interpretations, corrections, or changes to this competitive sealed proposal will be made by addenda. Sole issuing authority of addenda will be vested in TTBH. Addenda will be mailed, faxed, or emailed to all parties that are known to have received a copy of the competitive sealed proposal.

11. Oral Interviews. Oral interviews may be required.

12. Proposals Retained. All proposals submitted become the exclusive property of TTBH.

13. Changes. No oral statement of any person shall modify or otherwise change or affect the terms, conditions, plans and/or specifications stated in the various proposal packages and/or proposal instructions/requirements.

14. Ethics. The proposer shall not accept or offer gifts or anything of value, nor enter into any business arrangement with any employee, official or agent of TTBH.

15. Minimum Standards for Responsible Proposer. A prospective proposer must affirmatively demonstrate proposer's responsibility. A prospective proposer must meet the following requirements:
    A. Have adequate financial resources, or the ability to obtain such resources as required;
    B. Be able to comply with the required or proposed delivery schedule;
    C. Have a satisfactory record of performance; and
    D. Be otherwise qualified and eligible to receive an award.

16. Rights to Request Additional Information. TTBH may request representation and other information sufficient to determine proposer's ability to meet these minimum standards listed above.

17. References. TTBH requires proposer to furnish, with this proposal, a list of at least three (3) references where like services have been supplied by the firm. Include the name of the business, address, and contact name and telephone number.

18. Documentation. Proposer shall provide, with this proposal response, all documentation required by this proposal. Failure to provide this information may result in rejection of the proposal.

19. Silence of Specifications. The apparent silence of these specifications as to any detail or to the apparent omission from it of a detailed description concerning any point shall be regarded as meaning that only the best practices are to prevail. All interpretations of these specifications shall be made on the basis of this statement.

20. Legibility. Proposals ***must be*** legible and of a quality that can be reproduced.

21. Vendor Proposal and Demonstration Costs. All costs incurred by the vendor associated with preparing proposal responses and demonstrating products or services shall not be charged to TTBH.

22. Sales Tax. TTBH is, by statute, exempt from State sales tax and Federal tax.

23. Time of Award. Award may be made during the November 2018 Board of Trustees meeting. TTBH reserves the right to schedule a Special Called Meeting on another date for the purpose of making the award.

24. Contract Award. Awarding of the contract will be made by TTBH's Board of Trustees. The term of this agreement will begin upon final execution of the contract by both parties and will extend until final acceptance of the completed project by TTBH.

The following provisions may apply to the contract with the contracting firm:

a. Contract. TTBH reserves the right to negotiate a contract with the selected proposer. This proposal, when properly accepted by TTBH, shall constitute a contract equally binding between the successful proposer and TTBH. No different or additional terms will become part of this contract.

b. Payment Method. Payment will be a lump sum fee agreement with payments distributed throughout the life of the project based upon percentages or work completed. Any additional services contracted for will likewise be lump sum.

c. Indemnification. The proposer will indemnify TTBH against any claims, demands, and judgments of sums of money to any party accruing against TTBH for the loss of life or injury or damage to persons or property growing out of or resulting from this agreement.

d. Termination for Default. TTBH reserves the right to enforce the performance of this contract in any manner prescribed by law or deemed to be in the best interest of TTBH in the event of breach of default of this contract. Non-performance of the proposer in terms of specifications shall be a basis for the termination of the contract by TTBH. TTBH shall not pay for services which are unsatisfactory. Vendors will be given a reasonable opportunity before termination to correct the deficiencies. This, however, shall in no way be construed as negating the basis for termination for non-performance.

e. Independent Contractor. The Contractor will be considered an independent contractor and not an employee of TTBH for any purpose. TTBH will not withhold or pay on behalf of Contractor any sums for income tax, unemployment insurance, social security, or any other withholding, or make available to bidder any of the benefits, including workers' compensation insurance coverage, afforded to employees of TTBH. All such benefits, if any, are the sole responsibility of the bidder.

f. Insurance. Contractor agrees to maintain at its sole cost and expense policies of general and liability insurance coverage in order to insure bidder and TTBH against any claim for damages arising in connection with bidder's responsibilities under the contract. The Contractor shall furnish copies of the general and liability insurance policies and a certificate of insurance to TTBH prior to execution of the contract.

g. Payment and Performance Bonds. The successful bidder(s), if the contract exceeds $25,000, will be required to furnish a Payment Bond in the amount of One Hundred Percent (100%) of the contract price. A Performance bond in the amount of the one hundred percent (100%) of the contract price will be required if the contract amount exceeds $100,000. In either case, the bond(s) must be issued by one or more corporate sureties qualified to do business in Texas and acceptable to TTBH.

h. Certification of Child Support Payment Obligor. Under Section 231.006 (Texas Family Code related to child support), a Contractor is considered ineligible to receive payments from TTBH in the event the Contractor is past due on child support payments.

i. Confidentiality of Information and Prohibition Against Disclosure. In accordance with Texas Health and Safety Code, Chapter 611, and the Texas Administrative Code, Chapter 414, Subchapter A, *"Protected Health Information",* the bidder may not disclose confidential communications or records except as provided by Section 611.004 or 611.0045.

j. Contractual Abeyance or Bar. Prior to the execution of the agreement, the Contractor must notify Center if the Contractor is or becomes held in abeyance or barred from the award of a federal or state contract during the term of the contract.

l. Personal Protective Equipment: Contractors performing services on TTBH's properties shall adhere to but not be limited by the 2013 Uniform General Conditions, Article 7. The contractor shall furnish, at its own cost, Personnel Protective Equipment for its employees and site managers as required by OSHA regulations (29 CFR 1910 and 29 CFR 1926).

VII. PROCEDURES FOR SUBMITTING COMPETITIVE SEALED PROPOSAL

Submit one (1) original and four (4) copies of the Proposal and any attachments in a sealed envelope, marked "**HOP Villa Parking Lot Improvements - 2018**" Proposals must be received **no later than 4:00p.m. CTS, Thursday, November 01,2018**. Proposals should be addressed to:

Attn: Beatriz Trejo
Chief Financial Officer
Tropical Texas Behavioral Health
1901 South 24th Avenue (78539)/P.O. Drawer 1108
Edinburg, Texas 78540-1108 Phone: (956) 289-7015

If hand delivered must be delivered to the front desk no exceptions. Tropical has the right to reject any or all proposals to waive formalities and reasonable irregularities in submitted documents as it deems to be in its best interest and is not obligated to accept the lowest proposal. TTBH will not be responsible for any proposals lost in the mail or not delivered by the stated deadline for any reason.

VIII. BOARD OF TRUSTEES APPROVAL

TTBH's Board of Trustees will make the final selection of the award, if any, on the November 2018 meeting.

TTBH reserves the right to reject, for any reason and at its sole discretion, in total or in part, any and/or all proposals, regardless of comparability for price, terms or any other matter, to waive any formalities, and to negotiate on the basis of the proposals received for the most favorable terms and best service for TTBH. If an architectural firm is selected, TTBH will execute a contract. If TTBH's funding is materially decreased during the contract term, the contract may be amended and/or terminated.

No contract shall be deemed to exist between TTBH and any contractor until a mutually acceptable, comprehensive and binding agreement has been executed by TTBH and that

firm. A countersigned copy of the qualifications proposal or any other preliminary written agreements shall not suffice to bind TTBH to any legal obligation of any kind whatsoever with regard to the work considered hereby.

IX. REQUEST FOR PROPOSAL INQUIRIES

Direct proposal inquiries to Beatriz Trejo, Chief Financial Officer, at (956) 289-7015 (v), or by
e-mail at beatrejo@ttbh.org.

CONFLICT OF INTEREST (CIQ) QUESTIONNAIRE FORM CIQ
For vendor or other person doing business with local governmental entity

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This questionnaire is being filed in accordance with Chapter 176 of the Local Government Code by a person doing business with the governmental entity.

By law this questionnaire must be filed with the records administrator of the local government not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offence if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

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1. Name of person doing business with local governmental entity.

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2. ___ Check if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than September 1 of the year for which an activity described in Section 176.006(a), Local Government Code, is pending and not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

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3. Describe each affiliation or business relationship with an employee or contractor of the local governmental entity who makes recommendations to a local government officer of the local governmental entity with respect to expenditure of money.

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4. Describe each affiliation or business relationship with a person who is a local government officer and who appoints or employs a local government officer of the local governmental entity that is the subject of this questionnaire.

5. Name of the local government officer with who filer has affiliation or business relationship. (Complete this section only if the answers to A, B, or C is YES.)

This section, item 5 including subparts A, B, C & D, must be completed for each officer with whom the filer has affiliation or business relationship. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income from the filer of the questionnaire? _____Yes _____ No

B. Is the filer of the questionnaire receiving or likely to receive taxable income from or at the direction of the local government officer named in this section AND the taxable income is not from the local governmental entity? _____ Yes _____ No

C. Is the filer of this questionnaire affiliated with a corporation or other business entity that the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?
_____ Yes _____ No

D. Describe each affiliation or business relationship.

6. Describe any other affiliation or business relationship that might cause a conflict of interest.

7.

_____ _____
Signature of person doing business with the governmental entity Date

TROPICAL TEXAS BEHAVIORAL HEALTH

DISCLOSURE OF KINSHIP

(check applicable)

( ) I certify that no person who is employed by our company, _____, a bidder on a project of Tropical Texas Behavioral Health, is related to any of the members of the Board of Directors within any of the following degrees of relationship:

CONSANGUINITY (blood relatives)

1st degree of consanguinity: parent, child

2nd degree of consanguinity: brother, sister, grandparents, grandchildren

3rd degree of consanguinity: great-grandparents, great-grandchild, brother or sister's child, parents' brother or sister

AFFINITY (related by marriage)

1st degree of affinity: spouse, spouse's parents, child's spouse

2nd degree of affinity: spouse's brother or sister, brother or sister's spouse, spouse's grandparents, grandchild's spouses

( ) I declare that the following person(s) who is/are employed by our company, _____ _____, a bidder on a project of Tropical Texas Behavioral Health, is/are related to a member of the Board of Directors within the degree of consanguinity or affinity stated above, as follows:

Employee	**Board Member**	**Relation**
1.		
2.		
3.		
4.		
5.		

By: _____

Name: _____
Typed/Printed

Title: _____

Date: _____

(This disclosure must be signed by the owner, a principal partner, or an officer of a corporation)

TROPICAL TEXAS BEHAVIORAL HEALTH

Notice of Felony Conviction

Any person or business entity, other than a publicly-held corporation, must submit a completed version of this notice form with the bid indicating whether the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony, if any.

If the Owner determines that the person or business entity gave false or misleading information in this notice, or misrepresented the conduct resulting in the conviction, the Owner may terminate the contract after compensating the person or business entity for services performed before the termination of the contract.

I, _____, the undersigned owner of the business entity named herein, certify that the information I have provided herein is true and correct and within my personal knowledge.

Type of Business Entity (*e.g., sole proprietorship, partnership, limited partnership, limited liability company, close corporation, publicly-held corporation, etc.*): _____

Name of Business Entity: _____

Address of Principal Place of Business: _____

Mailing Address: _____ Phone: _____

(all business entities other than publicly-held corporations must complete the following)

___ No owner or operator of the business entity named herein has ever been convicted of a felony.

___ The business entity named herein is owned or operated by the following person(s) who has (have) been convicted of a felony:

Name: _____; Reason for conviction: _____; Date of conviction: _____; Dates and Place of Incarceration: _____; Probation/Parole Status: _____

Name: _____; Reason for conviction: _____; Date of conviction: _____; Dates and Place of Incarceration: _____; Probation/Parole Status: _____

Name: _____; Reason for conviction: _____; Date of conviction: _____; Dates and Place of Incarceration: _____; Probation/Parole Status: _____

Name: _____; Reason for conviction: _____; Date of conviction: _____; Dates and Place of Incarceration: _____; Probation/Parole Status: _____

Date: _____ Owner: _____

SPECIAL PROVISIONS

IN ALL CASES WHERE THESE SPECIAL PROVISIONS CONFLICT WITH THE TECHNICAL SPECIFICATION SECTIONS, GENERAL CONDITIONS OF THE AGREEMENT, SUPPLEMENTARY GENERAL CONDITIONS, CONTRACT CONDITIONS, OR ANY OTHER DOCUMENT CONTAINED HEREIN, THESE SPECIAL PROVISIONS SHALL GOVERN.

1. The CONTRACTOR shall do all necessary excavation, trenching, demolition, grading, backfill, etc., to complete the project. All excavation is unclassified. All material removed such as concrete, broken pipe, excess backfill, etc., shall become the property of the CONTRACTOR and he shall be responsible for removing it from the site at not extra expense to the OWNER. Any existing material deemed salvageable by the ENGINEER or the OWNER shall be carefully removed and hauled to a designated location as directed by the OWNER or ENGINEER within the City at no extra expense to the OWNER.

2. The CONTRACTOR shall be limited only to existing ROW for operations and/or easements provided by the OWNER. The CONTRACTOR at no extra cost to the OWNER will correct any damages done to property outside these designated work areas to its original or better conditions. It is important that the CONTRACTOR be aware of the work limits so that no damage can result to those areas outside these limits.

3. All trees, plants, grass and shrubs, except those which will be affected by construction shall be protected at all times. The areas in and adjacent to the construction site shall be restored to their original conditions after necessary fine grading is completed. The CONTRACTOR shall provide new grass of the same type removed to restore damaged areas. Only quality sandy loam topsoil shall be used for filling the top four inches of those areas damaged or filled.

4. Existing lawns are to remain intact as far as practical. The CONTRACTOR shall duly restore such areas disturbed to as good or better than original condition using the same type of grass, shrubs, or cover as the original. The CONTRACTOR shall be responsible for correcting any erosion that occurs at his cost without claim for extra compensation.

5. Damages done to existing utilities, power poles, fences, signs, mailboxes, driveways, culverts, pavement, drainage systems, etc. shall be repaired by the CONTRACTOR at no cost to the OWNER, and such costs shall be subsidiary to the various unit items in the Proposal.

6. The OWNER shall provide all testing. Testing shall be paid by the OWNER on all necessary testing selected by ENGINEER, but re-testing shall be charged to the CONTRACTOR from his monthly estimates, and no additional compensation will be made or allowed for reworking the necessary defective work not meeting the specified work of the plans and specifications. Any re-testing required by no-passing results shall be paid for by the

CONTRACTOR and shall be deducted from the contract amount. The ENGINEER, at his sole discretion, may require the CONTRACTOR to perform any necessary uncovering of any improvements to verify compliance with specifications by either visual observation or materials testing at no extra expense to the OWNER.

7. The CONTRACTOR shall furnish the Site Inspector and Observer, OWNER, and ENGINEER the names, address and telephone numbers of all personnel responsible for the work in case of Emergencies.

8. The successful CONTRACTOR shall attend a Pre-Construction Conference with the OWNER and ENGINEER at the date and time specified.

9. The CONTRACTOR shall submit to the ENGINEER a proposed sequence of work outline with approximate completion dates to be reviewed at the pre-construction conference. During the course of construction, the ENGINEER may request updates to the schedule indicating the start of the several part of the work and the estimated dates of completion of the several parts. Unless otherwise noted on the plans, the ENGINEER may require modification of construction schedule to meet any OWNER recognized or OWNER sponsored events which may be affected by the CONTRACTOR'S activities without claim for extra compensation.

10. It is important that traffic be interrupted at a minimum during construction. Prior to any ***Public Road Closures***, a Traffic Control Plan (TCP), prepared by a Registered Professional Engineer, must be submitted by the CONTRACTOR and written approval must be issued by the ENGINEER and OWNER. The OWNER may, at its sole discretion, require continuous operation of construction activities to minimize traffic interruption. The preparation and submittal of the TCP, its approval process, or continuous operation requirement shall not constitute a claim for additional compensation or time extension of the Project.

11. The CONTRACTOR is solely responsible for notifying the Engineering Department, Police Department, Fire Department, School District, Emergency Services, and other interested entities at least 48 hours in advance of any OWNER approved road closures or detours.

12. All traffic control devices shall be in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD), latest edition.

13. All work must be performed during regular business hours of 8 a.m. to 5 p.m., Monday thru Friday, except OWNER recognized holidays. It is the CONTRACTOR'S sole responsibility to complete all work within the time specified in the Contract during the designated hours of operation. The CONTRACTOR may request work outside these hours, but will require the presence of the City's Field Inspector, the cost of which will be borne by the CONTRACTOR. No cost for the OWNER'S Field Representative will be charged should the work be requested by the OWNER.

14. The CONTRACTOR shall be responsible for construction staking for the entire project and shall be done in accordance with the Specifications. The OWNER shall provide horizontal

and vertical control. Staking shall be performed by a Registered Professional Land Surveyor or Professional Engineer qualified to do such construction staking at no additional cost to the OWNER. CUT SHEETS shall be submitted to the ENGINEER and OWNER for review and approval.

15. The Plans show approximate locations of existing utilities including gas lines, telephone lines, power lines, water lines, sewer lines, storm sewers and irrigation lines within the vicinity. The CONTRACTOR is responsible for locating all existing utilities and shall exercise extreme care in working in the vicinity of these lines. The CONTRACTOR shall notify the Utility Companies while working in the vicinity of the corresponding private or public utilities.

16. All existing lines, whether belonging to the Public or Private shall remain in operation at all times. Switchover time, re-connecting new service from existing lines or services (if any) shall be kept to a minimum. Unless otherwise shown as a Bid Item, reconnections to existing water and sanitary sewer services shall be subsidiary to all items of the Bid Proposal at no additional cost to the OWNER.

17. The OWNER reserves the right to add or delete quantities of bid items in the Proposal at the Unit Prices given, provided however that such additions or reductions are within the aggregate limits specified in the General Conditions of the Agreement. No additional compensation will be made to the CONTRACTOR for increases in quantities resulting from deviations from the dimensions of the plans unless such deviation is approved in writing and in accordance with the Change Order provisions of the Contract Documents.

18. .The CONTRACTOR is expected to conduct his work in such a manner as to minimize any soil erosion or sediment runoff from the construction site. CONTRACTOR shall provide ENGINEER and OWNER an Erosion Control Plan (ECP) as part of a permit application to be completed and approved by the ENGINEER prior to commencement of work. Earth cuts and fills shall have smooth, flat side slopes, as generally indicated on the Plans, to preclude erosion of the soil. Such operations should be times consistent with the actual need for doing the work and only to leave raw, unprotected surfaces for a minimum of time. The preparation and submittal of the ECP or its approval process shall not constitute a claim for additional compensation or time extension of the Project.

19. Until acceptance by the ENGINEER of any part of all of the material, as provided for in these specifications, it shall be under the charge and care of the CONTRACTOR, and he shall take every necessary precaution against injury or damage to any part of the material by action of the elements of the non-execution of the work. The CONTRACTOR shall rebuild, repair, restore and make good, at his own expense, all injuries or damage to any portion of the material occasioned by any of the above causes before its completion and acceptance.

20. In cases where the CONTRACTOR deems extra compensation is due him for materials not clearly covered in the contract, or not ordered by the ENGINEER as an extra item, the CONTRACTOR shall notify the ENGINEER in writing of his intention to make claim for such extra compensation before he begins the work. The CONTRACTOR shall not proceed

until the OWNER, ENGINEER, and CONTRACTOR approves a written CHANGE ORDER. Failure on the part of the CONTRACTOR to give such notification or to afford the ENGINEER proper facilities for keeping strict account of actual cost shall constitute a waiver of the claim for such extra compensation. The filing of such notice by the CONTRACTOR and the keeping of costs by the ENGINEER shall not in any way be construed to prove the validity of the claim. When the work has been completed, the CONTRACTOR shall, within 10 days, file his claim for extra compensation with the ENGINEER.

21. Upon the failure of the CONTRACTOR to repair satisfactorily or to remove and replace, if so directed, rejected, unauthorized, or condemned materials immediately after receiving written notice from the ENGINEER, the OWNER may recover for such defective materials on the CONTRACTOR'S bond, or by action in a court having proper jurisdiction over such matters, or may employ labor and equipment and satisfactorily repair or remove and replace such work and charge the cost of the same to the CONTRACTOR, which cost will be deducted from any money due him.

22. The CONTRACTOR shall warrant all work for a period of not less that one (1) year from the date of final acceptance of the work by the ENGINEER. CONTRACTOR is responsible for scheduling a final inspection in the presence of the OWNER, ENGINEER, and CONTRACTOR, whereupon all items must be in accordance with plans and specifications prior to final acceptance.

23. All asphalt pavement repairs shall be completed as per the construction plans and specifications. The CONTRACTOR shall not leave any area requiring repairs in excess of 1,300 square yards or in excess of 30 days, whichever is less. The OWNER or ENGINEER may require immediate asphalt pavement repair should traffic conditions warrant. Failure by the CONTRACTOR to make the necessary repairs within the time specified by the OWNER may result in corrective action by the OWNER including the employ of materials, labor and equipment to satisfactorily perform such work and charge the cost of the same to the CONTRACTOR, which cost will be deducted from any money due him.

AGREEMENT FOR ENGINEERING/ARCHITECTURAL CONSTRUCTION

THIS AGREEMENT is dated as of the _____ day of _____ in the year 20_____by and between the **Tropical Texas Behavioral Health**, (hereinafter called OWNER) and_____ _____(hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete the WORK as specified or indicated in the OWNER's Contract Documents entitled **HOP VILLA PARKING LOT IMPROVEMENTS HARLINGEN, TEXAS**

The WORK of this Contract is comprised of commercial parking lot improvements and other appurtenances as shown on the plans and specifications.

ARTICLE 2. CONTRACT TIMES.

The WORK shall be completed within 75 Calendar days from the commencement date stated in the Notice to Proceed.

ARTICLE 3. TIME OF COMPLETION.

OWNER and the CONTRACTOR recognize that time is of the essence of this agreement and that the OWNER may suffer financial loss if the WORK is not completed within the time specified in Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that not as a penalty, but as added expense for Engineering/Architectural supervision the CONTRACTOR shall pay the OWNER for each day that expires after the time specified in Article 2 herein the amount corresponding below:

FOR AMOUNT OF CONTRACT			**COST PER DAY**
$ 5,000.00	to	$ 25,000.00	$100.00
$ 25,001.00	to	$ 100,000.00	$200.00
$ 100,001.00	to	$ 500,000.00	$250.00
$ 500,001.00	to	$1,000,000.00	$300.00
$1,000,001.00	to	$2,000,000.00	$400.00
$2,000,001.00	to	$3,000,000.00	$500.00
$3,000,001.00	to	$4,000,000.00	$600.00
$4,000,001.00	to	$5,000,000.00	$700.00
$5,000,001.00	and over		$800.00

ARTICLE 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in current funds the amount set forth in the Bid Proposal Form(s), being:

_____

ARTICLE 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

ARTICLE 6. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK consist of this Agreement and the following attachments to this Agreement:

- Notice to Bidders
- Addenda
- Instructions to Bidders
- Bid Proposal Forms including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, and all required certificates and affidavits
- Special Provisions
- Agreement for Engineering/Architectural Construction
- Performance Bond
- Payment Bond
- General Conditions of Contract for Engineer/Architectural Construction
- Supplemental General Conditions
- Technical Specifications
- Drawings

- Change Orders which may be delivered or issued after Effective Date of the Agreement and are not attached hereto.

There are no Contract Documents other than those listed in this Article 6. The Contract Documents may only be amended by Change Order as provided in the General Conditions.

ARTICLE 7. ASSIGNMENT

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

ARTICLE 8. MEDIATION CLAUSE

It is the intent of the parties that litigation be avoided, and in order to allow for the quick resolution of any and all disputes, if any, the parties hereby agree that any claims, demands or disputes that cannot be amicably resolved between the parties upon written request by either party shall be submitted within two weeks to a neutral, trained third party for assistance in dispute resolution by means of non-binding mediation.

ARTICLE 9. DISPUTE RESOLUTION/LITIGATION

All claims, disputes and other controversy between CONTRACTOR and Tropical Texas Behavioral Health arising out of or in any way related to the services provided by CONTRACTOR shall be submitted to mediation, before and as a condition precedent to other remedies provided by law. If a dispute at law arises related to these services and that dispute requires litigation as provided above, Tropical Texas Behavioral Health, assents to personal jurisdiction in the State of Texas; the claim will be brought and tried in Hidalgo County. The prevailing party will be entitled to recovery of all court costs, attorneys' fees, and other legally recoverable claim-related expenses.

ARTICLE 10. NOTICE

All notices or other communications required under this Agreement may be affecter either by personal delivery in writing or by Certified Mail, Return Receipt Requested. Notice shall be deemed to have been given when delivered or mailed to the parties at their respective addresses as set forth below or when mailed to the last address provided in writing to the other party by the addressee.

OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have caused this Agreement to be executed the day and year first above written.

OWNER: **TROPICAL TEXAS BEHAVIORAL HEALTH**	CONTRACTOR:
_____	_____
By _____	By _____
	[CORPORATE SEAL]
Attest_____	Attest_____
Address for giving notices	Address for giving notices
1901 SOUTH 24th AVENUE **EDINBURG, TEXAS 78539**	
	License No. _____
Approved as to Form:	
_____	Agent for service of process: _____
(Signature)	
_____	_____
(Title)	

AGREEMENT CERTIFICATE

(if Corporation)

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the _____
_____ _____
a corporation existing under the laws of the State of _____, held on _____, 20____ , the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____President of the Corporation, be and is hereby authorized to execute the Agreement dated _____, 20_____, by and between this Corporation and Tropical Texas Behavioral Health, and that his/her execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20_____.

_____
Secretary

(SEAL)

AGREEMENT CERTIFICATE

(if Partnership)

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the _____
_____
a partnership existing under the laws of the State of _____, held on _____, 20_____ , the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____of the Partnership, be and is hereby authorized to execute the Agreement dated_____ , 20_____ , by and between this Partnership and Tropical Texas Behavioral Health, and that his/her execution thereof, attested by the _____shall be the Official act and deed of this Partnership."

I further certify that said resolution is now in full force and effect.
IN WITNESS WHEREOF, I have hereunto set my hand this ___, day of _____, 20___.

_____
Partner

(SEAL)

AGREEMENT CERTIFICATE

(if Joint Venture)

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Principals of the_____
_____
a joint venture existing under the laws of the State of _____, held on _____
_____, 20_____ , the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____of the Joint Venture, be and is hereby authorized to execute the Agreement dated _____, 20_____, by and between this Joint Venture and Tropical Texas Behavioral Health, and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Joint Venture."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this ___, day of _____, 20_____.

_____
Managing Partner

(SEAL)

- END OF AGREEMENT -

PERFORMANCE BOND

STATUTORY PERFORMANCE BOND PURSUANT TO ARTICLE 2253
OF THE TEXAS LOCAL GOVERNMENT CODE AS AMENDED BY ACTS OF THE 1993,
73RD LEGISLATURE, CH. 268, § 1, EFF. SEPT. 1, 1993
****

KNOW ALL MEN BY THESE PRESENTS, THAT _____

_____

_____

_____

(hereinafter called the Principal(s), as Principal(s), and _____

_____

_____

_____

_____

(hereinafter called the Surety(s), as Surety(s), are held and firmly bound unto _____

_____

_____

_____

_____

_____

(hereinafter called the Obligee), in the amount of _____

_____Dollars ($_____)

for the payment whereof the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____day of _____, 20_____, for the _____

_____

PERFORMANCE BOND Continued:

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copies at length herein.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform the work in accordance with plans, specifications and contract documents, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Statutory Performance Bond Pursuant To Article 2253 of the Texas Local Government Code as Amended by Acts of the 1993, 73rd Legislature, Ch. 268, § 1, Eff. Sept. 1, 1993, and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, this instrument is executed in four counterparts, each one of which shall be deemed an original, this _____ day of _____ A.D., 20____.

_____
Principal

ATTEST:

_____ _____
(Principal) Secretary Signature
(SEAL)

_____ _____
Witness as to Principal (Print/Type Name)

_____ _____
(Address) (Address)

ATTEST:

_____
Surety

_____ _____
(Surety) Secretary Attorney-in-Fact (Signature)
(SEAL)

_____ _____
Witness as to Surety (Print/Type Name)

_____ _____
(Address) (Address)

NOTE: Date of Bond must not be prior to date of Contract

(1) Correct name of Contractor; (2) A Corporation, a Partnership or an Individual, as case may be; (3) Correct name of Surety; (4) Correct name of Owner; (5) County or Parish and State; (6) Owner; (7) If Contractor is Partnership, all partners should execute bond.

PAYMENT BOND

STATUTORY PAYMENT BOND PURSUANT TO ARTICLE 2253
OF THE TEXAS LOCAL GOVERNMENT CODE AS AMENDED BY ACTS OF THE 1993,
73RD LEGISLATURE, CH. 268, § 1, EFF. SEPT. 1, 1993

****

KNOW ALL MEN BY THESE PRESENTS, that _____

_____

_____

_____

_____

(hereinafter called the Principal(s), as Principal(s), and _____

_____

_____

_____

_____

_____

(hereinafter called the Surety(s), as Surety(s), are held and firmly bond unto _____

_____

_____

_____

_____

_____

(hereinafter called the Obligee), in the amount of _____

_____Dollars ($_____)

for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____, 20_____, to

PAYMENT BOND Continued:

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copies at length herein.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said contract, then, this obligation shall be void; otherwise to remain in full force and affect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Statutory Payment Bond Pursuant To Article 2253 of the Texas Local Government Code as Amended by Acts of the 1993, 73rd Legislature, Ch. 268, § 1, Eff. Sept. 1, 1993, and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, this instrument is executed in four counterparts, each one of which shall be deemed an original, this _____ day of _____ A.D., 20____.

_____
Principal

ATTEST:

_____ _____
(Principal) Secretary Signature
(SEAL)

_____ _____
Witness as to Principal (Print/Type Name)

_____ _____
(Address) (Address)

ATTEST: _____ _____
Surety

_____ _____
(Surety) Secretary Attorney-in-Fact (Signature)
(SEAL)

_____ _____
Witness as to Surety (Print/Type Name)

_____ _____
(Address) (Address)

NOTE: Date of Bond must not be prior to date of Contract

(1) Correct name of Contractor; (2) A Corporation, a Partnership or an Individual, as case may be; (3) Correct name of Surety; (4) Correct name of Owner; (5) County or Parish and State; (6) Owner; (7) If Contractor is Partnership, all partners should execute bond.

SUPPLEMENTARY GENERAL CONDITIONS

PART 1-- GENERAL

These Supplementary General Conditions make additions, deletions, or revisions to the General Conditions as indicated herein. All provisions which are not so added, deleted, or revised remain in full force and effect. Terms used in these Supplementary General Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

SGC-1 DEFINITIONS

Add the following definitions to Article 1:

ENGINEER - In accordance with its contract with the OWNER, the ENGINEER is further defined as the firm of SDI Engineering, LLC, 5602 E. Iowa Rd., Edinburg, Texas 78542.

OWNER -The OWNER is further defined as Tropical Texas Behavioral Health, 1901 South 24th Avenue, Edinburg, Texas, 78539.

SGC-2.2 COPIES OF DOCUMENTS

The OWNER shall furnish to the CONTRACTOR two copies of the Contract Documents which may include bound reduced drawings, if any, together with two sets of full-scale Drawings. Additional quantities of the Contract Documents will be furnished at reproduction cost plus mailing cost if copies are mailed.

SGC-2.4 STARTING THE WORK

Add the following as Paragraphs 2.4C and 2.4D of the General Conditions:

C. The CONTRACTOR shall notify the Texas Excavation Safety System (TESS), Phone No. 1-800-DIG-TESS, at least 48 hours in advance of the commencement of work at any site to allow the member utilities to examine the construction site and mark the location of the utilities' respective facilities.

D. The CONTRACTOR acknowledges that some (or all) of the utility companies with facilities shown on the drawings may not be members of TESS and, therefore, not automatically contacted by the above referenced telephone number. The CONTRACTOR shall be responsible for making itself aware of utility company facilities not reported by the USA System, and shall be liable for any and all damages stemming from repair or delay costs or any other expenses resulting from the unanticipated discovery of underground utilities. The CONTRACTOR shall be responsible for notifying all of the utilities at least 48 hours in advance of the commencement of work at any site to allow the utilities to examine the construction site and mark the location of the utilities'

respective facilities. The CONTRACTOR shall also be responsible for verifying that each utility has responsibly responded to such notification.

SGC-4.2 REPORTS OF PHYSICAL CONDITIONS

In the preparation of the Contract Documents, the ENGINEER has relied upon reports of explorations and tests of subsurface conditions at the site prepared by a Geotechnical Engineer engaged for this project. The Geotechnical Engineer prepared a report for this project. A copy of this report and drawings may be examined at the office of Engineer/Architect, during regular business hours if said reports and drawings are not bound herein. The CONTRACTOR may rely upon the accuracy of the technical data contained in the geotechnical report and drawings; however, the interpretation of such technical data, including any interpolation or extrapolation thereof, and opinions contained in the report and drawings are not to be relied on by the CONTRACTOR.

SGC-4.5 HAZARDOUS MATERIALS

No reports have been made available to the ENGINEER to indicate there will be discovery of Asbestos, PCB's, Petroleum, Hazardous Wastes, and/or Radioactive Materials at the Site. If the Contractor encounters existing material on sites owned or controlled by the Owner or in material sources that are suspected by visual observation or smell to contain hazardous materials, the Contractor shall immediately notify the Engineer and the Owner. The Owner will be responsible for the testing for and removal or disposition of hazardous materials on sites owned or controlled by the Owner. The Owner may suspend the work, wholly or in part during the testing, removal or disposition of hazardous materials on sites owned or controlled by the Owner. Materials utilized in the project shall be free of any hazardous materials, except as may be specifically provided for in the specifications.

SGC-5.1 BONDS

Delete the first sentence of Paragraph 5.1A and add the following:

The CONTRACTOR shall furnish a satisfactory Performance Bond in the amount of 100 percent of the Contract Price and a satisfactory Payment Bond in the amount of 100 percent of the Contract Price as security for the faithful performance and payment of all the CONTRACTOR's obligations under the Contract Documents.

Add the following as Paragraph 5.1.D of the General Conditions (and renumber GC 5.1.D as 5.1.E):

5.1.D MAINTENANCE AND GUARANTY BOND

The CONTRACTOR shall provide a Maintenance and Guaranty Bond in the amount of 100 percent of the contract price to provide a guarantee against defects in the WORK occurring during the year following the one-year correction period. The Bond shall meet all of the

requirements listed in Paragraph 5.1 BONDS, shall be payable to the OWNER, and be at the sole cost of the CONTRACTOR.

SGC-5.2 INSURANCE

A. The limits of liability for the insurance required by Paragraph 5.2 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations. Limits may be provided by a combination of primary and excess liability policies or through a single policy. If the limits are provided by a combination of primary and excess liability policies, then the excess or umbrella liability overages shall include commercial general, comprehensive automobile and employer's liability and shall provide coverage at least as broad as the underlying policies.

1. Workers' Compensation:
   a. State: In accordance with State Statute
   b. Applicable Federal (e.g. USL&H): Statutory
      Note: If the WORK called for in the Contract Documents involves work in or on any navigable waters, the CONTRACTOR shall provide Workers' Compensation coverage which shall include coverage under the Longshore and Harbor Workers' Compensation Act, the Jones Act, Maritime Law, and any other coverage required under Federal or State laws pertaining to workers in or on navigable waters.

2. Comprehensive or Commercial General Liability:
   Combined Single Limit:

   a. Bodily Injury — $250,000 each person
      $500,000 each occurrence

   b. Property Damage — $100,000 each occurrence
      $100,000 aggregate

      -or- $500,000 combined single limits

3. Comprehensive Automobile Liability (including owned, hired, and non-owned vehicles): Combined Single Limit:

   a. Bodily Injury — $100,000 each person
      $500,000 each occurrence

   b. Property Damage — $100,000 each occurrence
      $100,000 each aggregate

      -or- $500,000 combined single limits

4. Protective Liability:

a.	Bodily Injury	$250,000 each person $500,000 each occurrence
b.	Property Damage	$100,000 each occurrence $100,000 each aggregate
	-or-	$500,000 combined single limits

B. All policies shall provide that the CONTRACTOR agrees to waive all rights of subrogation against the OWNER, the ENGINEER, and their sub-consultants, employees, officers and directors, for WORK performed under the Agreement. Endorsements shall be provided with certificates of insurance.

C. All policies shall also specify that the insurance provided by the CONTRACTOR will be considered primary and not contributory to any other insurance available to the OWNER or ENGINEER.

D. All policies except Workers' Compensation and Builders Risk shall name the OWNER, ENGINEER, their consultants, sub-consultants, and their officers, directors, agents and employees as additional insureds. The Builders Risk insurance shall name the CONTRACTOR, OWNER, and ENGINEER as named insureds.

E. All policies shall provide for thirty days notice prior to any cancellation, reduction in coverage or nonrenewal.

SGC-5.2C INSURANCE

Add the following to Paragraph 5.2C of the General Conditions:

The CONTRACTOR shall also name Tropical Texas Behavioral Health and its officers, directors, agents, and employees as "additional insureds" under the insurance policies.

SGC-6.5 SUBSTITUTES OR "OR EQUAL" ITEMS

Add the following to Paragraph 6.5 of the General Conditions:

A. Whenever materials or equipment are indicated in the Contract Documents by using the name of a proprietary item or the name of a particular manufacturer, the naming of the item is intended to establish the type, function, and quality required. If the name is followed by the words "or equal" indicating that a substitution is permitted, materials or equipment of other manufacturers may be accepted if sufficient information is submitted by the CONTRACTOR to allow the ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named, subject to the following requirements:

1. The burden of proof as to the type, function, and quality of any such substitution product, material or equipment shall be upon the CONTRACTOR.
2. The ENGINEER will be the sole judge as to the type, function, and quality of any such substitution and the ENGINEER's decision shall be final.
3. The ENGINEER may require the CONTRACTOR to furnish additional data about the proposed substitution.
4. The OWNER may require the CONTRACTOR to furnish a special performance guarantee or other surety with respect to any substitution.
5. Acceptance by the ENGINEER of a substitution item proposed by the CONTRACTOR shall not relieve the CONTRACTOR of the responsibility for full compliance with the Contract Documents and for adequacy of the substitution.
6. The CONTRACTOR shall pay all costs of implementing accepted substitutions, including redesign and changes to WORK necessary to accommodate the substitution.

B. The procedure for review by the ENGINEER will include the following:

1. If the CONTRACTOR wishes to provide a substitution item, the CONTRACTOR shall make written application to the ENGINEER on the "Substitution Request Form."
2. Unless otherwise provided by law or authorized in writing by the ENGINEER, the "Substitution Request Form(s)" shall be submitted within the 35-day period after award of the Contract.
3. Wherever a proposed substitution item has not been submitted within said 35-day period, or wherever the submission of a proposed substitution material or equipment has been judged to be unacceptable by the ENGINEER, the CONTRACTOR shall provide the material or equipment indicated in the Contract Documents.
4. The CONTRACTOR shall certify by signing the form that the list of paragraphs on the form are correct for the proposed substitution.
5. The ENGINEER will evaluate each proposed substitution within a reasonable period of time.
6. As applicable, no shop drawing submittals shall be made for a substitution item nor shall any substitution item be ordered, installed, or utilized without the ENGINEER'S prior written acceptance of the CONTRACTOR'S "Substitution Request Form."
7. The ENGINEER will record the time required by the ENGINEER in evaluating substitutions proposed by the CONTRACTOR and in making changes by the CONTRACTOR in the Contract Documents occasioned thereby.

C. The CONTRACTOR's application shall address the following factors which will be considered by the ENGINEER in evaluating the proposed substitution:

1. Whether the evaluation and acceptance of the proposed substitution will prejudice the CONTRACTOR's achievement of Substantial Completion on time.
2. Whether acceptance of the substitution for use in the WORK will require a change in any of the Contract Documents to adapt the design to the proposed substitution.

3. Whether incorporation or use of the substitution in connection with the WORK is subject to payment of any license fee or royalty.
4. Whether all variations of the proposed substitution from the items originally specified are identified.
5. Whether available maintenance, repair, and replacement service are indicated. The manufacturer shall have a local service agency (within 50 miles of the site) which maintains properly trained personnel and adequate spare parts and is able to respond and complete repairs within 24 hours.
6. Whether an itemized estimate is included of all costs that will result directly or indirectly from acceptance of such substitution, including cost of redesign and claims of other contractors affected by the resulting change.
7. Whether the proposed substitute item meets or exceeds the experience and/or equivalency requirements listed in the appropriate technical specifications.

D. Without any increase in cost to the OWNER, the CONTRACTOR shall be responsible for and pay all costs in connection with proposed substitutions and of inspections and testing of equipment or materials submitted for review prior to the CONTRACTOR's purchase thereof for incorporation in the WORK, whether or not the ENGINEER accepts the proposed substitution or proposed equipment or material. The CONTRACTOR shall reimburse the OWNER for the charges of the ENGINEER for evaluating each proposed substitution.

SGC-6.6 SUBCONTRACT LIMITATIONS

Add the following as Paragraph 6.6B of the General Conditions:

B. The CONTRACTOR shall perform not less than 20 percent of the WORK with its own forces (i.e., without subcontracting). The 20 percent requirement shall apply to the Contract Price less the values of OWNER-assigned contracts and allowances in the Bid for pre-negotiated WORK.

SGC-6.7 PERMITS

A. Except for the permits specifically set forth in A above, the CONTRACTOR shall acquire all permits required by Laws or Regulations, including, without limitation, the following specific permits (if applicable):

1. Local jurisdiction building permits. OWNER will pay for local jurisdiction building permit. CONTRACTOR will be responsible for acquiring permit.
2. State permits to construct and/or operate sources of air pollution.
3. Certificates and permits are required for sources such as, but not limited to:
   a. Fuel burning equipment
   b. Gasoline and petroleum distillate storage containers
   c. Land disturbing activities
   d. Processing equipment (sand, gravel, concrete batch plant, etc.)
   e. Odors

4. Permits to construct and/or operating permits for construction should be obtained from: United Irrigation District
5. Stormwater Permit.
6. Permit-Required Confined Space - The workplace in which the WORK is to be performed may contain permit-required confined spaces (permit spaces) as defined 29 CFR 1910.146 and, if so, permit space entry is allowed only through compliance with a confined space entry program meeting the requirements of 29 CFR 1910.146.

SGC-6.17 INDEMNIFICATION

Add the following to Paragraph 6.17A of the General Conditions:

The CONTRACTOR shall also indemnify, defend, and hold harmless Tropical Texas Behavioral Health, and its officers, directors, agents, and employees, against and from all claims and liability arising under or by reason of the Agreement or any performance of the WORK, but not from the sole negligence or willful misconduct of Tropical Texas Behavioral Health.

SGC-9.3 PROJECT REPRESENTATION

A. The Owner, authorized representatives and agents of the Owner shall, at all times have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract. The Resident Project Representative, who is the OWNER's agent, will act as directed by and under the supervision of the OWNER and will confer with the ENGINEER regarding its actions. The Resident Project Representative's dealings in matters pertaining to the WORK shall, in general, be only with the ENGINEER and the CONTRACTOR, and dealings with Subcontractors shall only be through or with the full knowledge of the CONTRACTOR. Written communication with the OWNER will be only through or as directed by the ENGINEER.

B. The Resident Project Representative shall have the duties and responsibilities set forth in this paragraph.

1. Review the progress schedule of Shop Drawing submittals and schedule of values prepared by the CONTRACTOR and consult with the ENGINEER concerning their acceptability.
2. Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with the ENGINEER and notify in advance those expected to attend. Attend meetings and maintain and circulate copies of minutes thereof.
3. Serve as the ENGINEER's liaison with the CONTRACTOR, working principally through the CONTRACTOR's superintendent and assist said superintendent in understanding the intent of the Contract Documents. Assist the ENGINEER in serving as the OWNER's liaison with the CONTRACTOR.
4. Receive Shop Drawings and samples furnished by the CONTRACTOR.

5. Conduct on-site observations of the WORK in progress to assist the ENGINEER in determining if the WORK is proceeding in accordance with the Contract Documents.
6. Verify that the tests, equipment, and systems startups and operating and maintenance instruction are conducted as required by the Contract documents and in presence of the required personnel, and that the CONTRACTOR maintains adequate records thereof.
7. Transmit to the CONTRACTOR the ENGINEER's clarifications and interpretations of the Contract Documents.
8. Consider and evaluate the CONTRACTOR's suggestions for modifications in the Contract Documents and report them with recommendations to the ENGINEER.
9. Review applications for payment with the CONTRACTOR for compliance with the established procedure for their submittal and forward them with recommendations to the ENGINEER, noting particularly their relation to the schedule of values, work completed, and materials and equipment delivered at the Site but not incorporated in the WORK.
10. During the course of the WORK, verify that certificates, maintenance and operation manuals, and other data required to be assembled and furnished by the CONTRACTOR are applicable to the items actually installed.
11. Before the ENGINEER prepares a Notice of Completion, as applicable, submit to the CONTRACTOR a list of observed items requiring completion or correction.
12. Conduct final inspection in the company of the ENGINEER, the OWNER, and the CONTRACTOR, and prepare a punch list of items to be completed or corrected.
13. Verify that all items on the punch list have been completed or corrected and make recommendations to the ENGINEER concerning acceptance.

SGC-11.3D EQUIPMENT

The CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the current edition of the following reference publication:

A. "Rental Rate Blue Book for Construction Machinery" as published by the Machinery Information Division of the K-III Directory Corporation, (800) 669-3282.

SGC-12.2 WEATHER DELAYS

Delete paragraphs 12.2.A and 12.2.B. Add the following:

A. The occurrence of unusually severe weather during the life of the Contract will be considered a basis for extending contract time when work is not already suspended for other reasons. Unusually severe weather means weather, which at the time of year that it occurs, is unusual for the place in which it occurs.

B. Extension of time for unusually severe weather will be determined on a monthly basis and will include only those actual adverse weather days in excess of the normal adverse weather days included in the Contract Time. Normal adverse weather means adverse weather which, regardless of its severity, is to be reasonable expected for that particular

place at that particular time of year. The normal adverse weather days included in the Contract Time are based on historical records of temperature and precipitation.

C. Actual adverse weather days are those days meeting one or more of the criteria listed below. Time extensions for more than one criterion will take into consideration only that criterion having the greatest impact. Those actual adverse weather days in excess of the days listed in Table 12-1 will be allowed without regard to when they occur (except prior to mobilization or during suspension for other reasons) or their impact on contract completion.

1. Days with maximum temperature of 32 degrees F or less – one full day allowed.
2. Days with minimum temperature of 32 degrees F or less, but whose maximum temperature is over 32 degrees F – one-half day allowed.
3. Days when ½" or more of precipitation (rain or snow equivalent) occurs – one full day allowed.

D. Attached to the monthly Extension of Time Request, the CONTRACTOR shall submit a summary statement showing the number of days charged to the Contract for the preceding period

1. An itemized account of each day of the month showing which days meet one of the criteria outlined above.
3. A total number of adverse weather days.
4. The total number of days due to the CONTRACTOR for adverse weather days in excess of the normal adverse weather days.

SGC-14.3C AMOUNT OF RETENTION

Add the following to Paragraph 14.3C of the General Conditions:

Unless otherwise prescribed by law, the OWNER may retain a portion of the amount otherwise due to the CONTRACTOR, as follows:

1. Contracts equaling a total amount of $400,000.00 or over will bear a retainage of five (5) percent (%) on each partial disbursement. Contracts totaling less than $400,000.00 will bear a retainage of ten (10) percent (%) on each partial disbursement.

SGC-14.3D VALUE OF MATERIALS STORED AT THE SITE

Unless otherwise prescribed by law, the value of materials stored at the Site shall be 90% of the value of such materials.

SGC-16.8 OPERATION AND MAINTENANCE MANUALS AND TRAINING.

A. The Contractor shall obtain installation, operation, and maintenance manuals from manufacturers and suppliers for equipment furnished under the contract. The Contractor shall submit three copies of each complete manual to the Engineer within 90 days after approval of shop drawings, product data, and samples, and not later than the date of shipment of each item of equipment to the project site or storage location.

B. Each manual is to be bound in a folder and labeled to identify the contents and project to which it applies. The manual shall contain the following applicable items:

1. A listing of the manufacturer's identification, including order number, model, serial number, and location of parts and service centers.
2. A list of recommended stock of parts, including part number and quantity.
3. Complete replacement parts list.
4. Performance data and rating tables.
5. Specific instructions for installation, operation, adjustment, and maintenance.
6. Exploded view drawings for major equipment items.
7. Lubrication requirements.
8. Complete equipment wiring diagrams and control schematics with terminal identification.

C. Operations and maintenance manuals specified herein are in addition to any operation, maintenance, or installation instructions required by the Contractor to install, test, and start-up the equipment.

D. The Owner shall require the Engineer to promptly review each manual submitted, noting necessary corrections and revisions. If the Engineer rejects the manual, the Contractor shall correct and resubmit the manual until it is acceptable to Engineer as being in conformance with design concept of project and for compliance with information given in the Contract Documents. Owner may assess Contractor a charge for reviews of same items in excess of three (3) times. Such procedure shall not be considered cause for delay. Acceptance of manuals by Engineer does not relieve Contractor of any requirements or terms of the Contract.

E. The Contractor shall provide the services of trained, qualified technicians to check final equipment installation, to assist as required in placing same in operation, and to instruct operating personnel in the proper manner of performing routine operation and maintenance of the equipment.

SGC-16.9 AS-BUILT DIMENSION & DRAWINGS.

A. Contractor shall make appropriate daily measurements of facilities constructed and keep accurate records of location (horizontal and vertical) of all facilities.

B. Upon completion of each facility, the Contractor shall furnish Owner with one set of direct prints, marked with red pencil, to show as-built dimensions and locations of all work constructed. As a minimum, the final drawings shall include the following:

1. Horizontal and vertical locations of work.
2. Changes in equipment and dimensions due to substitutions.
3. "Nameplate" data on all installed equipment.
4. Deletions, additions, and changes to scope of work.
5. Any other changes made.

END OF SUPPLEMENTARY GENERAL CONDITIONS

Section K – Technical Specifications

- 00210 – TxDot Rolling
- 00216 – TxDot Proof Rolling
- 00247 – Type E, Grade 4 Flexible Base
- 00440 – TxDot Reinforced Steel
- 00529 – TxDot Concrete Curb, Gutter and
- 00531 - TxDot Sidewalks
- 01340 – Submittals
- 01568 – Erosion and Sediment Control
- 02102 – Clearing and Grubbing
- 02210 - TxDot Subgrade Preparation
- 02580 – Storm Sewer Structures
- 02601 – TxDot Flexible Base
- 02612 – Hot Mix Asphalt
- 02930 – Hydro-Mulch Seeding
- 15075 – Reinforced Concrete Pipe

SECTION 00210 – ROLLING

(Referenced from 2004 TxDOT, ITEM 210 Rolling – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

00210.1. Description. Compact embankment, subgrade, base, surface treatments, broken concrete pavement, or asphalt pavement using rollers. Break up asphalt mats, pit run material, or base materials.

00210.2. Equipment. The Contractor may use any type of roller to meet the production rates and quality requirements of the Contract unless otherwise shown on the plans or directed. When specific types of equipment are required, use equipment that meets the requirements of this Article. The Engineer may allow the use of rollers that operate in one direction only when turning does not affect the quality of work or encroach on traffic.

Table 1
Roller Requirements[1]

Roller Type	Materials to be Compacted	Load (tons)	Contact Pressure	Roller Speed (mph)
Steel wheel	Embankment, subgrade, base, asphalt concrete	≥ 10	≥ 325 lb. per linear inch of wheel width	2–3
Tamping	Embankment, subgrade, base	–	125–550 psi per tamping foot	2–3
Heavy tamping	Embankment, subgrade, base	–	≤ 550 psi per tamping foot	2–3
Vibratory	Embankment, subgrade, base, asphalt concrete	Type A < 6 Type B > 6 Type C as shown on plans	Per equipment specification and as approved	As approved
Light pneumatic	Embankment, subgrade, base, surface treatment	4.5–9.0	≥ 45 psi	2–6
	Asphalt Concrete			4–12
Medium pneumatic	Same as light pneumatic	12–25	≥ 80 psi, as directed	Same as light pneumatic
Heavy pneumatic	Embankment, subgrade, base, previously broken concrete pavement, other pavements	≥ 25	≤ 150 psi	2–6
Grid	Embankment, base, breaking up existing asphalt mats or base	5–13	–	2–3

1. Unless otherwise specified in the Contract.

A. **Static Steel Wheel Rollers.** Furnish single, double, or triple steel wheel, self-propelled power rollers weighing at least 10 tons capable of operating in a forward and backward motion. Ensure all wheels are flat. When static steel wheel rollers are required, vibratory rollers in the static mode may be used.
For single steel wheel rollers, pneumatic rear wheels are allowed for embankment, subgrade, and base. For triple steel wheel rollers, provide rear wheels with a minimum diameter of 48 in., a minimum width of 20 in., and a minimum compression of 325 lb. per inch of wheel width.

B. **Tamping Rollers.** Furnish self-propelled rollers with at least 1 self-cleaning metal tamping drum capable of operating in a forward or backward motion with a minimum effective rolling width of 5 ft. For rollers with more than 1 drum, mount drums in a frame so that each drum moves independently of the other. Operate rollers in static or vibratory mode.

1. **Tamping Roller (Minimum Requirement).** For all tamping rollers except for heavy tamping rollers, provide tamping feet that exert a static load of 125 to 550 psi and project at least 3 in. from the surface of the drum.
2. **Heavy Tamping Roller.** Provide tamping rollers that have:
   - 2 metal tamping drums, rolls, or shells, each with a 60-in. minimum diameter and a 5-ft. minimum width, or
   - 1 rear and 2 forward drums, each with a 60-in. minimum diameter. Arrange drums so that the rear drum compacts the space between the 2 forward drums and the minimum overall rolling width is 10 ft.

   Equip drums with tamping feet that:
   - project at least 7 in. from the drum surface,
   - have an area of 7 to 21 sq. in.,
   - are self-cleaning,
   - exert a static load of at least 550 psi, and
   - are spaced at 1 tamping foot per 0.65 to 0.70 sq. ft. of drum area.

C. **Vibratory Rollers.** Furnish self-propelled rollers with at least 1 drum equipped to vibrate. Select and maintain amplitude and frequency settings per manufacturer's specifications to deliver maximum compaction without material displacement or shoving, as approved. Furnish the equipment manufacturer's specifications concerning settings and controls for amplitude and frequency. Operate rollers at speeds that will produce at least 10 blows per foot unless otherwise shown on the plans or approved. Pneumatic rear wheels are allowed for embankment, subgrade, and base. Equip each vibrating drum with:
   - separate frequency and amplitude controls,
   - controls to manually start and stop vibration, and
   - a mechanism to continuously clean the face of the drum.

For asphalt-stabilized base and asphalt concrete pavement, furnish a roller that also has the ability to:

- automatically reverse the direction of the rotating eccentric weight,
- stop vibration before the motion of the roller stops, and
- thoroughly moisten the drum with water or approved asphalt release agent.

1. **Drum (Type A).** Furnish a roller with a static weight less than 6 tons and a vibratory drum.
2. **Drum (Type B).** Furnish a roller with a minimum static weight of 6 tons and a vibratory drum.
3. **Drum (Type C).** Furnish a roller as shown on plans.

D. **Pneumatic Tire Rollers.** Pneumatic tire rollers consist of rubber tire wheels on axles mounted in a frame with either a loading platform or body suitable for ballast loading. Arrange the rear tires to cover the gaps between adjacent tires of the forward group. Furnish rollers capable of forward and backward motion. Compact asphalt pavements and surface treatments with a roller equipped with smooth-tread tires. Compact without damaging the surface. When necessary, moisten the wheels with water or an approved asphalt release agent.

Select and maintain the operating load and tire air pressure within the range of the manufacturer's charts or tabulations to attain maximum compaction throughout the lift, as approved. Furnish the manufacturer's chart or tabulations showing the contact areas and contact pressures for the full range of tire inflation pressures and for the full range of loadings for the particular tires furnished. Maintain individual tire inflation pressures within 5 psi of each other. Provide uniform compression under all tires.

1. **Light Pneumatic Tire.** Furnish a unit:
   - with at least 9 pneumatic tires,
   - with an effective rolling width of approximately 5 ft.,
   - capable of providing a total uniform load of 4.5 to 9 tons, and
   - with tires capable of maintaining a minimum ground contact pressure of 45 psi.
2. **Medium Pneumatic Tire.** Furnish a unit:
   - with at least 7 pneumatic tires,
   - with an effective rolling width of approximately 7 ft.,
   - capable of providing a total uniform load of 12 to 25 tons, and
   - with tires capable of maintaining a minimum ground contact pressure of 80 psi or 90 psi as directed.
3. **Heavy Pneumatic Tire.** Furnish a unit:
   - with at least 4 pneumatic-tired wheels mounted on axles carrying at most 2 wheels,
   - with wheels arranged to carry approximately equal loads on uneven surfaces,

- with a width between 8 and 10 ft. that can turn 180° in the crown width,
- capable of providing a total uniform load of at least 25 tons,
- with tires capable of maintaining a maximum ground contact pressure of 150 psi, and
- with liquid-filled tires inflated to such a level that liquid will flow from the valve stem when the stem is in the uppermost position.

E. **Grid Rollers.** Furnish rollers that have 2 cylindrical cages with a minimum diameter of 66 in. and a minimum width of 32 in. Mount cages in a rigid frame with weight boxes. Use a cage surface of cast or welded steel fabric grid with bars 1-1/2 in. wide, spaced on 5-in. centers in each direction, that undulate approximately 1 in. between the high and low points. Furnish rollers capable of providing a total load of 5 to 13 tons and capable of being operated in a forward or backward motion.

F. **Alternate Equipment.** Instead of the specified equipment, the Contractor may, as approved, operate other compaction equipment that produces equivalent results. Discontinue the use of the alternate equipment and furnish the specified equipment if the desired results are not achieved.

00210.3. Construction. Perform this work in accordance with the applicable Items using equipment and roller speeds specified in Table 1. Use only rubber-tired equipment to push or pull compaction equipment on base courses. Use equipment that does not damage material being rolled.

00210.4. MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with “Measurement and Basis of Payment” section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

SECTION 00216 – PROOF ROLLING

(Referenced from 2004 TxDOT, ITEM 216 Proof Rolling – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

00216.1. Description. Proof-roll earthwork, base, or both to locate unstable areas.

00216.2. Equipment.

A. Specified Equipment. Furnish rollers that when loaded weigh at least 25 tons. The maximum acceptable load is 50 tons. Provide rollers that meet the requirements of Section 210.2.D, "Pneumatic Tire Rollers."

B. Alternative Equipment. Instead of the specified equipment, the Contractor may, as approved, operate other compaction equipment that produces equivalent results in the same period of time. Discontinue the use of the alternative equipment and furnish the specified equipment if the desired results are not achieved.

00216.3. Construction. Perform proof rolling as directed. Adjust the load and tire inflation pressures within the range of the manufacturer's charts or tabulations, as directed. Make at least 2 coverages with the proof roller. Offset each trip of the roller by at most 1 tire width. Operate rollers at a speed between 2 and 6 miles per hour, as directed. If an unstable or non-uniform area is found, correct the area in accordance with the applicable Item.

00216.4. MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

ITEM 247, Flexible Base Parameters

Flexible Base Type E will composed of caliche (argillaceous Limestone, calcareous or calcareous clay particles) and may contain stone, conglomerate, gravel, sand or granular materials when these materials are in situ with the caliche.

Blended material for Flexible Base TY E GR 4

The Contractor may blend base material with another caliche source or with crushed concrete, meeting the requirements for TY "D" materials, provided a minimum of 50% caliche is used. The crushed concrete may contain sand or granular materials. Stabilizing additives will not be allowed in the raw crushed concrete base. Acceptance will be under the following conditions:

Condition One (1): When both components of the blend in their individual stockpiles meet all the physical requirements of this Item, the field blending will be allowed.

Condition Two (2): When only one component of the blend passes the physical requirements of this Item, the materials shall be blended through a plant for stockpile testing and approval.

Flexible Base (TY E GR 4) shall conform to the following requirements:

BEFORE LIME IS ADDED

Retained on Sq. Sieve	Percent Required
2"	0
½"	20-60
No. 4	40-75
No. 40	70-90
Max. PI:	15
Max. Wet Ball PI:	15
Wet Ball Mill Max Amount	50

The Wet Ball Test (Tex-116-E) shall be run and the Plasticity Index of the material passing the No. 40 sieve shall be determined (Wet Ball PI).

After 1% lime (laboratory) is added to unlimed material

Min. Strength Triaxial Class 1. Triaxial Test (Lime Treated)	Tex-121-E

The percent of density as determined by Compaction Ratio (Tex-113-E) for the new Flexible Base shall be a minimum of 98%.

The Contractor's attention is called to the fact that certain existing and/or proposed structures may be within the limits of the Flexible Base. It shall be the Contractor's responsibility to perform construction operations without damage to these structures.

For water added under Item 247, the sulfate content should not exceed 3000-ppm and the chloride content should not exceed 3000-ppm.

Perform base ride quality testing for all base with only one lift of ACP or a seal coat as the final surface in accordance with Engineer's recommendation. Perform base ride quality testing before placing the ACP or seal coat.

SECTION 00440 – REINFORCING STEEL

(Referenced from 2004 TxDOT, ITEM 440 Reinforcing Steel – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

440.1. Description. Furnish and place reinforcing steel of the sizes and details shown on the plans.

440.2. Materials.

A. Approved Mills. Before furnishing steel, producing mills of reinforcing steel for the Department must be pre-approved in accordance with DMS-7320, "Qualification Procedure for Reinforcing Steel Mills," by the Construction Division, which maintains a list of approved producing mills. Reinforcing steel obtained from unapproved sources will not be accepted.

B. Deformed Bar and Wire Reinforcement. Unless otherwise shown on the plans, reinforcing steel must be Grade 60, and bar reinforcement must be deformed. Reinforcing steel must conform to one of the following:

- ASTM A 615, Grades 40 or 60;
- ASTM A 996, Type A, Grades 40 or 60;
- ASTM A 996, Type R, Grade 60, permitted in concrete pavement only (Furnish ASTM A 996, Type R bars as straight bars only and do not bend them. Bend tests are not required.); or
- ASTM A 706.

The provisions of this Item take precedence over ASTM provisions.

The nominal size, area, and weight of reinforcing steel bars covered by this Item are shown in Table 1. Designate smooth bars up to No. 4 by size number and above No. 4 by diameter in inches.

Table 1
Size, Area, and Weight of Reinforcing Steel Bars

Bar Size Number (in.)	Bar Size Number (mm)	Diameter (in.)	Area (Sq. in.)	Weight per Ft.
3	10	0.375	0.11	0.376
4	13	0.500	0.20	0.668
5	16	0.625	0.31	1.043
6	19	0.750	0.44	1.502
7	22	0.875	0.60	2.044
8	25	1.000	0.79	2.670
9	29	1.128	1.00	3.400
10	32	1.270	1.27	4.303
11	36	1.410	1.56	5.313
14	43	1.693	2.25	7.650
18	57	2.257	4.00	13.60

Note: Bar size numbers (in.) are based on the number of eighths of an inch included in the nominal diameter of the bar. Bar size numbers (mm) approximate the number of millimeters included in the nominal diameter of the bar.

C. Smooth Bar and Spiral Reinforcement. Smooth bars and dowels for concrete pavement must have a minimum yield strength of 60 ksi and 644 meet ASTM A 615. For smooth bars that are larger than No. 3, provide steel conforming to ASTM A 615 or meet the physical requirements of ASTM A 36.

Spiral reinforcement may be smooth or deformed bars or wire of the minimum size or gauge shown on the plans. Bars for spiral reinforcement must comply with ASTM A 615, Grade 40; ASTM A 996, Type A, Grade 40; or ASTM A 675, Grade 80, meeting dimensional requirements of ASTM A 615. Smooth wire must comply with ASTM A 82, and deformed wire must comply with ASTM A 496.

D. Weldable Reinforcing Steel. Reinforcing steel to be welded must comply with ASTM A 706 or have a carbon equivalent (C.E.) of at most 0.55%. A report of chemical analysis showing the percentages of elements necessary to establish C.E. is required for reinforcing steel that does not meet ASTM A 706 to be structurally welded. These requirements do not pertain to miscellaneous welds on reinforcing steel as defined in Section 448.4.B.1.a, “Miscellaneous Welding Applications.”

Calculate C.E. using the following formula:

$$C.E. = \%C + \frac{\%Mn}{6} + \frac{\%Cu}{40} + \frac{\%Ni}{20} + \frac{\%Cr}{10} - \frac{\%Mo}{50} - \frac{\%V}{10}$$

E. Welded Wire Fabric. For fabric reinforcement, use wire that conforms to ASTM A 82 or A 496. Use wire fabric that conforms to ASTM A 185 or A 497. Observe the relations shown in Table 2 among size number, diameter in inches, and area when ordering wire by size numbers, unless otherwise specified. Precede the size number for deformed wire with “D” and for smooth wire with “W.”

Designate welded wire fabric as shown in the following example: 6 × 12 – W16 × W8 (indicating 6-in. longitudinal wire spacing and 12-in. transverse wire spacing with smooth No. 16 wire longitudinally and smooth No. 8 wire transversely).

Table 2
Wire Size Number, Diameter, and Area

Size Number (in.)	Size Number (mm)	Diameter (in.)	Area (sq. in.)
31	200	0.628	0.310
30	194	0.618	0.300
28	181	0.597	0.280
26	168	0.575	0.260
24	155	0.553	0.240
22	142	0.529	0.220
20	129	0.505	0.200
18	116	0.479	0.180
16	103	0.451	0.160
14	90	0.422	0.140
12	77	0.391	0.120
10	65	0.357	0.100
8	52	0.319	0.080
7	45	0.299	0.070
6	39	0.276	0.060
5.5	35	0.265	0.055
5	32	0.252	0.050
4.5	29	0.239	0.045
4	26	0.226	0.040
3.5	23	0.211	0.035
2.9	19	0.192	0.035
2.5	16	0.178	0.025
2	13	0.160	0.020
1.4	9	0.134	0.014
1.2	8	0.124	0.012
0.5	3	0.080	0.005

Note: Size numbers (in.) are the nominal cross-sectional area of the wire in hundredths of a square inch. Size numbers (mm) are the nominal cross-sectional area of the wire in square millimeters. Fractional sizes between the sizes listed above are also available and acceptable for use.

F. Epoxy Coating. Epoxy coating will be required as shown on the plans. Before furnishing epoxy-coated reinforcing steel, an epoxy applicator must be pre-approved in accordance with DMS-7330, “Qualification Procedure for Reinforcing Steel Epoxy Coating Applicators.” The Construction Division maintains a list of approved applicators.

Coat reinforcing steel in accordance with Table 3.

Table 3
Epoxy Coating Requirements for Reinforcing Steel

Material	Specification
Bar	ASTM A 775 or A 934
Wire or fabric	ASTM A 884 Class A or B
Mechanical couplers	As shown on the plans
Hardware	As shown on the plans

Use epoxy coating material and coating repair material that complies with DMS-8130, “Epoxy Powder Coating for Reinforcing Steel.” Do not patch more than 1/4 in. total length in any foot at the applicator’s plant.

Epoxy-coated reinforcement will be sampled and tested in accordance with Tex-739-I.

Maintain identification of all reinforcing throughout the coating and fabrication and until delivery to the project site.

Furnish 1 copy of a written certification that the coated reinforcing steel meets the requirements of this Item and 1 copy of the manufacturer’s control tests.

G. Mechanical Couplers. When mechanical splices in reinforcing steel bars are shown on the plans, use the following types of coupler:

- sleeve-filler,
- sleeve-threaded,
- sleeve-swaged, or
- sleeve-wedge.

Furnish only couplers that have been produced by a manufacturer that has been prequalified in accordance with DMS-4510, “Mechanical Couplers.” Sleeve-wedge type couplers will not be permitted on coated reinforcing. Couplers for use on individual projects must be sampled and tested in accordance with DMS-4510. Furnish couplers only at locations shown on the plans.

440.3. Construction.

A. Bending. Cold-bend the reinforcement accurately to the shapes and dimensions shown on the plans. Fabricate in the shop if possible. Field-fabricate, if permitted, using a method approved by the Engineer. Replace improperly fabricated, damaged, or broken bars at no additional expense to the Department. Repair damaged or broken bars embedded in a previous concrete placement using a method approved by the Engineer. Unless otherwise shown on the plans, the inside diameter of bar bends, in terms of the nominal bar diameter (d), must be as shown in Table 4.

Table 4
Minimum Inside Diameter of Bar Bends

Bend	Bar Size Number (in.)	Bar Size Number (mm)	Diameter
Bends of 90° and greater in stirrups, ties, and other secondary bars that enclose another bar in the bend	3, 4, 5	10, 13, 16	4d
	6, 7, 8	19, 22, 25	6d
Bends in main bars and in secondary bars not covered above	3 through 8	10 through 25	6d
	9, 10, 11	29, 32, 36	8d
	14, 18	43, 57	10d

Note: Bar size numbers (in.) are based on the number of eighths of an inch included in the nominal diameter of the bar. Bar size numbers (mm) approximate the number of millimeters included in the nominal diameter of the bar.

Where bending No. 14 or No. 18 Grade 60 bars is required, bend-test representative specimens as described for smaller bars in the applicable ASTM specification. Make the required 90° bend around a pin with a diameter of 10 times the nominal diameter of the bar.

B. Tolerances. Fabrication tolerances for bars are shown in Figure 1.

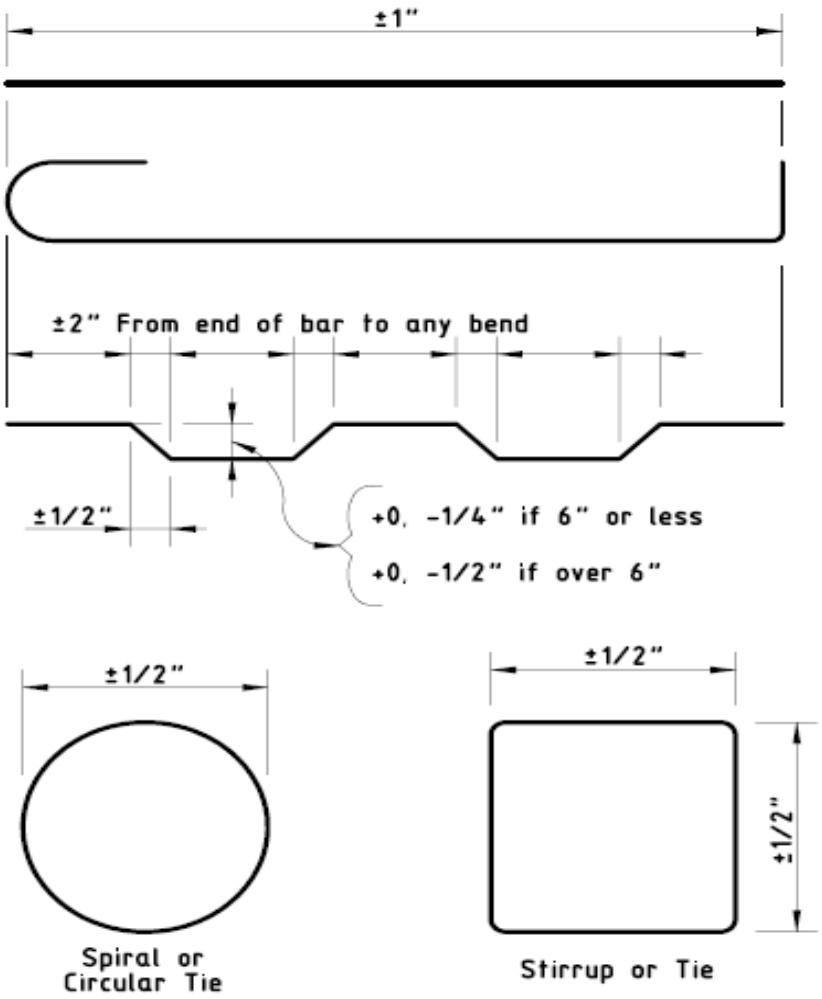


Figure 1
Fabrication tolerances for bars.

C. Storage. Store steel reinforcement above the ground on platforms, skids, or other supports, and protect it from damage and deterioration. Ensure that reinforcement is free from dirt, paint, grease, oil, and other foreign materials when it is placed in the work. Use reinforcement free from defects such as cracks and delaminations. Rust, surface seams, surface irregularities, or mill scale will not be cause for rejection if the minimum cross-sectional area of a hand wire-brushed specimen meets the requirements for the size of steel specified.

D. Splices. Lap-splice, weld-splice, or mechanically splice bars as shown on the plans. Additional splices not shown on the plans will require approval. Splices not shown on the plans will be permitted in slabs 15 in. or less in thickness, columns, walls, and parapets. x Unless otherwise approved, splices will not be permitted in bars 30 ft. or less in plan length. For bars exceeding 30 ft. in plan length, the distance center-to-center of splices must be at least 30 ft. minus 1 splice length, with no more than 1 individual bar length less than 10 ft. Make lap splices not shown on the plans, but otherwise permitted, in accordance with Table 5. Maintain the specified concrete cover and spacing at splices, and place the lap-spliced bars in contact, securely tied together.

Table 5
Minimum Lap Requirements for Bar Sizes through No. 11

Bar Size Number (in.)	Bar Size Number (mm)	Uncoated Lap Length	Coated Lap Length
3	10	1 ft. 4 in.	2 ft. 0 in.
4	13	1 ft. 9 in.	2 ft. 8 in.
5	16	2 ft. 2 in.	3 ft. 3 in.
6	19	2 ft. 7 in.	3 ft. 11 in.
7	22	3 ft. 5 in.	5 ft. 2 in.
8	25	4 ft. 6 in.	6 ft. 9 in.
9	29	5 ft. 8 in.	8 ft. 6 in.
10	32	7 ft. 3 in.	10 ft. 11 in.
11	36	8 ft. 11 in.	13 ft. 5 in.

Note: Bar size numbers (in.) are based on the number of eighths of an inch included in the nominal diameter of the bar. Bar size numbers (mm) approximate the number of millimeters included in the nominal diameter of the bar.

- Do not lap No. 14 or No. 18 bars.
- Lap spiral steel at least 1 turn.
- Splice welded wire fabric using a lap length that includes the overlap of at least 2 cross wires plus 2 in. on each sheet or roll. Splices using bars that develop equivalent strength and are lapped in accordance with Table 5 are permitted.
- For box culvert extensions with less than 1 ft. of fill, lap the existing longitudinal bars with the new bars as shown in Table 3. For extensions with more than 1 ft. of fill, lap at least 1 ft. 0 in.
- Ensure that welded splices conform to the requirements of the plans and of Item 448, “Structural Field Welding.” Field-prepare ends of reinforcing bars if they will be butt-welded. Delivered bars must be long enough to permit weld preparation.
- Install mechanical coupling devices in accordance with the manufacturer’s recommendations at locations shown on the plans. Protect threaded male or female connections, and make sure the threaded connections are clean when making the connection. Do not repair damaged threads.

- Mechanical coupler alternate equivalent strength arrangements, to be accomplished by substituting larger bar sizes or more bars, will be considered if approved in writing before fabrication of the systems.

E. Placing. Unless otherwise shown on the plans, dimensions shown for reinforcement are to the centers of the bars. Place reinforcement as near as possible to the position shown on the plans. In the plane of the steel parallel to the nearest surface of concrete, bars must not vary from plan placement by more than 1/12 of the spacing between bars. In the plane of the steel perpendicular to the nearest surface of concrete, bars must not vary from plan placement by more than 1/4 in. Cover of concrete to the nearest surface of steel must be at least 1 in. unless otherwise shown on the plans.

For bridge slabs, the clear cover tolerance for the top mat of reinforcement is ..0, +1/2 in.

Locate the reinforcement accurately in the forms, and hold it firmly in place before and during concrete placement by means of bar supports that are adequate in strength and number to prevent displacement and to keep the steel at the proper distance from the forms. Support bars by standard bar supports with plastic tips, approved plastic bar supports, or precast mortar or concrete blocks when supports are in contact with removable or stay-in-place forms. Use bright basic bar supports to support reinforcing steel placed in slab overlays on concrete panels or on existing concrete slabs. Bar supports in contact with soil or subgrade must be approved.

For bar supports with plastic tips, the plastic protection must be at least 3/32 in. thick and extend upward on the wire to a point at least 1/2 in. above the formwork. All accessories such as tie wires, bar chairs, supports, or clips used with epoxy-coated reinforcement must be of steel, fully coated with epoxy or plastic. Plastic supports approved by the Engineer may also be used with epoxy-coated reinforcement.

Cast mortar or concrete blocks to uniform dimensions with adequate bearing area. Provide a suitable tie wire in each block for anchoring to the steel. Cast the blocks to the thickness required in approved molds. The surface placed adjacent to the form must be a true plane, free of surface imperfections. Cure the blocks by covering them with wet burlap or mats for a period of 72 hr. Mortar for blocks should contain approximately 1 part hydraulic cement to 3 parts sand. Concrete for blocks should contain 850 lb. of hydraulic cement per cubic yard of concrete.

Place individual bar supports in rows at 4-ft. maximum spacing in each direction. Place continuous type bar supports at 4-ft. maximum spacing. Use continuous bar supports with permanent metal deck forms.

The exposure of the ends of longitudinals, stirrups, and spacers used to position the reinforcement in concrete pipe and in precast box culverts or storm drains is not cause for rejection.

Tie reinforcing steel for bridge slabs, top slabs of direct traffic culverts, and top slabs of prestressed box beams at all intersections, except tie only alternate intersections

where spacing is less than 1 ft. in each direction. For reinforcing steel cages for other structural members, tie the steel at enough intersections to provide a rigid cage of steel. Fasten mats of wire fabric securely at the ends and edges.

Before concrete placement, clean mortar, mud, dirt, debris, oil, and other foreign material from the reinforcement. Do not place concrete until authorized.

If reinforcement is not adequately supported or tied to resist settlement, reinforcement is floating upward, truss bars are overturning, or movement is detected in any direction during concrete placement, stop placement until corrective measures are taken.

F. Handling, Placement, and Repair of Epoxy-Coated Reinforcing Steel.

1. **Handling.** Provide systems for handling coated reinforcement with padded contact areas. Pad bundling bands or use suitable banding to prevent damage to the coating. Lift bundles of coated reinforcement with a strongback, spreader bar, multiple supports, or a platform bridge. Transport the bundled reinforcement carefully, and store it on protective cribbing. Do not drop or drag the coated reinforcement.
2. **Construction Methods.** Do not flame-cut coated reinforcement. Saw or shear-cut only when approved. Coat cut ends as specified in Section 440.3.F.3, “Repair of Coating.”

   Do not weld or mechanically couple coated reinforcing steel except where specifically shown on the plans. Remove the epoxy coating at least 6 in. beyond the weld limits before welding and 2 in. beyond the limits of the coupler before assembly. After welding or coupling, clean the steel of oil, grease, moisture, dirt, welding contamination (slag or acid residue), and rust to a near-white finish. Check the existing epoxy for damage. Remove any damaged or loose epoxy back to sound epoxy coating.

   After cleaning, coat the splice area with epoxy repair material to a thickness of 7 to 17 mils after curing. Apply a second application of repair material to the bar and coupler interface to ensure complete sealing of the joint.
3. **Repair of Coating.** For repair of the coating, use material that complies with the requirements of this Item and ASTM D 3963. Make repairs in accordance with procedures recommended by the manufacturer of the epoxy coating powder. For areas to be patched, apply at least the same coating thickness as required for the original coating. Repair all visible damage to the coating. Repair sawed and sheared ends, cuts, breaks, and other damage promptly before additional oxidation occurs. Clean areas to be repaired to ensure that they are free from surface contaminants. Make repairs in the shop or in the field as required.

00440.4. MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with “Measurement and Basis of Payment” section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

SECTION 00529 – CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER

(Referenced from 2004 TxDOT, ITEM 529 Concrete Curb, Gutter, and Combined Curb and Gutter – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

00529.1. DESCRIPTION.
Construct hydraulic cement concrete curb, gutter, and combined curb and gutter.

00529.2. MATERIALS.
Furnish materials conforming to:

- Item 360, “Concrete Pavement”
- Item 420, “Concrete Structures”
- Item 421, “Hydraulic Cement Concrete”
- Item 440, “Reinforcing Steel.”

Use Class A concrete or material specified in the plans. Use Grade 8 coarse aggregate for extruded Class A concrete. Use other grades if approved by the Engineer.

529.3. CONSTRUCTION. Provide finished work with a well-compacted mass and a surface free from voids and honeycomb, in the required shape, line, and grade. Round exposed edges with an edging tool of the radius shown on the plans. Mix, place, and cure concrete in accordance with Item 420, “Concrete Structures.” Construct joints at locations shown on the plans. Cure for at least 72 hr. Furnish and place reinforcing steel in accordance with Item 440, “Reinforcing Steel.” Set and maintain a guideline that conforms to alignment data shown on the plans, with an outline that conforms to the details shown on the plans.

A. Conventionally Formed Concrete. Shape and compact subgrade, foundation, or pavement surface to the line, grade, and cross section shown on the plans. Lightly sprinkle subgrade or foundation material immediately before concrete placement. Pour concrete into forms, and strike off with a template 1/4 to 3/8 in. less than the dimensions of the finished curb unless otherwise approved. After initial set, plaster surface with mortar consisting of 1 part hydraulic cement and 2 parts fine aggregate. Brush exposed surfaces to a uniform texture.

Place curbs, gutters, and combined curb and gutters in 50-ft. maximum sections unless otherwise approved.

B. Extruded or Slipformed Concrete. Hand-tamp and sprinkle subgrade or foundation material before concrete placement. Provide clean surfaces for concrete placement. If required, coat cleaned surfaces with approved adhesive or coating at the rate of application shown on the plans or as directed. Place concrete with approved self-propelled equipment. The forming tube of the extrusion machine or the form of the slipform machine must be easily adjustable

vertically during the forward motion of the machine to provide variable heights necessary to conform to the established grade line.

Attach a pointer or gauge to the machine so that a continual comparison can be made between the extruded or slipform work and the grade guideline. Other methods may be used when approved.

Finish surfaces immediately after extrusion or slipforming.

00529.4. MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with “Measurement and Basis of Payment” section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

SECTION 00531 – SIDEWALKS

(Referenced from 2004 TxDOT, ITEM 531 Sidewalks – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

00531.1. DESCRIPTION.

Construct hydraulic cement concrete sidewalks.

00531.2. MATERIALS.

Furnish materials conforming to the following:

- Item 360, “Concrete Pavement”
- Item 420, “Concrete Structures”
- Item 421, “Hydraulic Cement Concrete”
- Item 440, “Reinforcing Steel.”

Use Class A concrete or other concrete as specified. Use Grade 8 course aggregate for extruded Class A concrete. Use other grades if approved by the Engineer.

00531.3. CONSTRUCTION.

Shape and compact subgrade, foundation, or pavement surface to the line, grade, and cross-section shown on the plans. Lightly sprinkle subgrade or foundation material immediately before concrete placement. Hand-tamp and sprinkle foundation when placement is directly on subgrade or foundation materials. Remove and dispose of existing concrete in accordance with Item 104, “Removing Concrete.” Provide a clean surface for concrete placement directly on the surface material or pavement. Mix and place concrete in accordance with the pertinent Items. Hand-finishing is allowed for any method of construction. Finish exposed surfaces to a uniform transverse broom finish surface. Curb ramps must include a detectable warning surface and conform to details shown on the plans.

Install joints as shown on the plans. Brush all exposed surfaces to a smooth and uniform surface. Ensure that abrupt changes in sidewalk elevation do not exceed 1/4 inch, sidewalk cross slope does not exceed 2%, curb ramp grade does not exceed 8.3%, and flares adjacent to the ramp do not exceed 10% slope. Where a sidewalk crosses a concrete driveway, ensure that the sidewalk depth and reinforcement are not less than the driveway cross-sectional details shown on the plans.

Provide finished work with a well-compacted mass, a surface free from voids and honeycomb, and the required true-to-line shape and grade. Cure for at least 72 hr. in accordance with Item 420, “Concrete Structures.”

A. **Conventionally Formed Concrete**. Provide sidewalk sections separated by premold or board joint of the thickness shown on the plans in lengths greater than 8 ft. but less than 40 ft., unless otherwise directed. Terminate workday production at an expansion joint.

B. **Extruded or Slipformed Concrete**. Provide any additional surface finishing immediately after extrusion or slip forming as required on the plans. Construct joints at locations as shown on the plans or as directed.

00531.4. MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with “Measurement and Basis of Payment” section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

SECTION 01340 – SUBMITTALS

1.00 GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. The Section specifies the general methods and requirements of submissions applicable to the following work-related submittals in three categories: (1) Shop Drawings, Product Data, and Samples, (2) Construction Photographs and (3) Workmanship Bonds. Detailed submittal requirements are specified in the technical specifications sections.

1.02 SCHEDULE OF VALUES

A. Within fifteen (15) calendar days after award of Contract, the Contractor shall submit to the Engineer a tentative schedule of values (a breakdown of the lump sum bid) for the purpose of developing a schedule of values, which in turn shall be used to determine partial payment estimates.

1. The tentative schedule of values will be reviewed by the Engineer to determine whether, in his judgment, it is sufficiently detailed for the purpose intended. The Engineer will also evaluate the schedule to determine whether, in his judgment, the prices included are unbalanced. Unbalanced schedules will be disallowed.
2. The Engineer will provide the Contractor with his comments and/or may request additional information from the Contractor to justify certain item quantities and prices therefore. On the basis of the Engineer's comments, the Contractor shall revise and resubmit the tentative schedule for further review and/or approval.
3. Once the tentative schedule is approved by the Engineer, it shall become the schedule of values to be used in determining partial payment estimates. Twenty (20) copies of this schedule shall be submitted to the Engineer for distribution and his use.
4. No partial payment request (including the first) shall be made unless the schedule of values has been approved by the Engineer.

B. In so far as possible, total quantities and unit prices shall be shown for all items of work, separating for each item the materials and labor and such other sub-items as the Contractor may desire. "Lump sum", "miscellaneous" and other such general entries in the schedule shall be avoided whenever possible. Such items as bond premiums, temporary facilities and equipment storage may be listed separately in the schedule of values provided the costs can be substantiated. Overhead and profit shall not be listed as separate items.

C. The sum of the items listed on the schedule of values shall equal the contract lump sum price. No additional payment will be allowed if the quantities shown on

the schedule are less than those actually required to accomplish the work, unless the quantities are altered by a change order. This shall not be interpreted as a means by which the contract lump sum price could be diminished.

1.03 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

A. Shop Drawings

1. Shop drawings, as defined in the General Conditions, and as specified in individual work Sections include, but are not necessarily limited to, custom-prepared data such as fabrication and installation drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the Work.
2. Shop drawings for components of a system shall be submitted with all other system components as a complete shop drawing package. Failure to do so will cause rejection of individual submittals.
3. All shop drawings submitted by subcontractors for approval shall be sent directly to the Contractor for preliminary checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
4. All subcontractor's shop drawings submitted by the Contractor shall be checked regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.
5. All details on shop drawings submitted for approval shall show clearly the elevations of the various parts of the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements; such measurements shall be made and noted on the drawings before being submitted for approval.

B. Product Data

1. Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer’s printed statements of compliance and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing, and printed product warranties, as applicable to the work.

C. Samples

1. Samples, as specified in individual Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively- used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the Work.

1.04 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor shall review shop drawings, product data and samples prior to submission to the Engineer to determine and verify the following:

1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.
4. Conformance with the Specifications.

B. Each shop drawing, working drawing, sample and catalog data submitted by the Contractor shall have affixed to it the following Certification Statement, signed by the Contractor: "Certification Statement: By this submittal, 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 checked and coordinated each item with other applicable approved shop drawings and all Contract requirements."

C. Notify the Owner in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.

D. The review and approval of shop drawings, samples or catalog data by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefor.

E. Prequalification of any equipment shall not relieve the Contractor of the responsibility to submit complete shop drawings for the Engineer's review and approval.

F. No portion of the work requiring a shop drawing, working drawing, sample, or catalog data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to

accomplish conformity.

G. Project work, materials, fabrication, and installation shall conform to approved shop drawings, working drawings, applicable samples, and catalog data.

1.05 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other Contractor.

B. Number of submittals required:

1. Shop Drawings: Submit seven copies.
2. Product Data: Submit seven copies.
3. Samples: Submit the number stated in the respective Specification Sections, Submittals shall contain:
    1. The date of submission and the dates of any previous submissions.
    2. The Project title and number.
    3. Contractor identification.
    4. The names of:
        a. Contractor
        b. Supplier
        c. Manufacturer
    5. Identification of the product, with the specification section number.
    6. Field dimensions, clearly identified as such.
    7. Relation to adjacent or critical features of the Work or materials.
    8. Applicable standards, such as ASTM or Federal Specification numbers.
    9. Identification of deviations from Contract Documents.
    10. Identification of revisions on resubmittals.
    11. Two 8-in x 3-in blank spaces for Contractor and Engineer stamps.

1.06 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by the Engineer and resubmit until approved. No submittal will be considered approved until stamped by Contractor and Engineer.

B. Shop Drawings and Product Data:
1. Revise initial drawings or data, and resubmit as specified for the initial submittals,
2. Indicate any changes which have been made other than those requested by the Engineer.

C. Samples: Submit new samples as required for initial submittal.

1.07 DISTRIBUTION

A. Distribute reproductions of approved shop-drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. Number of copies shall be as directed by the Engineer but shall not exceed seven.

1.08 CONSTRUCTION PHOTOGRAPHS

A. The term “photograph” as used herein refers to a photographic view, including similar exposures taken to assure the usefulness of the photographic record, All photographs shall be taken in color, not black and white.

B. The Contractor shall have ten (10) photographs of the existing site taken prior to start of construction. The same views shall be rephotographed upon completion of all construction activities.

C. The Contractor shall have an average of four (4) photographs per month made of the work during its progress and they shall be submitted with each pay estimate and ten (10) photographs of the completed facilities, in addition those required above in paragraph B The photographs shall be of such views and taken at such times as the Engineer directs.

D. Prior to construction of additions to existing structures, there shall be taken for each existing structure a minimum of three (3) photographs to be used for indicating the condition of existing structure. These photographs shall be in addition to those specified above.

E. Three prints of each photograph shall be furnished promptly to the Engineer, and each print shall have a glossy finish and be mounted on a substantial backing. The overall dimensions of each mounted print shall be 8-in x 10-in with 1-1/4-in flexible binding margin on the short left hand side.

F. The film negatives shall be retained until the completion of the project and shall then be turned over to the Engineer.

G. Each photograph shall have attached to the backing a paper label, approximately 2-l/4-in wide by l-3/4-in high containing thereon in neat lettering:

   1. Contractor's name.
   2. Short Description of View.
   3. Photo No. and Date Taken.

1.9 GENERAL PROCEDURES FOR SUBMITTALS

A. Coordination of Submittal Times: Prepare and transmit each submittal

sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

1.10 WORKMANSHIP BONDS

A. Where specific units of work require the issuance of a bond or similar provision, as a means of assuring the Owner that certain possible failures of the work to perform as represented will be rectified at someone else's expense, submit fully executed bond backed by a surety company acceptable to the Owner and in the principal amount indicated. Include information sheet for the Owner's maintenance/operating personnel outlining proper procedures in case of failure or other instances which might affect the validity of the bond; list names, addresses and telephone numbers for the Owner's emergency and follow-up in connection with implementation of each bond.

1.11 INCLUSION OF SUBMITTALS, SPARE PARTS AND SPECIAL TOOLS

A. The submittals of shop drawings, product data, samples and workman-ship bonds as required in this Section and the Technical Sections of these Specifications, and the operation and maintenance manuals and special tools and spare parts as required, shall be considered as integral parts of the equipment for which they are required. No partial payments nor payments for materials on hand will be made for any materials or equipment which require submission of shop drawings and/or operation and maintenance manuals, unless such submittals have been made, and the Engineer has found them acceptable. No final payment will be made until all required shop drawings, operation and maintenance manuals. Special tools, accessories and spare parts have been submitted to the Engineer or delivered to the Owner, as is appropriate.

1.12 REPETITIVE REVIEW

A. Shop drawings and O&M manuals submitted for each item will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at times convenient to the Engineer and at the Contractor's expense, based on the Engineer's then prevailing rates. The Contractor shall reimburse the Owner for all such fees invoiced to the Owner by the Engineer.

B. Any need for more than one resubmission, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to extension of the Contract Time unless delay of the Work is directly caused by failure of Engineer to return into the mails any submittal within 21 days after its receipt in his office.

1.13 PAYMENT

A. The work specified in this Section shall be considered incidental and payment will be included as part of the appropriate lump sum or unit prices stated in the Proposal.

END OF SECTION

SECTION 01568 - EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

1.00 GENERAL

1.01 WORK INCLUDED

Furnish labor, materials, equipment and incidentals necessary to provide erosion and sediment control for the duration of the construction period including furnishing, installing and maintaining erosion and sediment control structures and procedures and the proper removal when no longer required.

The intent of this specification is to provide guidelines for the Contractor to adhere to all State, Federal, and Local environmental regulations. It is also the intent to provide preventive measures to keep sediment from entering any storm water system, including open channels. It is the Contractor's responsibility to adhere to all State, Federal and Local requirements. While the Owner may require the Contractor to install erosion control devices during construction, this will in no way relieve the Contractor of his responsibility.

1.02 QUALITY ASSURANCE

A. Comply with applicable requirements of all governing authorities having jurisdiction. The Specifications and the Plans are not represented as being comprehensive, but rather to convey the intent to provide complete slope protection and erosion control for both the Owner's and adjacent property.

B. Erosion control measures shall be established at the beginning of construction and maintained during the entire length of construction. On-site areas which are subject to severe erosion and off-site areas which are especially vulnerable to damage from erosion and/or sedimentation are to be identified and receive additional erosion control measures as directed by the Owner or the Engineer.

C. All land-disturbing activities shall be planned and conducted to minimize the size of the area to be exposed at any one time and to minimize the time of exposure.

D. Surface water runoff originating upgrade of exposed area shall be controlled to reduce erosion and sediment loss during the period of exposure.

E. When the increase in the peak rates and velocity of storm water runoff resulting from a land-disturbing activity is sufficient to cause accelerated erosion of the receiving ditch or stream, the Contractor shall install measures to control both the velocity and rate of release so as to minimize accelerated erosion and increased sedimentation of the stream as directed by the Owner or the Engineer.

F. All land-disturbing activities shall be planned and conducted so as to minimize off-site sedimentation damage.

G. The Contractor shall be responsible for periodically cleaning out and disposing of all sediment once the storage capacity of the drainage feature or structure receiving the sediment is reduced by one-half. The Contractor shall also be responsible for cleaning out and disposing of all sediment at the time of completion of the Work.

1.03 SUBMITTALS

1.04 STANDARDS

1.05 DELIVERY AND STORAGE [Not Used]

1.06 JOB CONDITIONS; CODES AND ORDINANCES

Comply with the local codes and ordinances. If local codes and ordinances require more stringent or additional erosion and sediment control measures during construction, Contractor shall provide such measures.

1.07 OPTIONS

1.08 GUARANTEES

2.00 PRODUCTS

2.01 MATERIALS

A. STRAW BALES: Straw bales shall weigh a minimum of fifty (50) pounds and shall be at least 30" in length. Bales shall be composed entirely of vegetable matter and be free of seeds. Binding shall be wire or nylon string, jute or cotton binding is unacceptable. Bales shall be used for not more than three months before being replaced. However, if weather conditions cause biological degradation of the straw bales, they shall be replaced sooner than the three month time period to prevent a loss of structural integrity of the dike.

B. SILT FENCE: Silt fence fabric shall be nylon reinforced polypropylene fabric which has a built-in cord running the entire length of the top edge of the fabric. The fabric must meet the following minimum criteria:

Tensile Strength, ASTM D4632	90 lbs.,
Puncture Rating, ASTM D4833	60 lbs.,
Mullen Burst Rating, ASTM D3786	200 psi,
Apparent Opening Size, U.S. Sieve No. 40	

Silt fence shall be "Enviro Fence" preassembled silt fence, AMXCO Silt Stop prefabricated silt fence, AMOCO Style 2155 preassembled silt fence or approved equal.

C. SILT FENCE POSTS: A minimum 2" x 2" (nominal) x 54" pressure treated wood posts of Number 2 Grade southern yellow pine or approved equal.

D. SAND BAG: Sand bag material shall be polypropylene, polyethylene, polyamide or cotton burlap woven fabric, minimum unit weight four (4) ounces per square yard, mullen burst strength exceeding 300 psi and ultraviolet stability exceeding 70%. Length shall be 24 to 30 inches, width shall be 16 to 18 inches and thickness shall be six (6) to eight (8) inches and having an approximate weight of 40 pounds. Sand bags shall be filled with coarse grade sand, free from deleterious material. All sand shall pass through a No. 10 sieve.

E. P.V.C. PIPE: Pipe shall be SDR-35 polyvinyl chloride having a minimum nominal internal diameter of 4". Pipes shall be sized for anticipated flows.

F. SOIL RETENTION BLANKET: Soil retention blankets shall consist of a geocomposite of excelsior or fiber blanket with an extruded plastic net attached to the tope side. The plastic net shall be photodegradable and the excelsior or fiber blanket shall be made smolder resistant without the use of chemicals. Soil retention blankets shall be high velocity type to resist severe runoff. The soil retention blanket shall be one (1) of the following classes and types:

1. Class 1. "Slope Protection"
   (a) Type A. Slopes of 3:1 or flatter - Clay soils
   (b) Type B. Slopes of 3:1 or flatter - Sandy soils
   (c) Type C. Slopes steeper than 3:1 - Clay soils
   (d) Type D. Slopes steeper than 3:1 - Sandy soils

2. Class 2. "Flexible Channel Liner"
   (a) Type E. Short-term duration (Up to 2 Years)
   Shear Stress (t_D)< 1.0 lb./sq. ft.
   (b) Type F. Short-term duration (Up to 2 Years)
   Shear Stress (t_d) 1.0 to 2.0 lb./sq. ft.
   (c) Type G. Long-term duration (Longer than 2 Years)
   Shear Stress (t_d) > 2.0 to < 5.0 lb./sq. ft.
   (d) Type H. Long-term duration (Longer than 2 Years)
   Shear Stress (t_d) greater than 0 Equal to 5.0 lb./sq. ft.

The Contractor has the option of selecting an approved soil retention blanket provided that selection conforms to the following list of approved soil retention blankets for slope protection applications:

CLASS I. SLOPE PROTECTION

TYPE A: Slopes of 3:1 or Flatter-Clay Soils
Airtrol® ANTI-WASH®/GEOJUTE® (Regular)
Contech Standards®

Contech Standards Plus®
Green Triangle Regular®
Green Triangle Superior®
GREENSTREAK® PEC MAT
Curlex®
North American Green® S150
North American Green® S75
North American Green® SC150
POLYJUTEÔ 407/GT
SOIL SAVER®
TerraJute®
Verdyol® ERO-MAT®
Xcel Regular®
Xcel Superior®

TYPE B: Slopes of 3:1 or Flatter-Sandy Soils
Contech Standards®
Contech Standards Plus®
GEOCOIR®/DEKOWE® 700
Green Triangle Superior®
Green Triangle Regular®
North American Green® S75
North American Green® SC150
North American Green® S150
POLYJUTEÔ 407/GT
TerraJute®
Verdyol® ERO-MAT®
Xcel Superior®
Xcel Regular®

TYPE C: Slopes Steeper than 3:1-Clay Soils
Airtrol®
ANTI-WASH®/GEOJUTE® (Regular)
Contech Standards Plus®
Curlex®
Green Triangle Superior®
GREENSTREAK® PEC-MAT
North American Green® SC150
North American Green® S150
POLYJUTEÔ 407/GT
SOIL SAVER®
TerraJute®
Xcel Superior®

TYPE D: Slopes Steeper than 3:1-Sandy Soils
Contech Standards Plus®

GEOCOIR®/DEKOWE® 700
Green Triangle Superior®
North American Green® S150
North American Green® SC150
POLYJUTEÔ 407GT
TerraJute®
Xcel Superior®

CLASS II: FLEXIBLE CHANNEL LINER PROTECTION

2.02 MIXES [Not Used]

2.03 FABRICATIONS [Not Used]

2.04 MANUFACTURED PRODUCTS [Not Used]

3.00 EXECUTION

3.01 PREPARATION

3.02 INSTALLATION

A. TEMPORARY STRAW BALE DIKE

1. Straw bales shall be embedded a minimum of 4" and securely anchored using 2" x 2" wood stakes driven through the bales into the ground a minimum of 6". Straw bales are to be placed directly adjacent to one another leaving no gap between them.
2. Bales shall be placed in a single row, lengthwise on proposed line, with ends of adjacent bales tightly abutting one another. In swales and ditches, the barrier shall extend to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale. Additional bales shall be placed behind the first row where the bales abut each other. The additional bale is used to prevent unfiltered runoff from escaping between the bales.
3. The excavated soil shall be backfilled against the barrier. Backfill shall conform to ground level on the downhill side and shall be built up to 4" above ground level on the uphill side. Loose straw shall be scattered over the area immediately uphill from a straw barrier.

B. SILT FENCE

The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas to a limited extent. The Contractor shall excavate a 6" by 6" trench for site fence bedding along the lower perimeters of the site where necessary to prevent sediment from entering any drainage system. The Contractor shall install the silt fence in accordance with the manufacturer's recommendations and

instructions. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence shall remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way or where soil conditions prevent a minimum toe-in depth of 6" or installation of support post to depth of 12". Fabric shall overlap at abutting ends a minimum of 3' and shall be jointed such that no leakage or bypass occurs. If concentrated flow occurs after installation, corrective action must be taken such as placing rock berm in the areas of concentrated flow.

C. SAND BAG BERM

1. The purpose of a sandbag berm is to intercept sediment-laden water from disturbed areas such as construction in steam beds, create a retention pond, detain sediment and release water in sheet flow.
2. A temporary sand bag bern shall be installed across a channel or right of way in a developing or disturbed area and should be used when the contributing drainage area is greater than 5 acres. The berm shall be a minimum height of 18", measured from the top of the existing ground at the upslope toe to the top of the berm. The berm shall be sized to have a minimum width of 48" measured at the bottom of the berm and 18" measured at the top of the berm.
3. The sand bag berm shall be inspected after each rain. The sand bags shall be reshaped or replaced as needed during inspection. Additional inspections shall be made daily by the responsible party and when the silt reaches 6", the accumulated silt shall be removed and disposed of at an approved site in a manner that will not contribute to additional siltation. The sand bag berm shall be left in place until all upstream areas are stabilized and accumulated silt removed; removal must be done by hand.

D. SOIL RETENTION BLANKETS

1. A soil retention blanket (SRB) is a geotextile or biodegradable fabric placed over disturbed areas to limit the effects of erosion due to rainfall impact and runoff across barren soil. Soil retention blankets are manufactured by a wide variety of vendors addressing a wide variety of conditions such as vegetation establishment and high velocity flow. Blankets are used in areas which are difficult to stabilize such as steep slopes, drainage swales or high pedestrian traffic areas.
2. The soil retention blanket, whether installed as slope protection or as flexible channel liner, shall be placed within 24 hours after seeding or sodding operations have been completed, or as approved by the Engineer. Prior to placing the blanket, the area to be covered shall be relatively free of all rocks or clods over 1-1/2" in maximum dimension and all sticks or other foreign material which will prevent the close contact of the blanket with the soil. The area shall be smooth and free of ruts and other depressions. If as a result of rain, the prepared bed becomes crusted or eroded or if any eroded places, ruts or

depressions exist for any reason, the Contractor shall be required to rework the soil until it is smooth and to reseed or resod the area at the Contractor's expense.

Installation and anchorage of the soil retention blanket shall be in accordance with the manufacturer's recommendations.

E. PROTECTION OF BARE AREAS

1. Apply seeding and soil retention blanket to bare areas including new embankment areas, fills, stripped areas, graded areas or otherwise disturbed areas, which have a grade greater than 5% or which will be exposed for more than 30 days.
2. Bare working areas on which it is not practical or desirable to install seeding and soil retention blankets, as determined by the Engineer, such as areas under proposed building slabs, shall be temporarily sloped to drain at a minimum of 0.2% and a maximum of 5% grade. These areas shall then be "trackwalked" with a crawler dozer traveling up and down the slope to form the effect of small "terraces" with the tracks of the dozer. Apply a minimum of three (3) coverages to each area with the dozer tracks.
3. Route runoff from the areas through the appropriate silt fence system.
4. Protect earth spoil areas by "trackwalking" and silt fences.

F. INTERCEPTOR SWALE

1. Interceptor swales may have a v-shape or be trapezoidal with a flat bottom and side slopes of 3:1 or flatter. These are used to shorten the length of exposed slope by intercepting runoff and can also serve as perimeter swales preventing off-site runoff from entering the disturbed area or prevent sediment-laden runoff from leaving the construction site or disturbed area. The outflow from a swale must be directed to a stabilized outlet or sediment trapping device. The swales should remain in place until the disturbed area is permanently stabilized.
2. Stone Stabilization shall be used when grades exceed 2% or velocities exceed 6' per second and shall consist of a layer of crushed stone 3" thick, or flexible channel liner soil retention blankets. Stabilization shall extend across the bottom of the swale and up both sides of the channel to minimum height of 3" above the design water surface elevation based on a two year storm.
3. Interceptor swale shall be installed across exposed slopes during construction and should intercept no more than five (5) acres of runoff. Swales shall have a minimum bottom width of 2'-0" and a maximum depth of 1'-6" with side slopes of 3:1 or flatter. Swale must have positive drainage for its entire length to an outlet. When the slope exceeds 3%, or velocities exceed 4' per second (regardless of slope), stone stabilization is required. Check dams are also recommended to reduce velocities in the swales possibly reducing the amount of stabilization necessary. Swales should be inspected on a weekly basis during wet weather and repairs should be made promptly to maintain a consistent cross section.

4. All trees, brush, stumps, obstructions and other material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
5. The swale shall be excavated or shaped to line, grade, and cross-section as required to meet criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. All earth removed and not needed in construction shall be disposed of in an approved spoils site so that it will be conveyed to a sediment trapping device.
7. Diverted runoff from a disturbed or exposed upland area shall be conveyed to a sediment trapping device.
8. The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.
9. Minimum compaction for the swale shall be 90% standard proctor.

G. LOCATION OF EROSION AND SEDIMENT CONTROL STRUCTURES

1. Locate erosion and sediment control structures as required to prevent erosion and removal of sediment from the project site. Silt fences shall be required for disturbed areas and soil stockpiles/spoil areas. Each silt fence installation shall have a minimum net length (exclusive of embedments into diversion dikes or other ineffective areas) of 25'. The runoff from a maximum of one (1) acre of disturbed area or soil stockpile/ spoil area shall be routed through any individual silt fence installation.
2. Install diversion dikes to divert runoff to the silt fence installation.
3. Install silt traps at the inlet (upstream) end of the drainage structures, including open channels, through which runoff from disturbed areas or soil stockpiles/spoil areas may drain.
4. Provide an overall erosion and sediment control system which protects disturbed areas and soil stockpiles/spoil areas. The system shall be modified by the Contractor from time to time to effectively control erosion and sediment during construction.

3.03 MAINTENANCE

A. Maintain erosion and sediment control structures and procedures in full working order at all times during construction. This shall include any necessary repair or replacement of items which have become damaged or ineffective. Remove sediment on a regular basis which accumulates in sediment control devices and place the material in approved earth spoil areas or return the material to the area from which it eroded.

B. Upon completion of construction, properly remove the temporary erosion and sediment control structures and complete the area as indicated.

C. Soil retention blankets will not require removal if installed on a finished graded area specified to receive seeding.

3.04 FIELD QUALITY CONTROL

In the event of conflict between the requirements and storm water pollution control laws, rules or regulations or other Federal, State or Local agencies, the more restrictive laws, rules or regulations shall apply.

3.05 CLEAN AND ADJUST [Not Used]

PART 4 - MEASUREMENT AND PAYMENT

4.01 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

SECTION 02102 CLEARING AND GRUBBING

CONDITIONS OF THE CONTRACT AND DIVISION I, as applicable, apply to this Section.

PART 1 –GENERAL

1.1 SECTION INCLUDES

A. Protecting and preserving trees and vegetation designated to remain.

B. Clearing of site, including, but not limited to the removal of trees, shrubs, and vegetation which is not designated to remain, and brush, branches, logs, rock, debris, rubbish and other objectionable material from the entire project area.

C. Grubbing of site, including, but not limited to uprooting and removal of all stumps, roots, other organics, etc. to their full depth from the project area and disking to a depth of nine (9) inches.

D. Removal and legal, satisfactory disposal of all material cleared and grubbed from the site.

1.2 PAYMENT

A. No separate measurement or payment will be made for materials and labor performed under this section. Include all costs in the lump sum price.

PART 2 - PRODUCTS [Not Used]

PART 3 - EXECUTION

3.1 CONDITIONS AT SITE

A. Execute all work in an orderly and careful manner with due consideration for any and all surrounding areas, planting or structures which are to remain. Periodically, water as required to allay dust and dirt. Protect any adjacent property and improvements from damage and replace any portions damaged through this operation.

B. Coordinate and comply with the following:
   1. Geotechnical Report.
   2. Local ordinances and requirements of authorities having jurisdiction.

C. The Contractor shall take proper precautions to protect adjacent or adjoining property from damage caused by clearing and grubbing activities. All damage shall be repaired or replaced at Contractor's expense.

D. The Contractor shall be responsible for obtaining all permits required by State and local governing agencies.

3.2 DISPOSAL OF MATERIAL

A. Cleared material becomes the property of the Contractor and shall be legally and satisfactorily removed and disposed of off-site. On-site burning will not be permitted

3.3 FINAL SITE PREPARATION

A. Remove all rubbish, etc., resulting from work of this section from site.

B. After clearing, grubbing and discing the project site, rake and pick the entire site to remove all debris material.

END OF SECTION

02210 – SUBGRADE PREPARATION (LIME TREATED)

(Referenced from 2004 TxDOT, ITEM 260 Lime Treatment (Road-Mixed) – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

260. Description. Mix and compact lime, water, and subgrade or base (with or without asphaltic concrete pavement) in the roadway.

260.2. Materials. Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications. Notify the Engineer of the proposed material sources and of changes to material sources. Obtain verification from the Engineer that the specification requirements are met before using the sources. The Engineer may sample and test project materials at any time before compaction. Use Tex-100-E for material definitions.

A. Lime. Furnish lime that meets the requirements of DMS-6350 "Lime and Lime Slurry," and DMS-6330, "Lime Sources Prequalification of Hydrated Lime and Quicklime." Use hydrated lime, commercial lime slurry, or quicklime, as shown on the plans. When furnishing quicklime, provide it in bulk.

B. Flexible Base. Furnish base material that meets the requirements of Section 02601, "Flexible Base," for the type and grade shown on the plans, before the addition of lime.

C. Water. Furnish water free of industrial wastes and other objectionable material.

D. Asphalt. When asphalt or emulsion is permitted for curing purposes, furnish materials that meet the requirements of Section 02577, "Asphalts, Oils, and Emulsions," as shown on the plans or as directed.

E. Mix Design. The Engineer will determine the target lime content and optimum moisture content in accordance with Tex-121-E or prior experience with the project materials. The Contractor may propose a mix design developed in accordance with Tex-121-E. The Engineer will use Tex-121-E to verify the Contractor's proposed mix design before acceptance. Reimburse the Department for subsequent mix designs or partial designs necessitated by changes in the material or requests by the Contractor. When treating existing materials, limit the amount of asphalt concrete pavement to no more than 50% of the mix unless otherwise shown on the plans or directed.

260.3. Equipment. Provide machinery, tools, and equipment necessary for proper execution of the work. Provide rollers in accordance with Section 00210, "Rolling." Provide proof rollers in accordance with Section 00216, "Proof Rolling," when required.

A. Storage Facility. Store quicklime and dry hydrated lime in closed, weatherproof containers.

B. Slurry Equipment. Use slurry tanks equipped with agitation devices to slurry hydrated lime or quicklime on the project or other approved location. The Engineer may approve other slurrying methods.

Provide a pump for agitating the slurry when the distributor truck is not equipped with an agitator. Equip the distributor truck with a sampling device in accordance with Tex-600-J, Part I, when using commercial lime slurry.

C. Pulverization Equipment. Provide pulverization equipment that:

- cuts and pulverizes material uniformly to the proper depth with cutters that plane to a uniform surface over the entire width of the cut,
- provides a visible indication of the depth of cut at all times, and
- uniformly mixes the materials.

260.4. Construction. Construct each layer uniformly, free of loose or segregated areas, and with the required density and moisture content. Provide a smooth surface that conforms to the typical sections, lines, and grades shown on the plans or as directed.

A. Preparation of Subgrade or Existing Base for Treatment. Before treating, remove existing asphalt concrete pavement when shown on the plans or as directed. Shape existing material in accordance with applicable bid items to conform to typical sections shown on the plans and as directed.

When shown on the plans or directed, proof roll the roadbed in accordance with Section 00216, “Proof Rolling,” before pulverizing or scarifying existing material. Correct soft spots as directed.

When new base material is required to be mixed with existing base, deliver, place, and spread the new material in the required amount per station. Manipulate and thoroughly mix new base with existing material to provide a uniform mixture to the specified depth before shaping.

B. Pulverization. Pulverize or scarify existing material after shaping so that 100% passes a 2-1/2-in. sieve. If the material cannot be uniformly processed to the required depth in a single pass, excavate and windrow the material to expose a secondary grade to achieve processing to plan depth.

C. Application of Lime. Uniformly apply lime using dry or slurry placement as shown on the plans or as directed. Add lime at the percentage determined in Section 260.2.E, “Mix Design.” Apply lime only on an area where mixing can be completed during the same working day.
Start lime application only when the air temperature is at least 35°F and rising or is at least 40°F. The temperature will be taken in the shade and away from artificial heat. Suspend application when the Engineer determines that weather conditions are unsuitable.

Minimize dust and scattering of lime by wind. Do not apply lime when wind conditions, in the opinion of the Engineer, cause blowing lime to become dangerous to traffic or objectionable to adjacent property owners. When pebble grade quicklime is placed dry, mix the material and lime thoroughly at the time of lime application. *Use of quicklime can be dangerous. Inform users of the recommended precautions for handling and storage.*

1. **Dry Placement.** Before applying lime, bring the prepared roadway to approximately optimum moisture content. When necessary, sprinkle in accordance with Section 00204, "Sprinkling." Distribute the required quantity of hydrated lime or pebble grade quicklime with approved equipment. Only hydrated lime may be distributed by bag. Do not use a motor grader to spread hydrated lime.
2. **Slurry Placement.** Provide slurry free of objectionable materials, at or above the approved minimum dry solids content, and with a uniform consistency that will allow ease of handling and uniform application. Deliver commercial lime slurry to the jobsite or prepare lime slurry at the jobsite or other approved location by using hydrated lime or quicklime, as specified.

   Distribute slurry uniformly by making successive passes over a measured section of roadway until the specified lime content is reached. Uniformly spread the residue from quicklime slurry over the length of the roadway being processed, unless otherwise directed.

D. Mixing. Begin mixing within 6 hours of application of lime. Hydrated lime exposed to the open air for 6 hours or more between application and mixing, or that experiences excessive loss due to washing or blowing, will not be accepted for payment.

Thoroughly mix the material and lime using approved equipment. Allow the mixture to mellow for 1 to 4 days, as directed. When pebble grade quicklime is used, allow the mixture to mellow for 2 to 4 days, as directed. Sprinkle the treated materials during the mixing and mellowing operation, as directed, to achieve adequate hydration and proper moisture content. After mellowing, resume mixing until a homogeneous, friable mixture is obtained.

After mixing, the Engineer will sample the mixture at roadway moisture and test in accordance with Tex-101-E, Part III, to determine compliance with the gradation requirements in Table 1.

Table 1 Gradation Requirements (Minimum % Passing)

Sieve Size	Base	Subgrade
1-3/4 in.	100	100
3/4 in.	85	85
No. 4	–	60

E. Compaction. Compact the mixture using density control, unless otherwise shown on the plans. Multiple lifts are permitted when shown on the plans or approved. Bring each layer to the moisture content directed. When necessary, sprinkle the treated material in accordance with Section 00204, “Sprinkling.” Determine the moisture content of the mixture at the beginning and during compaction in accordance with Tex-103-E.

Begin rolling longitudinally at the sides and proceed toward the center, overlapping on successive trips by at least one-half the width of the roller unit. On super elevated curves, begin rolling at the low side and progress toward the high side. Offset alternate trips of the roller. Operate rollers at a speed between 2 and 6 MPH, as directed. Rework, recompact, and refinish material that fails to meet or that loses required moisture, density, stability, or finish before the next course is placed or the project is accepted. Continue work until specification requirements are met. Rework in accordance with Section 260.4.F, “Reworking a Section.” Perform the work at no additional expense to the Department.

1. **Ordinary Compaction.** Roll with approved compaction equipment, as directed. Correct irregularities, depressions, and weak spots immediately by scarifying the areas affected, adding or removing treated material as required, reshaping, and recompacting.
2. **Density Control.** The Engineer will determine roadway density of completed sections in accordance with Tex-115-E. The Engineer may accept the section if no more than 1 of the 5 most recent density tests is below the specified density and the failing test is no more than 3 pcf below the specified density.
   a. **Subgrade.** Compact to at least 95% of the maximum density determined in accordance with Tex-121-E, unless otherwise shown on the plans.
   b. **Base.** Compact the bottom course to at least 95% of the maximum density determined in accordance with Tex-121-E, unless otherwise shown on the plans. Compact subsequent courses treated under this Item to at least 98% of the maximum density determined in accordance with Tex-121-E, unless otherwise shown on the plans.

F. Reworking a Section. When a section is reworked within 72 hours after completion of compaction, rework the section to provide the required density. When a section is reworked more than 72 hr. after completion of compaction, add additional lime at 25% of the percentage determined in Section 260.2.E, “Mix Design.” Reworking includes loosening, adding material or removing unacceptable material if necessary, mixing as directed, compacting, and finishing. When density control is specified, determine a new maximum density of the reworked material in accordance with Tex-121-E, and compact to at least 95% of this density or as shown on the plans.

G. Finishing. Immediately after completing compaction of the final course, clip, skin, or tight-blade the surface of the lime-treated material with a maintainer or subgrade trimmer to a depth of approximately 1/4 in. Remove loosened material

and dispose of at an approved location. Roll the clipped surface immediately with a pneumatic tire roller until a smooth surface is attained. Add small amounts of water as needed during rolling. Shape and maintain the course and surface in conformity with the typical sections, lines, and grades shown on the plans or as directed.

Finish grade of constructed subgrade in accordance with Section 132.3.F.1, "Grade Tolerances." Finish grade of constructed base in accordance with Section 02601.4.D, "Finishing."

H. Curing. Cure for the minimum number of days shown in Table 2 by sprinkling in accordance with Section 00204, "Sprinkling," or by applying an asphalt material at a rate of 0.05 to 0.20 gal. per square yard as directed. Maintain moisture during curing. Upon completion of curing, maintain the moisture content in accordance with Article 132.3E, "Maintenance of Moisture and Reworking" for subgrade and Article 247.4E, "Curing" for bases prior to placing subsequent courses. Do not allow equipment on the finished course during curing except as required for sprinkling, unless otherwise approved. Apply seals or additional courses within 14 calendar days of final compaction.

Table 2 Minimum Curing Requirements before Placing Subsequent Courses[1]

Untreated Material	Curing (Days)
PI ≤ 35	2
PI > 35	5

260.5 MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

SECTION 02580 - STORM SEWER STRUCTURES

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. This work shall consist of furnishing and installing appurtenances except manholes, for storm sewers in accordance with details on the plans, as specified herein, and as directed by the ENGINEER.

B. The various types of structures such as inlets, headwalls, energy dissipators, etc. are designated on the plans by letters or by numbers indicating the particular design of each. Each type shall be constructed in accordance with the details indicated and to the depth required by the profiles and schedules given.

PART 2 - PRODUCTS

2.01 GENERAL:

A. The construction plans will specify the size and material for the pipe between the storm sewer main and structure.

B. The various types of storm inlets and their relation to curb and gutter, or valley gutter, are shown on the plan details. Construction plans will identify the type to be constructed.

C. Grating size, material, and configuration shall conform to the plan details.

2.02 MATERIALS:

A. Concrete
   1. Concrete for cast-in-place structures shall be Class A concrete.
   2. Concrete for precast structures shall be 4000 psi at 28 days and comply with the applicable requirements of ASTM C 478.

B. Mortar:
   1. Mortar shall be composed of 1 part Portland Cement and 2 parts clean, sharp mortar sand suitably graded for the purpose by conforming in other respects to the provisions of Section 03300 - Cast In Place Concrete for fine aggregate.
   2. Hydrated lime or lime putty may be added to the mix, but in no case shall it exceed 10 percent by weight of the total dry mix.

C. Reinforcement:
   Reinforcing Steel shall conform to Section 03330 - Cast -In-Place Concrete.

D. Brick:
   1. Bricks shall be of first quality, sound, hard-burned brick. Shale bricks, if used, shall be homogeneous, thoroughly and uniformly burned.
   2. Bricks shall not absorb more than 17 percent of water by weight submerged in water for 24 hours, having been in a completely dry state prior to placing in water.
   3. Clay brick shall conform to the requirements of ASTM C 62, Grade SW. Concrete brick meeting the requirements of ASTM C 55, Grade A, shall be acceptable.

E. Concrete Block:
   Concrete blocks shall conform to ASTM C 139.

F. Frames, Grates, Rings and Covers:
   Frames, grates, rings and covers shall conform to Section 02571 - Sanitary and Storm Sewers.

G. Miscellaneous Items:
   Cast iron for supports, steps and inlet units shall conform to the shape and dimensions indicated. The casting shall be clean and perfect, free from sand or blow holes or other defects. Cast iron casting shall meet the requirements of ASTM A 48, Class 30. Steel for temporary covers when used with Stage Construction shall be adequate for the trench loads imposed.

PART 3 - EXECUTION

3.01 INSTALLATION OF DRAINAGE FACILITIES:

A. Excavation and backfilling for the storm inlet shall be accomplished in accordance with Section 02218.

B. Trenching, backfilling, and compaction for the connecting pipe between the storm sewer main and the storm inlet shall conform to the specifications contained in Section 02221 - Trench Excavation and Compaction. Pipe shall be installed in accordance with Section 02571 - Sanitary and Storm Sewers.

C. All pipe and structures shall be installed per location and elevations, as shown on the construction plans. If an underground obstruction is encountered during installation (i.e., existing utility line), the work shall stop and the ENGINEER shall be immediately notified.

D. Direct connection to a storm sewer main will be permitted if:

Connecting Line	Sewer Main
Not more than 12" (I.D.)	Not less than 36" (I.D.)
Not more than 18" (I.D.)	Not less than 48" (I.D.)

For connecting lines sized greater than those specified above, the connection to the main will be made with a manhole or a factory constructed wye. Connection to the main will comply with the plan details.

E. Removal of curb and gutter, and sidewalk for installation of a storm inlet shall be made at a scored or full depth joint.

F. Existing pavement removal and replacement shall conform to Section 02571 - Sanitary and Storm Sewers and shall conform to residential or arterial pavement sections of the same material (asphalt or Portland Cement concrete) as the existing pavement.

G. No width greater than 1/2 inch will be permitted between the inlet grate and the inlet frame.

H. Private drainage facility installations, which are to be constructed under an authorization of "Drainage Facilities within Public Right-of-Way," shall comply with the standard details and specifications.

I. The construction of inlets shall be completed as soon as is practical after storm sewer lines are connected to the inlet. All storm sewers shall be cut neatly at the inside face of the walls of the inlet and pointed up with mortar.

J. Bases for cast-in-place inlets may be placed prior to or at the CONTRACTOR'S option after the sewer is constructed.

K. The inverts passing out of or through an inlet shall be shaped and grouted across the floor of the inlet as indicated. This shaping may be accomplished by adding shaping mortar or concrete after the base is cast or by placing the required additional shaping material with the base.

L. All miscellaneous storm sewer structures shall be completed in accordance with the plan details. Backfilling to original ground elevation shall be in accordance with the provisions of the appropriate items and as directed by the ENGINEER.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. Pavement removal and repair will be measured by the square yard.

B. Trench excavation, backfill, and compaction will not be measured nor paid, but will be considered incidental work to the appropriate items.

C. Frame, grates, rings and covers will not be measured or paid, but will be considered incidental work to the appropriate items.

D. Connecting pipe shall be measured in accordance with Section 02571 - Sanitary and Storm Sewers (4.01.B).

E. Storm sewer inlets shall be measured per each for the type and size specified.

F. All miscellaneous storm sewer structures satisfactorily completed in accordance with the plans and specifications will be measured per each complete unit.

4.02 PAYMENT:

A. The accepted quantities of pavement removal and repair shall be paid for at the contract unit price per square yard per type of repair.

B. The accepted quantities of connecting pipe shall be paid in accordance with Section 02571 - Sanitary and Storm Sewers (4.02.A.1).

C. The accepted quantities of storm inlets will be paid at the contract unit price per each per type of storm inlet, and shall include: the contract structure, grating, excavation, backfilling and compaction, and curb removal and replacement.

D. The accepted quantities of complete special storm sewer structures shall be paid at the unit price per each.

E. Compensation, whether by contract pay item or incidental work, will be for furnishing all material, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

SECTION 02601 – FLEXIBLE BASE

(Referenced from 2004 TxDOT, ITEM 247 Flexible Base – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

02601.1. Description. Construct a foundation course composed of flexible base.

02601.2. Materials. Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications. Notify the Engineer of the proposed material sources and of changes to material sources. The Engineer may sample and test project materials at any time before compaction throughout the duration of the project to assure specification compliance. Use Tex-100-E material definitions.

A. **Aggregate.** Furnish aggregate of the type and grade shown on the plans and conforming to the requirements of Table 1. Each source must meet Table 1 requirements for liquid limit, plasticity index, and wet ball mill for the grade specified. Do not use additives such as but not limited to lime, cement, or fly ash to modify aggregates to meet the requirements of Table 1, unless shown on the plans.

Table 1
Material Requirements

Property	Test Method	Grade 1	Grade 2	Grade 3	Grade 4
Master gradation sieve size (% retained)	Tex-110-E				As shown on the plans
2-1/2 in.		–	0	0	
1-3/4 in.		0	0–10	0–10	
7/8 in.		10–35	–	–	
3/8 in.		30–50	–	–	
No. 4		45–65	45–75	45–75	
No. 40		70–85	60–85	50–85	
Liquid limit, % max.[1]	Tex-104-E	35	40	40	As shown on the plans
Plasticity index, max.[1]	Tex-106-E	10	12	12	As shown on the plans
Plasticity index, min.[1]		As shown on the plans			
Wet ball mill, % max.[2]	Tex-116-E	40	45	–	As shown on the plans
Wet ball mill, % max. increase passing the No. 40 sieve		20	20	–	
Classification[3]	Tex-117-E	1.0	1.1–2.3	–	As shown on the plans
Min. compressive strength[3], psi					As shown on the plans
lateral pressure 0 psi		45	35	–	
lateral pressure 15 psi		175	175	–	

1. Determine plastic index in accordance with Tex-107-E (linear shrinkage) when liquid limit is unattainable as defined in Tex-104-E.
2. When a soundness value is required by the plans, test material in accordance with Tex-411- A.
3. Meet both the classification and the minimum compressive strength, unless otherwise shown on the plans.

1. **Material Tolerances.** The Engineer may accept material if no more than 1 of the 5 most recent gradation tests has an individual sieve outside the specified limits of the gradation. When target grading is required by the plans, no single failing test may exceed the master grading by more than 5 percentage points on sieves No. 4 and larger or 3 percentage points on sieves smaller than No. 4.

   The Engineer may accept material if no more than 1 of the 5 most recent plasticity index tests is outside the specified limit. No single failing test may exceed the allowable limit by more than 2 points.

2. **Material Types.** Do not use fillers or binders unless approved. Furnish the type specified on the plans in accordance with the following.
   a. Type A. Crushed stone produced and graded from oversize quarried aggregate that originates from a single, naturally occurring source. Do not use gravel or multiple sources.
   b. Type B. Crushed or uncrushed gravel. Blending of 2 or more sources is allowed.
   c. Type C. Crushed gravel with a minimum of 60% of the particles retained on a No. 4 sieve with 2 or more crushed faces as determined by Tex-460-A, Part I. Blending of 2 or more sources is allowed.
   d. Type D. Type A material or crushed concrete. Crushed concrete containing gravel will be considered Type D material. Crushed concrete must meet the requirements in Section 02601.2.A.3.b, “Recycled Material (Including Crushed Concrete) Requirements,” and be managed in a way to provide for uniform quality. The Engineer may require separate dedicated stockpiles in order to verify compliance.
   e. Type E. As shown on the plans.

3. **Recycled Material.** Recycled asphalt pavement (RAP) and other recycled materials may be used when shown on the plans. Request approval to blend 2 or more sources of recycled materials.
   a. Limits on Percentage. When RAP is allowed, do not exceed 20% RAP by weight unless otherwise shown on the plans. The percentage limitations for other recycled materials will be as shown on the plans.
   b. Recycled Material (Including Crushed Concrete) Requirements.
      (1) Contractor Furnished Recycled Materials. When the Contractor furnishes the recycled materials, including crushed concrete, the final product will be subject to the requirements of Table 1 for the

grade specified. Certify compliance with DMS-11000, “Evaluating and Using Nonhazardous Recyclable Materials Guidelines,” for Contractor furnished recycled materials. In addition, recycled materials must be free from reinforcing steel and other objectionable material and have at most 1.5% deleterious material when tested in accordance with Tex-413- A. For RAP, do not exceed a maximum percent loss from decantation of 5.0% when tested in accordance with Tex-406-A. Test RAP without removing the asphalt.

(2) Department Furnished Required Recycled Materials. When the Department furnishes and requires the use of recycled materials, unless otherwise shown on the plans:

- Department required recycled material will not be subject to the requirements in Table 1,
- Contractor furnished materials are subject to the requirements in Table 1 and this Item,
- the final product, blended, will be subject to the requirements in Table 1, and
- for final product, unblended (100% Department furnished required recycled material), the liquid limit, plasticity index, wet ball mill, classification, and compressive strength is waived.

Crush Department-furnished RAP so that 100% passes the 2 in. sieve. The Contractor is responsible for uniformly blending to meet the percentage required.

(3) Department Furnished and Allowed Recycled Materials. When the Department furnishes and allows the use of recycled materials or allows the Contractor to furnish recycled materials, the final blended product is subject to the requirements of Table 1 and the plans.

c. Recycled Material Sources. Department-owned recycled material is available to the Contractor only when shown on the plans. Return unused Department-owned recycled materials to the Department stockpile location designated by the Engineer unless otherwise shown on the plans. The use of Contractor-owned recycled materials is allowed when shown on the plans. Contractor-owned surplus recycled materials remain the property of the Contractor. Remove Contractor-owned recycled material from the project and dispose of them in accordance with federal, state, and local regulations before project acceptance. Do not intermingle Contractor-owned recycled material with Department-owned recycled material unless approved by the Engineer.

B. **Water.** Furnish water free of industrial wastes and other objectionable matter.

C. **Material Sources.** When non-commercial sources are used, expose the vertical faces of all strata of material proposed for use. Secure and process the

material by successive vertical cuts extending through all exposed strata, when directed.

02601.3. Equipment. Provide machinery, tools, and equipment necessary for proper execution of the work. Provide rollers in accordance with Item 210, “Rolling.” Provide proof rollers in accordance with Item 216, “Proof Rolling,” when required.

02601.4. Construction. Construct each layer uniformly, free of loose or segregated areas, and with the required density and moisture content. Provide a smooth surface that conforms to the typical sections, lines, and grades shown on the plans or as directed. Stockpile base material temporarily at an approved location before delivery to the roadway. Build stockpiles in layers no greater than 2 ft. thick. Stockpiles must have a total height between 10 and 16 ft. unless otherwise shown on the plans. After construction and acceptance of the stockpile, loading from the stockpile for delivery is allowed. Load by making successive vertical cuts through the entire depth of the stockpile. Do not add or remove material from temporary stockpiles that require sampling and testing before delivery unless otherwise approved. Charges for additional sampling and testing required as a result of adding or removing material will be deducted from the Contractor’s estimates. Haul approved flexible base in clean trucks. Deliver the required quantity to each 100-ft. station or designated stockpile site as shown on the plans. Prepare stockpile sites as directed. When delivery is to the 100-ft. station, manipulate in accordance with the applicable Items.

A. **Preparation of Subgrade or Existing Base.** Remove or scarify existing asphalt concrete pavement in accordance with Item 105, “Removing Stabilized Base and Asphalt Pavement,” when shown on the plans or as directed. Shape the subgrade or existing base to conform to the typical sections shown on the plans or as directed. When new base is required to be mixed with existing base, deliver, place, and spread the new flexible base in the required amount per station. Manipulate and thoroughly mix the new base with existing material to provide a uniform mixture to the specified depth before shaping. When shown on the plans or directed, proof roll the roadbed in accordance with Item 216, “Proof Rolling,” before pulverizing or scarifying. Correct soft spots as directed.

B. **Placing.** Spread and shape flexible base into a uniform layer with an approved spreader the same day as delivered unless otherwise approved. Construct layers to the thickness shown on the plans. Maintain the shape of the course. Control dust by sprinkling, as directed. Correct or replace segregated areas as directed, at no additional expense to the Department. Place successive base courses and finish courses using the same construction methods required for the first course.

C. **Compaction.** Compact using density control unless otherwise shown on the plans. Multiple lifts are permitted when shown on the plans or approved. Bring each layer to the moisture content directed. When necessary, sprinkle the material in accordance with Item 204, “Sprinkling.” Begin rolling longitudinally at the sides and proceed towards the center, overlapping on successive trips

by at least 1/2 the width of the roller unit. On super elevated curves, begin rolling at the low side and progress toward the high side. Offset alternate trips of the roller. Operate rollers at a speed between 2 and 6 mph as directed. Rework, recompact, and refinish material that fails to meet or that loses required moisture, density, stability, or finish before the next course is placed or the project is accepted. Continue work until specification requirements are met. Perform the work at no additional expense to the Department.

1. **Ordinary Compaction.** Roll with approved compaction equipment as directed. Correct irregularities, depressions, and weak spots immediately by scarifying the areas affected, adding or removing approved material as required, reshaping, and re-compacting.
2. **Density Control.** Compact to at least 100% of the maximum density determined by Tex-113-E unless otherwise shown on the plans. Determine the moisture content of the material at the beginning and during compaction in accordance with Tex-103-E. The Engineer will determine roadway density of completed sections in accordance with Tex-115-E. The Engineer may accept the section if no more than 1 of the 5 most recent density tests is below the specified density and the failing test is no more than 3 pcf below the specified density.

D. **Finishing.** After completing compaction, clip, skin, or tight-blade the surface with a maintainer or subgrade trimmer to a depth of approximately 1/4 in. Remove loosened material and dispose of it at an approved location. Seal the clipped surface immediately by rolling with a pneumatic tire roller until a smooth surface is attained. Add small increments of water as needed during rolling. Shape and maintain the course and surface in conformity with the typical sections, lines, and grades as shown on the plans or as directed. In areas where surfacing is to be placed, correct grade deviations greater than 1/4 in. in 16 ft. measured longitudinally or greater than 1/4 in. over the entire width of the cross-section. Correct by loosening, adding, or removing material. Reshape and re-compact in accordance with Section 02601.4.C, “Compaction.”

E. **Curing.** Cure the finished section until the moisture content is at least 2 percentage points below optimum or as directed before applying the next successive course or prime coat.

02601.5. MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with “Measurement and Basis of Payment” section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

END OF SECTION

02612 – DENSE-GRADED HOT-MIX ASPHALT (METHOD)

(Referenced from 2004 TxDOT, ITEM 340 Dense-Graded Hot-Mix Asphalt (Method) – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

02612.1. Description. Construct a pavement layer composed of a compacted, dense-graded mixture of aggregate and asphalt binder mixed hot in a mixing plant.

02612.2. Materials. Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications. Notify the Engineer of all material sources. Notify the Engineer before changing any material source or formulation. When the Contractor makes a source or formulation change, the Engineer will verify that the requirements of this Item are met and may require a new laboratory mixture design, trial batch, or both. The Engineer may sample and test project materials at any time during the project to verify compliance.

A. Aggregate. Furnish aggregates from sources that conform to the requirements shown in Table 1, and as specified in this Section, unless otherwise shown on the plans. Provide aggregate stockpiles that meet the definition in this Section for either coarse aggregate or fine aggregate. When reclaimed asphalt pavement (RAP) is allowed by plan note, provide RAP stockpiles in accordance with this Section. Aggregate from RAP is not required to meet Table 1 requirements unless otherwise shown on the plans. Supply mechanically crushed gravel or stone aggregates that meet the definitions in Tex-100-E. The Engineer will designate the plant or the quarry as the sampling location. Samples must be from materials produced for the project. The Engineer will establish the surface aggregate classification (SAC) and perform Los Angeles abrasion, magnesium sulfate soundness, and Micro-Deval tests. Perform all other aggregate quality tests listed in Table 1. Document all test results on the mixture design report. The Engineer may perform tests on independent or split samples to verify Contractor test results. Stockpile aggregates for each source and type separately. Determine aggregate gradations for mixture design and production testing based on the washed sieve analysis given in Tex-200-F, Part II. Do not add material to an approved stockpile from sources that do not meet the aggregate quality requirements of the Department's *Bituminous Rated Source Quality Catalog* (BRSQC) unless otherwise approved.

1. Coarse Aggregate. Coarse aggregate stockpiles must have no more than 20% material passing the No. 8 sieve. Provide aggregates from sources listed in the BRSQC. Provide aggregate from nonlisted sources only when tested by the Engineer and approved before use. Allow 30 calendar days for the Engineer to sample, test, and report results for nonlisted sources. Provide coarse aggregate with at least the minimum SAC shown on the plans. SAC requirements apply only to aggregates used on the surface of travel lanes, unless otherwise shown on the plans. The SAC for sources on the Department's AQMP is listed in the BRSQC.

Class B aggregate meeting all other requirements in Table 1 may be blended with

a Class A aggregate in order to meet requirements for Class A materials. When blending Class A and B aggregates to meet a Class A requirement, ensure that at least 50% by weight of the material retained on the No. 4 sieve comes from the Class A aggregate source. Blend by volume if the bulk specific gravities of the Class A and B aggregates differ by more than 0.300. When blending, do not use Class C or D aggregates. For blending purposes, coarse aggregate from RAP will be considered as Class B aggregate.

2. RAP. RAP is salvaged, milled, pulverized, broken, or crushed asphalt pavement. Crush or break RAP so that 100% of the particles pass the 2-in. sieve.

RAP from either Contractor- or Department-owned sources, including RAP generated during the project, is permitted only when shown on the plans. Department-owned RAP, if allowed for use, will be available at the location shown on the plans. When RAP is used, determine asphalt content and gradation for mixture design purposes. Perform other tests on RAP when shown on the plans.

When RAP is allowed by plan note, use no more than 30% RAP in Type A or B mixtures unless otherwise shown on the plans. For all other mixtures, use no more than 20% RAP unless otherwise shown on the plans.

Do not use RAP contaminated with dirt or other objectionable materials. Do not use the RAP if the decantation value exceeds 5% and the plasticity index is greater than 8. Test the stockpiled RAP for decantation in accordance with the laboratory method given in Tex-406-A, Part I. Determine the plasticity index using Tex-106-E if the decantation value exceeds 5%. The decantation and plasticity index requirements do not apply to RAP samples with asphalt removed by extraction.

Do not intermingle Contractor-owned RAP stockpiles with Department-owned RAP stockpiles. Remove unused Contractor-owned RAP material from the project site upon completion of the project. Return unused Department-owned RAP to the designated stockpile location.

3. Fine Aggregate. Fine aggregates consist of manufactured sands, screenings, and field sands. Fine aggregate stockpiles must meet the gradation requirements in Table 2. Supply fine aggregates that are free from organic impurities. The Engineer may test the fine aggregate in accordance with Tex-408-A to verify the material is free from organic impurities. At most 15% of the total aggregate may be field sand or other uncrushed fine aggregate. With the exception of field sand, use fine aggregate from coarse aggregate sources that meet the requirements shown in Table 1, unless otherwise approved.

If 10% or more of the stockpile is retained on the No. 4 sieve, test the stockpile and verify that it meets the requirements in Table 1 for coarse aggregate angularity (Tex-

460-A) and flat and elongated particles (Tex-280-F).

Table 1 Aggregate Quality Requirements

Property	Test Method	Requirement
Coarse Aggregate		
SAC	AQMP	As shown on plans
Deleterious material, %, max	Tex-217-F, Part I	1.5
Decantation, %, max	Tex-217-F, Part II	1.5
Micro-Deval abrasion, %, max	Tex-461-A	Note 1
Los Angeles abrasion, %, max	Tex-410-A	40
Magnesium sulfate soundness, 5 cycles, %, max	Tex-411-A	302
Coarse aggregate angularity, 2 crushed faces, %, min	Tex 460-A, Part I	853
Flat and elongated particles @ 5:1, %, max	Tex-280-F	10
Fine Aggregate		
Linear shrinkage, %, max	Tex-107-E	3
Combined Aggregate4		
Sand equivalent, %, min	Tex-203-F	45

1. Not used for acceptance purposes. Used by the Engineer as an indicator of the need for further investigation.
2. Unless otherwise shown on the plans.
3. Unless otherwise shown on the plans. Only applies to crushed gravel.
4. Aggregates, without mineral filler, RAP, or additives, combined as used in the job-mix formula (JMF).

Table 2 Gradation Requirements for Fine Aggregate

Sieve Size	% Passing by Weight or Volume
3/8"	100
#8	70–100
#200	0–30

B. **Mineral Filler.** Mineral filler consists of finely divided mineral matter such as agricultural lime, crusher fines, hydrated lime, cement, or fly ash. Mineral filler is allowed unless otherwise shown on the plans. Do not use more than 2% hydrated lime or cement, unless otherwise shown on the plans. The plans may require or disallow specific mineral fillers. When used, provide mineral filler that:

- is sufficiently dry, free-flowing, and free from clumps and foreign matter;
- does not exceed 3% linear shrinkage when tested in accordance with Tex-107-E; and
- meets the gradation requirements in Table 3.

Table 3 Gradation Requirements for Mineral Filler

Sieve Size	% Passing by Weight or Volume
#8	100
#200	55–100

C. **Baghouse Fines.** Fines collected by the baghouse or other dust-collecting equipment may be reintroduced into the mixing drum.

D. **Asphalt Binder.** Furnish the type and grade of performance-graded (PG) asphalt binder specified on the plans in accordance with Section 300.2.J, "Performance-Graded Binders."

E. **Tack Coat.** Unless otherwise shown on the plans or approved, furnish CSS-1H, SS-1H, or a PG binder with a minimum high-temperature grade of PG 58 for tack coat binder in accordance with Item 300, "Asphalts, Oils, and Emulsions."

Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use. If required, verify that emulsified asphalt proposed for use meets the minimum residual asphalt percentage specified in Item 300, "Asphalts, Oils, and Emulsions."

The Engineer will obtain at least 1 sample of the tack coat binder per project and test it to verify compliance with Item 300. The Engineer will obtain the sample from the asphalt distributor immediately before use.

F. **Additives.** When shown on the plans, use the type and rate of additive specified. Other additives that facilitate mixing or improve the quality of the mixture may be allowed

when approved.

If lime or a liquid antistripping agent is used, add in accordance with Item 301, "Asphalt Antistripping Agents." Do not add lime directly into the mixing drum of any plant where lime is removed through the exhaust stream unless the plant has a baghouse or dust collection system that reintroduces the lime back into the drum.

02612.3. Equipment. Provide required or necessary equipment in accordance with Item 320, "Equipment for Asphalt Concrete Pavement."

02612.4. Construction. Design, produce, store, transport, place, and compact the specified paving mixture in accordance with the requirements of this Item. Unless otherwise shown on the plans, provide the mix design. The Department will perform quality assurance (QA) testing. Provide quality control (QC) testing as needed to meet the requirements of this Item.

A. Mixture Design.

1. Design Requirements. Use a Level II specialist certified by a Department-approved hot-mix asphalt certification program to develop the mixture design. Have the Level II specialist sign the design documents. Unless otherwise shown on the plans, use the typical weight design example given in Tex-204-F, Part I, to design a mixture meeting the requirements listed in Tables 1 through 6. Use an approved laboratory to perform the Hamburg Wheel test and provide results with the mixture design, or provide the laboratory mixture and request that the Department perform the Hamburg Wheel test. The Construction Division maintains a list of approved laboratories. Furnish the Engineer with representative samples of all materials used in the mixture design. The Engineer will verify the mixture design. If the design cannot be verified by the Engineer, furnish another mixture design.

The Contractor may submit a new mixture design at anytime during the project. The Engineer will approve all mixture designs before the Contractor can begin production. Provide the Engineer with a mixture design report using Department-provided software. Include the following items in the report:

- the combined aggregate gradation, source, specific gravity, and percent of each material used;
- results of all applicable tests;
- the mixing and molding temperatures;
- the signature of the Level II person or persons who performed the design;
- the date the mixture design was performed; and
- a unique identification number for the mixture design.

Table 4 Master Gradation Bands (% Passing by Weight or Volume) and Volumetric Properties

Sieve Size	A Coarse Base	B Fine Base	C Coarse Surface	D Fine Surface	F Fine Mixture
1-1/2"	98.0–100.0	–	–	–	–
1"	78.0–94.0	98.0–100.0	–	–	–
3/4"	64.0–85.0	84.0–98.0	95.0–100.0	–	–
1/2"	50.0–70.0	–	–	98.0–100.0	–
3/8"	–	60.0–80.0	70.0–85.0	85.0–100.0	98.0–100.0
#4	30.0–50.0	40.0–60.0	43.0–63.0	50.0–70.0	80.0–86.0
#8	22.0–36.0	29.0–43.0	32.0–44.0	35.0–46.0	38.0–48.0
#30	8.0–23.0	13.0–28.0	14.0–28.0	15.0–29.0	12.0–27.0
#50	3.0–19.0	6.0–20.0	7.0–21.0	7.0–20.0	6.0–19.0
#200	2.0–7.0	2.0–7.0	2.0–7.0	2.0–7.0	2.0–7.0
Design VMA1, % Minimum					
–	12.0	13.0	14.0	15.0	16.0
Plant-Produced VMA, % Minimum					
–	11.0	12.0	13.0	14.0	15.0

1. Voids in Mineral Aggregates.

Table 5 Laboratory Mixture Design Properties

Property	Test Method	Requirement
Target laboratory-molded density, %	Tex-207-F	96.01
Tensile strength (dry), psi (molded to 93% ±1% density)	Tex-226-F	85–2002
Boil test3	Tex-530-C	–

1. Unless otherwise shown on the plans.
2. May exceed 200 psi when approved and may be waived when approved.

3. Used to establish baseline for comparison to production results. May be waived when approved.

Table 6 Hamburg Wheel Test Requirements[1]

High-Temperature Binder Grade	**Minimum # of Passes**2 **@ 0.5" Rut Depth, Tested @ 122°F**
PG 64 or lower	10,000
PG 70	15,000
PG 76 or higher	20,000

1. Tested in accordance with Tex-242-F.
2. May be decreased or waived when shown on the plans.

B. Job-Mix Formula Approval. The job-mix formula (JMF) is the combined aggregate gradation and target asphalt percentage used to establish target values for mixture production. JMF is the original laboratory mixture design used to produce the trial batch. The Engineer and the Contractor will verify JMF based on plant-produced mixture from the trial batch unless otherwise approved. The Engineer may accept an existing mixture design previously used on a Department project and may waive the trial batch to verify JMF. If the JMF is not verified by the Engineer from the trial batch, adjust the JMF or redesign the mix and produce as many trial batches as necessary to verify the JMF.

Provide the Engineer with split samples of the mixtures and blank samples used to determine the ignition oven correction factors. The Engineer will determine the aggregate and asphalt correction factors from the ignition oven using Tex-236-F.

The Engineer will use a Texas gyratory compactor calibrated in accordance with Tex-914-F in molding production samples. The Engineer will perform Tex-530-C and retain the tested sample for comparison purposes during production. The Engineer may waive the requirement for the boil test.

C. JMF Field Adjustments. Produce a mixture of uniform composition closely conforming to the approved JMF. If, during initial days of production, the Contractor or Engineer determines that adjustments to the JMF are necessary to achieve the specified requirements, or to more nearly match the aggregate production, the Engineer may allow adjustment of the JMF within the tolerances of Table 7 without a laboratory redesign of the mixture.

The Engineer will adjust the asphalt content to maintain desirable laboratory density near the optimum value while achieving other mix requirements.

Table 7 Operational Tolerances

Description	Test Method	Allowable Difference from JMF Target
Individual % retained for #8 sieve and larger		±5.01
Individual % retained for sieves smaller than #8 and larger than #200	Tex-200-F or Tex-236-F	±3.01
% passing the #200 sieve		±2.01
Asphalt content, %	Tex-236-F	±0.31
Laboratory-molded density, %		±1.0
VMA, %, min	Tex-207-F	Note 2

1. When within these tolerances, mixture production gradations may fall outside the master grading limits; however, the percent passing the #200 sieve will be considered out of tolerance when outside the master grading limits.
2. Test and verify that Table 4 requirements are met.

D. Production Operations. Perform a new trial batch when the plant or plant location is changed. The Engineer may suspend production for noncompliance with this Item. Take corrective action and obtain approval to proceed after any production suspension for noncompliance.

1. Operational Tolerances. During production, do not exceed the operational tolerances in Table 7. Stop production if testing indicates tolerances are exceeded on:

- 3 consecutive tests on any individual sieve,
- 4 consecutive tests on any of the sieves, or
- 2 consecutive tests on asphalt content. Begin production only when test results or other information

indicate, to the satisfaction of the Engineer, that the next mixture produced will be within Table 7 tolerances.

1. **Storage and Heating of Materials.** Do not heat the asphalt binder above the temperatures specified in Item 300, "Asphalts, Oils, and Emulsions" or outside the manufacturer's recommended values. On a daily basis, provide the Engineer with the records of asphalt binder and hot-mix asphalt discharge temperatures in accordance with Item 320, "Equipment for Asphalt Concrete Pavement." Unless otherwise approved, do not store mixture for a period long enough to affect the quality of the mixture, nor in any

case longer than 12 hr.

2. **Mixing and Discharge of Materials.** Notify the Engineer of the target discharge temperature and produce the mixture within 25°F of the target. Monitor the temperature of the material in the truck

   before shipping to ensure that it does not exceed 350°F. The Department will not pay for or allow placement of any mixture produced at more than 350°F. Control the mixing time and temperature so that substantially all moisture is removed from the mixture before discharging from the plant.

E. **Hauling Operations.** Before use, clean all truck beds to ensure mixture is not contaminated. When a release agent is necessary to coat truck beds, use a release agent on the approved list maintained by the Construction Division.

F. **Placement Operations.** Prepare the surface by removing raised pavement markers and objectionable material such as moisture, dirt, sand, leaves, and other loose impediments from the surface before placing mixture. Remove vegetation from pavement edges. Place the mixture to meet the typical section requirements and produce a smooth, finished surface with a uniform appearance and texture. Offset longitudinal joints of successive courses of hot mix by at least 6 in. Place mixture so longitudinal joints on the surface course coincide with lane lines, or as directed. Ensure that all finished surfaces will drain properly. Place mixture within the compacted lift thickness shown in Table 8, unless otherwise shown on the plans or allowed.

Table 8 Compacted Lift Thickness and Required Core Height

Mixture Type	Compacted Lift Thickness	
	Minimum (in.)	Maximum (in.)
A	3.00	6.00
B	2.50	5.00
C	2.00	4.00
D	1.50	3.00
F	1.25	2.50

1. **Weather Conditions.** Place mixture when the roadway surface temperature is 60°F or higher unless otherwise approved. Measure the roadway surface temperature with a handheld infrared thermometer. Unless otherwise shown on the plans, place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable in the opinion of the Engineer.
2. **Tack Coat.** Clean the surface before placing the tack coat. Unless otherwise approved, apply tack coat uniformly at the rate directed by the Engineer. The Engineer will set the rate between 0.04 and 0.10 gal. of residual asphalt per square yard of surface area. Apply a thin, uniform tack coat to all contact surfaces of curbs, structures, and all joints. Prevent splattering of tack coat when placed adjacent to curb, gutter, and structures. Roll the tack coat with a pneumatic-tire roller when directed. The Engineer may use Tex-243-F to

verify that the tack coat has adequate adhesive properties. The Engineer may suspend paving operations until there is adequate adhesion.

G. Lay-Down Operations.

1. **Minimum Mixture Placement Temperatures.** Use Table 9 for suggested minimum mixture placement temperatures.
2. **Windrow Operations.** When hot mix is placed in windrows, operate windrow pickup equipment so that substantially all the mixture deposited on the roadbed is picked up and loaded into the paver.

Table 9 Suggested Minimum Mixture Placement Temperature

High-Temperature Binder Grade	Minimum Placement Temperature (Before Entering Paver)
PG 64 or lower	260°F
PG 70	270°F
PG 76	280°F
PG 82 or higher	290°F

H. Compaction. Use air void control unless ordinary compaction control is specified on the plans. Avoid displacement of the mixture. If displacement occurs, correct to the satisfaction of the Engineer. Ensure pavement is fully compacted before allowing rollers to stand on the pavement. Unless otherwise directed, use only water or an approved release agent on rollers, tamps, and other compaction equipment. Keep diesel, gasoline, oil, grease, and other foreign matter off the mixture. Unless otherwise directed, operate vibratory rollers in static mode when not compacting, when changing directions, or when the plan depth of the pavement mat is less than 1-1/2 in.

Use tamps to thoroughly compact the edges of the pavement along curbs, headers, and similar structures and in locations that will not allow thorough compaction with the rollers. The Engineer may require rolling with a trench roller on widened areas, in trenches, and in other limited areas.

Allow the compacted pavement to cool to 160°F or lower before opening to traffic unless otherwise directed. When directed, sprinkle the finished mat with water or limewater to expedite opening the roadway to traffic.

1. **Air Void Control.** Compact dense-graded hot-mix asphalt to contain from 5% to 9% in-place air voids. Do not increase the asphalt content of the mixture to reduce pavement air voids.
2. **Ordinary Compaction Control.** Furnish the type, size, and number or rollers required for compaction, as approved. Furnish at least 1 medium pneumatic-tire roller (minimum 12-ton weight). Use the control strip method given in Tex-207-F, Part IV, to establish rolling patterns that achieve maximum compaction.

a. **Rollers.** Furnish the type, size, and number or rollers required for compaction, as approved. Use a pneumatic-tire roller to seal the surface, unless otherwise shown on the plans. Use additional rollers as required to remove any roller marks.
b. **Air Void Determination.** Unless otherwise shown on the plans, obtain 2 roadway specimens at each location selected by the Engineer for in-place air void determination. The Engineer will measure air voids in accordance with Tex-207-F and Tex-227-F. Before drying to a constant weight, cores may be predried using a Corelok or similar vacuum device to remove excess moisture. The Engineer will use the average air void content of the 2 cores to calculate the in-place air voids at the selected location.
c. **Air Voids Out of Range.** If the in-place air void content in the compacted mixture is below 5% or greater than 9%, change the production and placement operations to bring the in-place air void content within requirements. The Engineer may suspend production until the in-place air void content is brought to the required level, and may require a test section as described in Section 340.4.H.1.d, "Test Section."
d. **Test Section.** Construct a test section of 1 lane-width and at most 0.2 mi. in length to demonstrate that compaction to between 5% and 9% in-place air voids can be obtained. Continue this procedure until a test section with 5% to 9% in-place air voids can be produced. The Engineer will allow only 2 test sections per day. When a test section producing satisfactory in-place air void content is placed, resume full production.

Follow the selected rolling pattern unless changes that affect compaction occur in the mixture or placement conditions. When such changes occur, establish a new rolling pattern. Compact the pavement to meet the requirements of the plans and specifications.

When rolling with the 3-wheel, tandem or vibratory rollers, start by first rolling the joint with the adjacent pavement and then continue by rolling longitudinally at the sides. Proceed toward the center of the pavement, overlapping on successive trips by at least 1 ft., unless otherwise directed. Make alternate trips of the roller slightly different in length. On superelevated curves, begin rolling at the low side and progress toward the high side unless otherwise directed.

I. Irregularities. Immediately take corrective action if surface irregularities, including but not limited to segregation, rutting, raveling, flushing, fat spots, mat slippage, color, texture, roller marks, tears, gouges, streaks, or uncoated aggregate particles, are detected. The Engineer may suspend production or placement operations until the problem is corrected.

At the expense of the Contractor and to the satisfaction of the Engineer, remove and replace any mixture that does not bond to the existing pavement or that has other surface irregularities identified above.

J. **Ride Quality.** Use Surface Test Type A to evaluate ride quality in accordance with Item 585, "Ride Quality for Pavement Surfaces," unless otherwise shown on the plans.

02612.5. MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

*** * * END OF SECTION * * ***

SECTION 02930- LAWNS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: The establishment of a complete and uniform lawn including fine grading, sodding, and/or hydro-mulching.

B. Related Sections:
1. Section 02819-Irrigation
2. Section 02900-Pianting

1.02 QUALIFICATIONS

A. Lawn work to be performed by a single firm specializing in commercial landscape work with a minimum of five (5) years' experience on similar type projects. Owner/SSP Design to review qualifications and approve subcontractor prior to commencing work.

1.03 SUBMITTALS

A. Submittals shall be formatted in a three-ring binder (10 copies) with tabs identifying each section. Required submittal information for this section shall be included with the overall landscape submittal and shall be designated 'Section-20-Lawns/Fertilizer'. The following submittals are required for this section:
1. Product Data: Manufacturer's specifications and application instructions for fertilizer.
2. Certificates: Inspection certificate from Texas Department of Agriculture indicating sod has been found free of diseases, insects and larvae.
3. Certificates: Breakdown of seed types, percentages, and mixture composition.
4. Sod Delivery Tickets: One per truckload indicating sod species, nursery certification, date and time of cutting.

1.04 DELIVERY, STORAGE AND HANDLING

A. Sod Delivery: Have sod delivered within twenty-four hours of cutting. Stack sod with roots to roots, protected from exposure to elements during shipment.

B. Storage: Lay sod as soon a practicable after delivery. If installation is delayed more than four hours, store sod under shade and keep constantly moist. Sod must be laid within forty-eight hours of cutting. Do not pile more than two foot depth of sod. Do not tear, stretch or drop sod. Do not allow soil to break free of turf roots.

1.05 PROJECT CONDITIONS

A. Utility Construction: Do not lay sod or begin hydro-mulching until all underlying utility work is complete, trenches backfilled, compacted and graded, and topsoil placed and fine graded.

1.06 MAINTENANCE/WARRANTY

A. Maintenance Service: Maintain the work of this Section until the Date of Substantial Completion and ninety (90) days thereafter or until a complete and uniform lawn has been established and final acceptance has been approved by Owner/SSP Design.
   1. Establish hydro-mulched or sodded lawns per planting plans. Reapply hydro-mulch or re-sod as necessary until full and uniform coverage is obtained.
   2. Mow lawns to maintain height of grass at 2 inches or as directed by Owner/SSP Design.
   3. Trim/edge all lawn areas adjacent to watering basins, pavements, driveways, walls, structures, curbs, planting beds, edges and islands.
   4. Provide weed, insect and disease control to maintain health of grass.
   5. Fertilize with commercial grade lawn fertilizer until complete and uniform coverage is obtained.
   6. Irrigation:
      a) If the irrigation system is operating, program and monitor the system to provide adequate water for grass.
      b) If the irrigation system is not operating, hand water grass.

B. Warranty: Warranty shall cover all lawn grasses for a period of three months from the date of substantial completion or until final acceptance by Owner/SSP Design. Final acceptance will not be approved until full and uniform lawns are completely established.

C. Maintenance Records: Contractor must provide Owner/SSP Design copies of all maintenance records including dates maintenance occurred, type of maintenance carried out, crew time on site and any issues such as problems with irrigation, etc.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: See Section 02900, Landscaping.

B. Sod: (See schedule for type). Provide premium #1 certified sod grown in a sod nursery on sandy soil, at least 1 yr. old with a heavy top and a strong, well-knit root system, and not more than five percent weeds or foreign grasses.

C. Hydro-mulch mixture: (See schedule for type). Lawn seed mixture shall be shall be fresh, clean new, crop seed. Hydro-mulch mixture shall be composed of both hulled and unhulled seed with an appropriate percentage of Rye according to season of planting. The Contractor shall furnish SSP Design the dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety for approval prior to beginning work. Any hydro-mulching applied before SSP Design approval of the exact mixture will be subject to rejection and shall be re-done with approved mixture.

D. Fertilizer: 12-4-8 (N-P-K), formulated for slow-release Nitrogen.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine the site and conditions under which this work is to be performed. Have the installer notify the Contractor in writing, with a copy to SSP Design, if the site is unsatisfactory. Do not begin the work until unsatisfactory conditions have been corrected in a manner acceptable to installer. Beginning of work indicates acceptance of the site as satisfactory by the installer.

3.02 PREPARATION

A. Topsoil: Refer to Section 02900 'Landscaping' for topsoil amendment.

B. Site Preparation: Contractors must visit and review site prior to bidding. Compacted soils and sub-soils from construction activities must be ripped and tilled until a loose, friable and free-draining condition is met.

All existing weeds, grass, stabilized sub-base material, rubble, excavated soil and other material shall be removed from the site and disposed of by the contractor prior to starting any new landscape work. Soil conditions around entire site must be approved by SSP Design prior to rough and finished grading operations. Contractor shall not install any fill or topsoil in landscape areas prior to site condition approval by SSP Design.

3.03 INSTALLATION- HYDRO-MULCH/SEED

A. All exterior ground within the limit of contract, except surfaces occupied by structures and paving, except areas indicated to be undisturbed, shall be seeded, hydro-mulched or planted as shown on drawings. Furnish topsoil as required, finish grading, prepare seed bed, seed, hydro-mulch and maintain areas as indicated on the drawings.

B. Lawn Area Preparations - Grade areas to finish grades, filling as needed or removing surplus material. Float all lawn areas to a smooth, uniform grade as indicated on Civil Engineer's grading plans. All lawn areas shall slope to drain away from structures, sidewalks, driveways and planting beds. Where no grades are shown, areas shall have a smooth and continual grade between existing or fixed controls (such as walks, curbs, catch basins/drain inlets, elevational steps or structures) and elevations shown on plans. Contractor to ensure proper drainage away from all structures. Adjust grades as necessary to direct water away from structures and planting beds. Report any discrepancies on all drainage issues in writing to SSP Design, Civil Engineer, and Owner or Owner's Representative.

C. Roll, scarify, rake and level as necessary to obtain true, even lawn surfaces. All finish grades shall meet approval of the SSP Design, before seeding/hydromulching operations. Loosen soil to a depth of three inches (3") in lawn areas by approved method of scarification and grade to remove edges and depressions. Remove stones or foreign matter over one half inch (1/2") in diameter from the top three inches (3") of soil. Float lawn areas to finish grades.

D. Lawn areas should be permitted to settle or should be firmed by rolling before seeding/hydro-mulching.

E. Seeding/hydro-mulching shall not be performed in windy weather.

F. Lawn areas shall be seeded by hydro-mulching evenly with an

approved mechanical hydro-mulcher at the rate of a minimum of three (3) pounds per 1,000 square feet. In areas inaccessible to hydro-mulching equipment, the seeded ground shall be lightly raked with flexible rakes and rolled with a water ballast roller. After rolling, seeded areas are to be lightly mulched with wheat straw or approved material.

G. Water seeded/hydro-mulched areas daily or as necessary to keep ground and hydro-mulch moist. Do not excessively water so as to cause erosion or pending. Continue this watering regime until full germination. After germination period, water lawns areas only as required to maintain health and vigor of grass growth.

H. The surface layer of soil for seeded/hydro-mulched areas must be kept moist during the germination period. After first cutting, water as specified above.

I. Make daily inspections to determine the moisture content of the soil and adjust the watering schedule established by the irrigation system installer to fit conditions.

J. After grass growth has started, all areas or parts of areas, which fail to show a uniform stand of grass for any reason whatsoever shall be reseeded/hydro-mulched in accordance with the plans and as specified herein. Such areas and parts of areas shall reseeded, hydro-mulched or sodded repeatedly until all areas are covered with a full and uniform stand of grass at no additional cost to the Owner.

K. Watering shall be done in such a manner and as frequently as is deemed necessary by the contractor or Owner/SSP Design to assure continued growth of healthy grass. All areas of the site shall be watered in such a way as to prevent erosion due to excessive quantities applied over small areas and to avoid damage to the finished surface due to the watering equipment.

L. Water for the execution and maintenance of this work shall be provided by the Owner at no expense to the Contractor. The Contractor shall, however, furnish his own portable tanks, pumps, hose, pipe, connections, nozzles, and any other equipment required to transport the water from the available outlets and apply it to the lawn areas in an approved manner.

M. Mowing of the seeded, hydro-mulched or sodded areas shall be

initiated when the grass has attained a height of three to four inches (3" to 4"). For subsequent mowing Bermuda grass shall be maintained at a height of 2" and St. Augustine grass shall be maintained at a height of 3". Not more than one third (1/3) of the grass leaf shall be removed at any cutting and cutting shall not occur more than seven (7) days apart.

N. When the amount of grass is heavy, it shall be removed to prevent destruction of the underlying turf. If weeds or other undesirable vegetation threaten to smother the planted species, such vegetation shall be mowed or, in the case of rank growths, shall be uprooted, raked and removed from the area by methods approved by SSP Design or Owner.

O. Protect seeded/hydro-mulched areas against trespassing while the grass is germinating and growing-in. Furnish and install fences, signs, barriers or any other necessary temporary protective devices. Damage resulting from trespass, erosion, washout, settlement or other causes shall be repaired by the Contractor at their expense.

P. Remove all fences, signs, barriers or other temporary protective devices after final acceptance.

3.04 INSTALLATION- SOD

A. Sod shall be installed to all areas as indicated on plans.

B. Sod Bed Preparation - Grade areas to finish grade, filling as needed or removing surplus dirt, stone, debris, etc. and floating areas to a smooth, uniform grade as indicated on grading plans. All lawn areas are to slope to drain.

C. Sod shall be cut and laid on site the same day. Only healthy vigorous growing sod is to be laid.

D. Always lay sod across slope and tightly together so as to make a solid area.

E. Roll or firmly but lightly tamp with suitable wooded or metal tamper all new sod sufficiently to set or press sod into underlying soil.

F. Contractor to fill all gaps or seams in the sodded areas using clean sand. G. After sodding has been completed, clean up and thoroughly water-in newly sodded areas.

3.05 FERTILIZING- GRASS

A. Grass or sodded areas shall have fertilizer applied in two (2) applications with a thorough watering immediately following application. The first application shall be one (1) week before the hydro-seeding using a Starter Fertilizer 20-27-5 (N-P- K) at a rate of 3.5 lbs per 1,000 square feet and harrowed into the top two inches (2") of seedbed. The second application shall be done after grow-in using a Turf Builder fertilizer 12-4-8 (N-P-K) at the rate of 5 pounds per 1,000 square feet.

3.06 CLEANUP AND PROTECTION

A. Remove debris from landscaped areas daily and sweep clean adjacent pavements, if soiled by landscape activities.

B. Protect lawns from damage, theft or vandalism until final acceptance.

END OF SECTION

SECTION 02930 HYDRO-MULCH SEEDING

PART 1- GENERAL

1.1 DESCRIPTION

A. The work covered by this section consists of furnishing all plant, labor, materials, equipment, supplies, supervision and tools and performing all work necessary to top soiling, smoothing, seeding, fertilizing, watering maintenance and cleanups of side slopes, all in accordance with these specifications.

B. The hydro-mulch seeding operations, together with all necessary related work, shall conform to the requirements specified in this section. The area(s) to be hydro-mulch seeded shall be noted in the construction documents.

1.2 MEASUREMENT & PAYMENT

A. No separate measurement or payment will be made for materials and labor performed under this section. Include all costs in the lump sum price.

PART 2 – PRODUCTS

2.1 MATERIALS

A. All seed must meet the requirements of the U.S. Department of Agriculture Rules & Regulations as set forth in the Federal Seed Act and the Texas Seed Law.

B. Type of seed, purity and germination requirements, rate of application and planting dates are as follows:

TABLE I Application Rate

Type	Pounds per Acre	Planting Date
Hulkd Common Bermuda Grass 98/88	40	Jan. 1 to Apr. 15
Unhulled Common Bermuda Grass 98/88	40	Jan. 1 to Apr. 15
Annual Rye Grass, including Gulf	50	Jan. 1 to Apr. 15
Hulled Common Bermuda Grass 98/88	40	Apr. 15 to Oct. 1
Hulled Common Bermuda Grass 98/88	40	Oct. 1 to Jan. 1
Unhulled Common Bermuda Grass 98/88	40	Oct. 1 to Jan. I

SECTION 15075 – REINFORCED CONCRETE PRESSURE PIPE

PART 1: GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals necessary to install and test reinforced concrete pipe and fittings for raw water lines and irrigation pipelines as shown on the Drawings and as specified herein.

B. All pipes shall be manufactured for this project and no pipe shall be furnished from stock.

1.02 RELATED WORK NOT INCLUDED

A. Excavation and backfilling are included in Section 02200.

B. ASTM C 1103-89 Standard Practice for Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines.

C. ASTM 361, Reinforced Concrete Low-Head Pressure Pipe

1.03 SUBMITTALS

A. Submit to the Engineer, within thirty days of the Effective Date of the Agreement, the name of the pipe and fitting suppliers and a list of materials to be furnished.

B. Submit to the Engineer, shop drawings showing layout and details of reinforcement, joint, method of manufacture and installation of pipe, specials and fittings, and a schedule of pipe lengths (including the length of individual pipes by diameter) for the entire job.

C. Prior to each shipment of pipe, submit certified test reports that the pipe for this Contract was manufactured and tested in accordance with the ASTM and ANSI/AWWA Standards specified herein.

1.04 QUALITY ASSURANCE

A. The manufacturer shall be responsible for the performance of all acceptance tests as specified in Paragraph 5.1.2 of ASTM C76. In addition, all reinforced concrete pipe to be installed under this Contract may be inspected at the plant for compliance with these Specifications by an independent testing laboratory provided by the Owner. The Contractor shall require the manufacturer's cooperation in these inspections. The cost of inspection of all pipe approved for this Contract, plus the cost of inspection of a reasonable amount of disapproved pipe will be borne by the Owner.

B. Prior to each shipment of units for the raw water, or irrigation, pipeline, hyrdostatic pressure tests on the pipe and the pipe joint shall be conducted according to the procedures of ASTM 361, section 10.4. Tests will be conducted on each run at the manufacturer's facility. Tests will be conducted on each 100 units (or less) from a run. The pipe shall be tested to a pressure of 13 psi for 30 minutes, with no visible leaks in the pipe or joints. Each tests will be witnessed by the Engineer' representative.

C. Inspection of the pipe will also be made by the Engineer or other representatives of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.

PART 2: PRODUCTS

2.01 REINFORCED CONCRETE PIPE

A. Except as otherwise specified herein, pipe shall conform to ASTM Standards Specifications for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe, Designation C76, Class III, Wall C. The pipe interior shall be smooth and even, free from roughness, projections, indentations, offsets, or irregularities of any kind. The concrete mass shall be dense and uniform.

B. Non-air-entraining portland cement conforming to ASTM C150, Type II shall be used. The use of a non-bleeding, water-reducing, dispersing agent may be permitted subject to the specific approval of the Engineer. The use of any other admixture will not be permitted.

C. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM C33, except for gradation, with a maximum loss of 8 percent when subjected to 5 cycles of the soundness test using magnesium sulfate. Coarse aggregate shall consist of well-graded crushed stone conforming to the requirements of ASTM C33, except for gradation, with a maximum loss of 8 percent when subjected to 5 cycles of the soundness test using magnesium sulfate. Documentation that the aggregates to be used in the manufacture of reinforced concrete pipe meet these requirements shall be submitted to the Engineer as stated in Paragraph 1.03.

D. The 28-day compressive strength of the concrete, as indicated by cores cut from the pipe shall be not less than 6,000 psi. The concrete mass shall be dense and uniform. The average absorption shall not exceed 5.5 percent of the dry weight and no specimen shall exceed 6.0 percent. Reinforcement shall be circular for all concrete pipe. Quadrant steel shall not be used. Reinforcement shall be installed in both the bell and the spigot. At least one circumferential reinforcement wire shall be in both the bell and spigot area, and reinforcement in the bell and spigot shall be adequate to prevent damage to concrete during shipping, handling and after

installation. Cores indicating reinforcing steel having less than 85 percent bond shall be cause for rejection of the lot of pipes.

E. Pipe may be rejected for any of the following reasons:
1. Exposure of any wires, positioning spacers or chairs used to hold the reinforcement cage in position, or steel reinforcement in any surface of the pipe, except for ends of longitudinal reinforcing.
2. Transverse reinforcing steel found to be in excess of ¼ inch out of specified position after the pipe is molded.
3. Any shattering or flaking of concrete at a crack.
4. Voids, with the exception of a few minor bugholes, on the interior and exterior surfaces of the pipe exceeding 1/4 inch in depth unless properly and soundly pointed with mortar or other approved material.
5. Unauthorized application of any wash coat of cement or grout.
6. A deficiency greater than ¼ inch from the specified wall thickness of pipe 30 inches or smaller in internal diameter.
7. A deficiency greater than 6% from the specified wall thickness of pipe larger than 30 inches in internal diameter, except that the deficiency may be 8% adjacent to the longitudinal form joint, provided that the additional deficiency does not lie closer than 20% of the internal diameter of the pipe. The deficiencies in wall thickness permitted herein do not apply to gasket contact surfaces in gasketed joint pipe.
8. A variation from the specified internal diameter in excess of 1%, or interior surfaces which have been reworked after placing of concrete. The variation in internal diameter permitted herein does not apply to gasket contact surface in gasketed joint pipe.
9. A hollow spot (identified by tapping the internal surface of the pipe) which is greater than 30 inches in length or wider than 3 times the specified wall thickness. Repair of such defective areas not exceeding these limitations may be made as specified in Paragraph 2.01R.
10. Defects that indicate imperfect molding of concrete, or any surface defect indicating honeycomb or open texture (rock pockets) greater in size than area equal to a square with a side dimension of 2-1/2 times the wall thickness or deeper than two times the maximum graded aggregate size, or local deficiency of cement resulting in loosely bonded concrete, the area of which exceeds in size the limits of area described in Paragraph 9 above when the defective concrete is removed. Repair of such defects not exceeding these limits may be made as specified in Paragraph 2.01R.
11. Any of the following cracks:
    a. A crack having a width of 0.005 inch to 0.01 inch throughout a continuous length of 36 inches or more.
    b. A crack having a width of 0.01 inch to 0.03 inch or more throughout a continuous length of one foot or more.
    c. Any crack greater than 0.005 inch extending through the wall of pipe and having a length in excess of the wall thickness.
    d. Any crack showing two visible lines of separation for a continuous length of two feet or more, or an interrupted length of three feet or more anywhere in evidence, both inside and outside.

e. Cracks anywhere greater than 0.03 inch in width.

F. The pipe shall be clearly marked as required by ASTM C76 in a manner acceptable to the Engineer. The markings may be at either end of the pipe for the convenience of the manufacturer, but for any one size shall always be at the same end of each pipe length. Pipe shall not be shipped until the compressive strength of the concrete has attained 4,000 psi and not before 5 days after manufacture, and/or repair, whichever is the longer.

G. Pipe shall have a minimum laying length of approximately 8 feet, except for closure and other special pieces as approved by the Engineer. The Contractor shall have available at the site of the work sufficient pipe of various lengths to affect closure at structures that cannot be located to accommodate standard lengths. Short lengths of pipe made for closure etc. may be used in the pipeline at the end of construction if properly spaced. The length of the incoming and outgoing concrete pipe at each structure shall not exceed 4 feet, except where the joint is cast flush with the exterior wall of the structure, where steel wall fittings are provided or where otherwise noted on the Drawings. Maximum laying length shall not exceed 16 feet, but the installation of 16 foot lengths will depend upon the ability of the Contractor to handle such lengths of pipe in sheeted trenches, comply with trench width requirements, maintain the integrity of the sheeting and avoid disturbance to adjacent ground. If, in the opinion of the Engineer, the use of 16 foot lengths is impracticable, shorter lengths shall be used.

H. After manufacture, each length of pipe shall be checked against the length noted on the shop drawings. Pipe more than 1-1/2 inch longer than that shown on the shop drawings shall not be used on this project. Variations in length of the same pipe shall not exceed ASTM C76 requirements.

I. During manufacturing, measuring devices shall be used to assure joint assembly is within the tolerance of ASTM C76 and these Specifications.

J. The Engineer shall have the right to cut cores from such pieces of the finished pipe as he desires for such inspection and tests as he may wish to apply. Holes left by the removal of cores shall be filled in an approved manner by and at the expense of the manufacturer. Core drilling shall be carried out by the pipe manufacturer at his expense.

K. The Engineer shall also have the right to take samples of the concrete after it has been mixed, or as it is being placed in the forms or molds, and to make such inspection and tests thereof as he may wish.

L. At the start of the work, a set of test cylinders shall be taken each day on which pipe is manufactured for the project or more often if required. This may ultimately be reduced to one set of three specimens for every 50 cubic yards of concrete placed, if the uniformity of results warrants, and if approved by the Engineer. At the start of the work, a relationship shall be established between ultimate strength of test cylinders stored in a standard manner as compared to cylinders steam-

cured with the pipe and as compared to cores taken from the corresponding finished pipe. At least five sets of tests shall be made.

M. Test cores may be taken for every 500 linear feet of pipe manufactured, but not less than once each day on which pipe is manufactured for the project. Cores may be reduced to one set of two per week (or possibly fewer, but not less than one set for every 1,500 linear feet), if a satisfactory relationship is established between cores and cylinders made and cured in the standard manner. This relation-ship shall not vary by more than 10 percent more or less from the average ratio. Cores may be drilled in any manner which will provide a smooth core face. All pipe cylinders and cores shall be 4 inches in diameter. Cores shall be carefully saw-trimmed and capped in a vertical position with a sulfur cap of minimum thickness, at least one day before being tested.

N. Core testing shall conform to Standard ASTM Methods.

O. At the time of inspection, the pipe will be carefully examined for compliance with the appropriate ASTM and project specifications, and shop drawings. All pipes shall be inspected for general appearance, dimension, “scratch-strength”, blisters, cracks, roughness, soundness, etc. Ail pipes will be checked for soundness by being tapped and scratched over a reasonable portion of the area, at least once on every 50 square inches of pipe surface. The surface shall be dense and close-textured. Cores also shall serve as a basis for rejection of pipe, particularly if lamination or poor bond of reinforcement is apparent.

P. The manufacturer shall use measuring devices to assure joint assembly is within tolerances of ASTM C76 and these Specifications. If, during construction, the pipes cannot be satisfactorily joined, the manufacturer shall pre-join the pipe at his shop.

Q. Unsatisfactory or damaged pipe will be either permanently rejected or returned for minor repairs. Only that pipe actually conforming to the Specifications and accepted will be listed for approval, shipment and payment. Approved pipe will be so stamped or stenciled on the inside before it is shipped. All pipe which has been damaged after delivery will be rejected, and if such pipe already has been laid in the trench, it shall be acceptably repaired, if permitted, or removed and replaced, entirely at the Contractor's expense.

R. Pitts, blisters, rough spots, breakage, and other imperfections may be repaired, subject to the approval of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Non-shrink cement mortar used for repairs shall have a minimum compressive strength of 6,000 psi at the end of 7 days and 7,000 psi at the end of 28 days, when tested in 3-inch cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the Engineer.

S. Steel wall fittings to be used in the walls of the cast-in-place structures shall be equal to those manufactured by Interpace Corp., and shall be compatible with

rubber and steel joints of reinforced concrete pipe and prestressed concrete cylinder pipe where applicable.

2.02 JOINTS FOR CONCRETE PIPE

2.02.a. Raw Water and Irrigation Pipelines

A rubber gasket shall be the sole element of the joint depended upon to provide water-tightness. Rubber gaskets shall be solid gaskets of circular cross section. The gasket shall be confined in an annular space formed by the bell or bell ring and a groove in the spigot end of the pipe or spigot right or by shoulders on the bell and spigot ends of the pipe in such a manner that slight movement of the pipe or hydrostatic pressure can not displace the gasket and so that when the joint is assembled, the gasket is compressed to form a watertight seal. Joints shall be designed so that the gasket will not be required to support the weight of the pipe. The joint will be a Type R-4 with a formed gasket groove in spigot end, details conforming to Figures 5 and 6 of the Bureau of Reclamation Standard Specifications for Reinforced Concrete Pressure Pipe, November 1, 1991. Leading edge of bell shall be chamfered or rounded to facilitate entrance of gasket. The minimal cross-sectional area of annular space for gasket, with joint in normal concentric closure position, shall not be less than the cross-sectional area of gasket calculated using the maximum stretched cross-sectional diameter. Minimal cross-sectional area of annular space for gasket shall be calculated for minimum bell diameter, maximum spigot diameter, minimum groove width at spigot surface, and minimum groove depth. The average stretch cross-sectional area of the gasket shall meet the requirements of the Bureau of Reclamation specifications for Concrete pipe, dated November 1, 1991 for the Type R-4 joint.

2.02.b. Other Rubber Gasket Joints (These joints are not acceptable for irrigation pipelines)

A. Joints shall be the bell and spigot type of joint with provisions for using a round rubber “O-Ring” gasket in a recess in the spigot end of the pipe. The bevel on the bell of the pipe shall be between 1-1/2 degrees and 2-1/2 degrees. The diameters of the joint surfaces which compress the gasket shall not vary from the true diameters by more than 1/16 inch.

B. The round rubber “O-Ring” gaskets shall conform to ASTM C443. Two gaskets shall be submitted to the Engineer for tests at least 30 days before joining any of the pipe. Specimens of the gaskets shall be subjected to tensile tests of approximately 100 psi before and after immersion and heating tests, and shall show an elongation of at least 25 percent. Upon release from the tensile tests, each specimen shall return to its original length.

C. Specimens shall be heated in a dry oven to 150°F for 6-hour duration and five specimens shall be tested by immersion, one each as follows: 2-hour immersion in petroleum ether, 72-hour immersion in saturation Hydrogen Sulfide solution, 72-hour immersion in 1 percent NaOH solution, 72-hour immersion in standard soap solution (80 per-cent alcohol), and 72-hour immersion in 10 percent NaCl solution.

The specimens shall show no detrimental change in color, texture, or feeling upon completion of the above tests. The manufacturer shall supply test data and affidavits showing compliance with these requirements. Tests shall have been conducted within six months of the start of manufacture of the pipe.

D. The gaskets shall be designed and manufactured so that the completed joint will withstand an internal water pressure in excess of 15 psi for a period of ten minutes without showing any leakage by the gasket or displacement of it, see ASTM C443. The pipe manufacturer shall provide facilities for testing the effectiveness of the joints against leakage and one such test may be required for each 500 feet of pipe. Such tests shall be made by an internal or external pressure against the joint of at least 15 psi for a period of ten minutes. The completed joint, when installed in place in the work, shall be capable of withstanding a ground water pressure of 15 psi without exceeding the allowable leakage specified herein.

E. The pipe manufacturer shall furnish information and supervise the installation of at least the first five joints installed by the Contractor. The ends of the pipe shall be made true to form and dimension, and the bell shall be made by casting against steel forms.

F. The manufacturer shall inspect all pipe joint surfaces for out-of-roundness and pipe ends for squareness. The manufacturer shall furnish to the Engineer a notarized affidavit stating all pipe meets the requirements of ASTM C76, these Specifications and the joint design.

PART 3: EXECUTION

3.01 LAYING CONCRETE PIPE

A. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe or fittings and the joint surfaces. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before laying, and no piece shall be installed which is found to be defective.

B. The pipe shall be laid to the grade shown on the plans. The Contractor or the Engineer shall stake the trench line with optical equipment. As soon as the excavation is completed to the normal grade of the bottom of the trench, the Contractor shall place screened gravel in the trench, and the pipe shall be firmly bedded in this gravel to conform accurately to the lines and grades indicated on the Drawings. Screened gravel shall conform to the requirements of Section 02200. Blocking under the pipe will not be permitted.

As an alternate to the above paragraph, if approved by the Engineer, the pipe may be laid on an approved subgrade of insitu soils. The trench must be excavated to grade and the trench bottom shall be finish to smooth, firm, and uniform finish. The trench shall be over excavated at the pipe bell location, so that the pipe loading shall be full resisted on the barrel of the pipe. Unstable soil shall be removed and

replaced with gravel which shall be thoroughly tamped. The Engineer will determine the depth of removal, and the replacement of unstable soil shall be included in the gravel unit price item.

C. Screened gravel shall be placed and compacted to give complete vertical and lateral support for the lower section of the pipe as indicated on the Drawings. A depression shall be left in the supporting gravel, or trench bottom, at the joint to prevent contamination of the rubber gasket immediately before being forced home. Before the pipe is lowered into the trench, the spigot and bell shall be cleaned and free from dirt. Gasket, bell, and spigot shall be lubricated by a vegetable lubricant which is not soluble in water, furnished by the pipe manufacturer, and harmless to the rubber gasket. The rubber gasket shall be equalized in the spigot groove by running a smooth, round object, inserted between gasket and spigot, around the entire circumference several times. The pipe shall be properly aligned in the trench to avoid any possibility of contact with the side of the trench and fouling the gasket. As soon as the spigot is centered in the bell of the previously laid pipe, it shall be forced home with jacks or come-alongs. After the gasket is compressed and before the pipe is brought fully home, each gasket shall be carefully checked for proper position around the full circumference of the joint. Steel inserts shall be used to prevent the pipe from going home until the feeler gage is used to check the final position of the gasket. The jacks or come-alongs shall be anchored sufficiently back along the pipeline (a minimum of 5 lengths) so that the pulling force will not dislodge the pieces of pipe already in place. Only a jack or come-along shall be employed to force the pipe home smoothly and evenly and hold the pipe while backfilling is in progress. Under no circumstances shall crowbars be used nor shall any of the motor driven equipment be used.

D. As soon as the pipe is in place and before the come-along is released, screened gravel, or select, backfill shall be placed as indicated on the Drawings and compacted for at least one-half the length of pipe. The Contractor shall take extra care to compact backfill under the pipe haunches. Not until this backfill is placed shall the come-along be released. If any motion at joints can be detected, a greater amount of back-fill shall be placed before pressure is released. When pipe laying is not in progress, including lunchtime, the open ends of the pipe shall be closed by a watertight plug or other approved means.

E. The Contractor shall carefully regulate his equipment and construction operations such that the loading of the pipe does not exceed the loads for which the pipe is designed and manufactured. Any pipe damaged during construction operations shall promptly and satisfactorily be repaired or replaced at the Contractor's expense.

F. The interior joints of all pipes, 30 inches and larger shall be filled with non-shrinking grout after the backfilling and testing is completed. Grout shall consist of one part by volume of cement, 1-1/2 parts by volume of sand, conforming to ASTM C33 and 1/4 part by volume of EMBECO or equal. The mixture shall have a dry, crumbly consistency and shall be pounded into place and troweled to make a smooth joint.

3.02 TESTING AND CLEANING

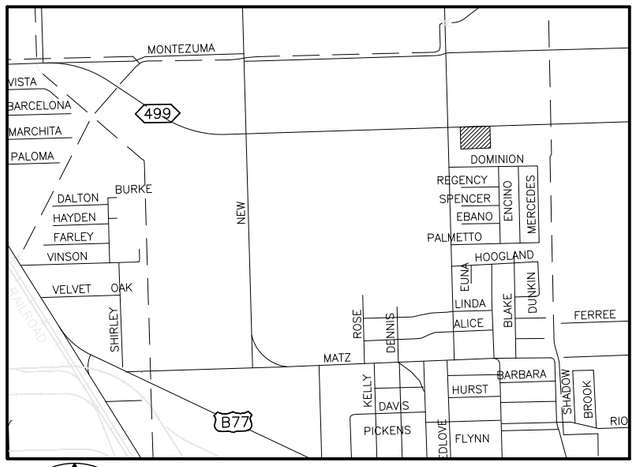
A. Testing and cleaning shall be as specified in Section 01656.

B. Irrigation, or Raw Water, Pipeline Leak Test
The installed raw water line will be blocked and filled with water to operating pressure. All visible leaks will be repaired by the Contractor. Leak repair will be made as follows: The joint will be filled with non-shrink epoxy grout with a water activated polyurethane chemical grout pneumatically injected behind the non-shrink expoxy grout.

If leaks are excessive in the installed line, the Engineer reserves the right to require the Contractor to successfully complete joint-by-joint hydrostatic tests to 13 psi for 10 minutes on each repaired joint before final acceptance.

C. Low Pressure Air Test (These tests are not required for irrigation pipelines)
1. For making low-pressure air tests, the Contractor shall use equipment specifically designed and manufactured for the purpose of testing sewer pipelines using low-pressure air. The equipment shall be provided with an air regulator valve or air safety valve so set that the internal air pressure in the pipeline cannot exceed 8 psig. The leakage test using low-pressure air shall be made on each manhole-to-manhole section of pipeline. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressure without requiring external bracing or blocking. All air used shall pass through a single control panel.
2. Low-pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psig greater than the maximum pressure exerted by ground water that may be above the invert of the pipe at the time of the test. However, the internal air pressure in the sealed line shall not be allowed to exceed 8 psig. When the maximum pressure exerted by the ground water exceeds 4 psi, the Contractor shall conduct only an infiltration test as specified in Section 01666.
   At least two minutes shall be allowed for the air pressure to stabilize in the section under test. After the stabilization period, the low-pressure air supply hose shall be quickly disconnected from the control panel. The time required in minutes for the pressure in the section under test to decrease from 3.5 to 2.5 psig (greater than the maximum pressure exerted by ground water that may be above the invert of the pipe) shall not be less than that shown in the tables prepared by the National Clay Pipe Institute.
3. If the pipe section does not pass the air test, either sectionalize the section tested to determine the location of the leak or perform a hydrostatic leak test. Once the leak has been located, repair and retest.

END OF SECTION



LOCATION MAP:
N.T.S.

INDEX TO SHEETS:

COVER SHEET:

CIVIL IMPROVEMENTS:

PROJECT CONTACTS:

CIVIL ENGINEERING FIRM:

SDI ENGINEERING, L.L.C.
5602 E. IOWA RD.
EDINBURG, TEXAS 78542
ISAEL POSADAS, P.E.
PHONE: (956) 287–1818
FAX: (956) 287–3697
E–MAIL: info@sdi–engineering.com

TEXAS TROPICAL

PARKING LOT IMPROVEMENTS

HARLINGEN, TEXAS

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NOTE:

CONTRACTORS SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOUND ON THESE SET OF DRAWINGS, PRIOR TO ANY CONSTRUCTION.

SDI ENGINEERING, LLC
CIVIL • TRANSPORTATION • PLANNING • STORMWATER
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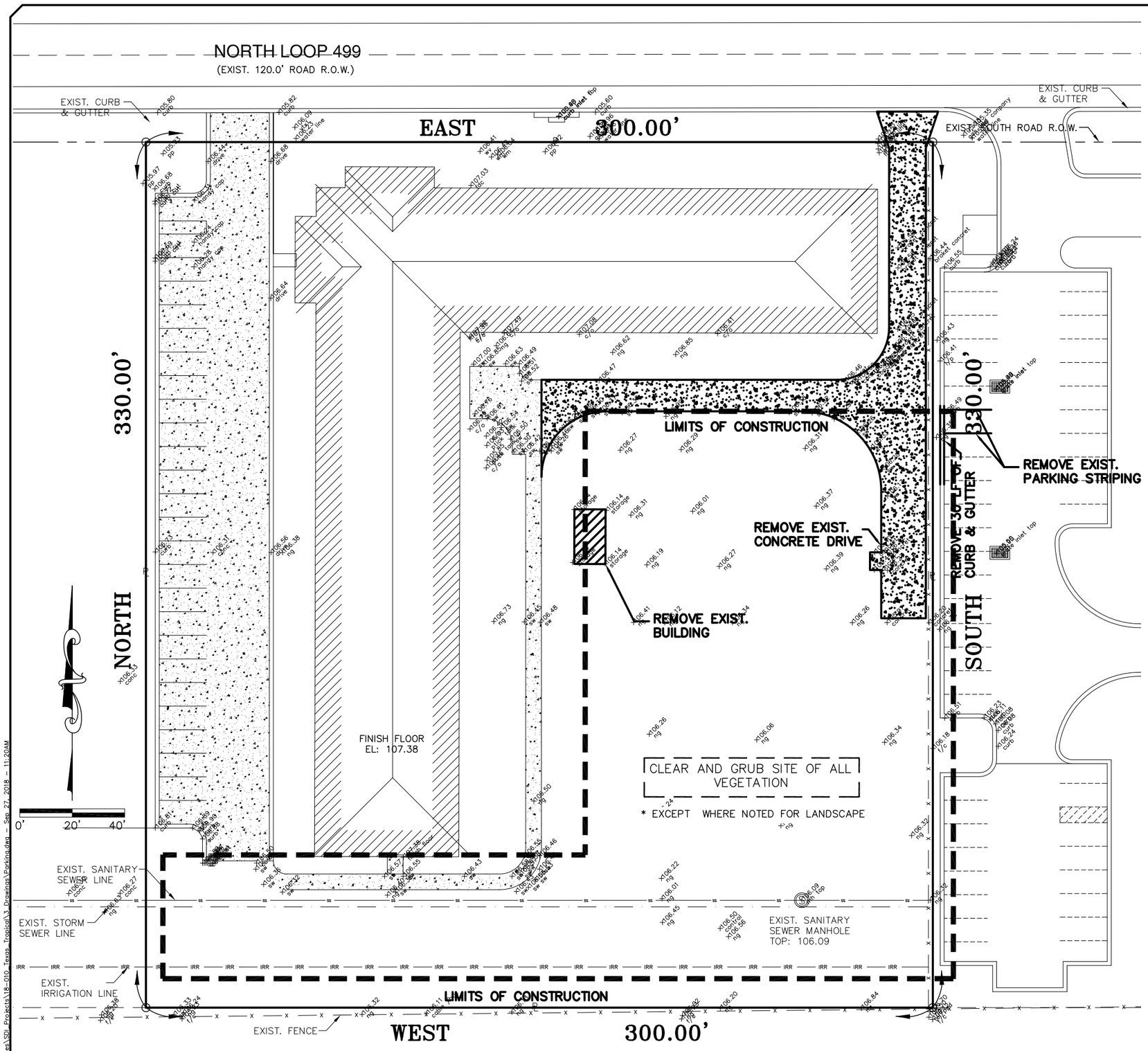
INFO@SDI-ENGINEERING.COM
TBPE REG. NO. F-13016



GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL EXISTING PUBLIC OR PRIVATE UTILITIES PRIOR TO CONSTRUCTION. LOCATIONS AND GRADES OF EXISTING UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REPAIRS TO DAMAGED LINES AT NO ADDITIONAL COST TO THE OWNER.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE JOBSITE.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL MATERIAL AND EQUIPMENT STORED ON THE JOBSITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STORAGE OF MATERIALS IN A SAFE AND WORKMANLIKE MANNER TO PREVENT INJURIES, DURING AND AFTER WORKING HOURS, UNTIL PROJECT COMPLETION.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND CONSTRUCTION INSPECTIONS WITH THE PROPER REGULATORY AGENCIES, PRIOR TO BEGINNING CONSTRUCTION. COPIES OF ALL PERMITS SHALL BE SENT TO THE ENGINEER.

5. THE DRAWINGS SHOW AS MUCH INFORMATION AS CAN BE REASONABLE OBTAINED FROM ON THE GROUND OBSERVATION AND EXISTING CONSTRUCTION DRAWINGS REGARDING THE ENTIRE TOPOGRAPHY, CONTOURS, SUB-SURFACE SOILS, AS WELL AS THE LOCATION AND NATURE OF PIPELINES, STORM SEWERS, WATERLINES, NATURAL GAS LINES, UNDERGROUND CABLES, ETC. HOWEVER, THE ACCURACY OF OR COMPLETENESS OF SUCH INFORMATION IS NOT GUARANTEED.

6. CONTRACTOR SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.) REGULATIONS.

7. ALL WORK IS TO BE DONE IN ACCORDANCE WITH APPLICABLE NATIONAL, STATE MUNICIPAL AND LOCAL CODES.

8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SUPERVISE AND COORDINATE ALL WORK TO INSURE THE PROPER EXECUTION, ALL WORK IS TO BE ACCOMPLISHED IN A NEAT, WORKMAN LIKE MANNER, AND ALL EXCESS MATERIALS, TRASH AND DEBRIS, ETC., SHALL BE REMOVED FROM THE JOB BY THE CONTRACTOR, AT THEIR EXPENSE.

9. THE CONTRACTOR SHALL KEEP ALL STREETS FREE OF DIRT, MUD, ETC. DURING THE COURSE OF CONSTRUCTIONS.

10. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO IN ACCORDANCE TO ENGINEERING STANDARDS.

11. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK.

12. BACKFILL TO TOP OF NEW PAVEMENT OR CURBS WITH CLEAN SOIL FREE OF CLODS. ALL DISTURBED AREAS AND AREAS REQUIRING GRADING SHALL BE FINE GRADED, REMOVE ALL TRASH/DEBRIS AND PROVIDE A SMOOTH SURFACE FOR PROPER TURF MANAGEMENT. HYDROMULCH DISTURBED AREAS NOT NOTED TO BE SOLID SOD OR AS DIRECTED BY THE ENGINEER.

13. CONTRACTOR SHALL EXERCISE CARE IN REMOVING/TRANSPORTING ANY ITEMS DEEMED SALVAGEABLE BY OWNER.

14. ANY ITEM DAMAGED OR UNSUITABLE FOR USE SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.

FILE NAME:	
DATE:	7/3/18
SURVEYED BY:	
DESIGNED BY:	IF
DRAWN BY:	IF
REVISED BY:	IP
CHECKED BY:	IP

TITLE: TEXAS TROPIC SITE PLAN

DEMOLITION & CLEARING AREAS

SDI ENGINEERING, LLC
CIVIL • TRANSPORTATION • PLANNING • STORMWATER
5602 E. IOWA RD. EDINBURG, TEXAS (956) 287-1818 PH. (956) 287-3697 FAX
INFO@SDI-ENGINEERING.COM
TBPE REG. NO. F-13016

SCALE: FULL: N.T.S. HALF: 1"= 40'

TBPE REG. NO. F-13016

STATE OF TEXAS ISAEL POSADAS 89435 LICENSED PROFESSIONAL ENGINEER

THIS SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ISAEL POSADAS, P.E. No. 89435 ON SEPTEMBER 27, 2018. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

DATE: 9/27/18

SHEET NO.: 1 OF 6

Z:\SDI Files\SDI Projects\18-010 Texas Tropical\3 Drawings\Parking.dgn - Sep 27, 2018 - 11:20AM

NORTH LOOP 499
(EXIST. 120.0' ROAD R.O.W.)

EXIST. CURB & GUTTER

EXIST. CURB & GUTTER

EXIST. SOUTH ROAD R.O.W.

EAST 300.00'

WEST 300.00'

NORTH

SOUTH

330.00'

330.00'

125.96'

30.00' DRIVE

R3.00'

22.50'

36.00'

6.00'

184.47'

172.48'

208.48'

FINISH FLOOR
EL: 107.38

PROP. 27.00' DRIVE.

0.00'

R5'

R10'

EXIST. SANITARY SEWER LINE

EXIST. STORM SEWER LINE

35.00'

PROP. 24.00' DRIVE

EXIST. SANITARY SEWER MANHOLE
TOP: 106.09

EXIST. IRRIGATION LINE

278.25'

EXIST. FENCE

0' 20' 40'

PARKING LOT IMPROVEMENTS

ITEM	SQ. YRD.	L.F.	QTY
5.0' CONC. SIDEWALK	–	152	–
9.0' CONC. SIDEWALK	–	26	–
CURB & GUTTER	–	981	–
ASPHALT	3,131.00	–	–
CALICHE	3,528.00	–	–
BASE	3,528.00	–	–

FILE NAME:
DATE: 7/3/18
SURVEYED BY:
DESIGNED BY: IF
DRAWN BY: IF
REVISED BY: IP
CHECKED BY: IP

TITLE: TEXAS TROPIC SITE PLAN

PARKING LOT DIMENSIONS

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TBPE REG. NO. F-13016

STATE OF TEXAS
ISAEL POSADAS
89435
LICENSED PROFESSIONAL ENGINEER

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DATE: 9/27/18

SHEET NO.: 2 OF 6

Z:\SDI Files\SDI Projects\18-010 Texas Tropical\3 Drawings\Parking.dwg - Oct 01, 2018 - 8:29AM

NORTH LOOP 499
(EXIST. 120.0' ROAD R.O.W.)

EXIST. CURB & GUTTER

EAST 300.00'

EXIST. CURB & GUTTER

EXIST. SOUTH ROAD R.O.W.

330.00'

NORTH

330.00'

SOUTH

PROP. 152 LF OF 5.0' SIDEWALK

PROP. 26 LF OF 9.0' SIDEWALK

EXIST. 28.50' DRIVE

9.00' WALKWAY STRIPING

EXIST. 30.00' DRIVE

EXIST. 24.00' DRIVE

EXIST. 24.00' DRIVE

EXIST. 36.00' DRIVE

6.00' STRIPING

PROP. 18 PARKING LOT WHEEL STOPS

FINISH FLOOR EL: 107.38

EXIST. SANITARY SEWER LINE

EXIST. STORM SEWER LINE

EXIST. SANITARY SEWER MANHOLE TOP: 106.09

EXIST. IRRIGATION LINE

EXIST. FENCE

WEST 300.00'

0' 20' 40'

FILE NAME:

DATE: 7/3/18

SURVEYED BY:

DESIGNED BY: IF

DRAWN BY: IF

REVISED BY: IP

CHECKED BY: IP

TITLE: TEXAS TROPIC SITE PLAN

PARKING LOT STRIPING

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TBPE REG. NO. F-13016

STATE OF TEXAS ISAEL POSADAS 89435 LICENSED PROFESSIONAL ENGINEER

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DATE: 9/27/18

SHEET NO.: 3 OF 6

Z:\SDI Files\SDI Projects\18-010 Texas Tropical\3 Drawings\Parking.dwg - Sep 27, 2018 - 11:26AM

NORTH LOOP 499
(EXIST. 120.0' ROAD R.O.W.)

EXIST. CURB & GUTTER

EAST 300.00'

EXIST. CURB & GUTTER

EXIST. SOUTH ROAD R.O.W.

330.00'

NORTH

SOUTH

330.00'

MATCH

MATCH

MATCH

PROP. 9 LF OF LOW PROFILE CURB & GUTTER

SW: 106.50

TC: 106.50

INSTALL GRATE INLET TOP: 104.79 FL: 101.79

TC: 106.44

B.M. #1 EXIST. GRATE INLET TOP: 105.48

TC: 106.50

TC: 106.50 MATCH

TC: 106.50

TC: 106.50

B.M. #2 EXIST. GRATE INLET TOP: 105.50

TC: 106.50

INSTALL GRATE INLET TOP: 104.79 FL: 101.53

PROP. 104 LF OF 15" RCP @ 0.25%

PROP. 35 LF OF 15" RCP @ 0.25%

FINISH FLOOR EL: 107.38

TC: 106.90 MATCH

TC: 106.50 MATCH

TC: 106.50

EXIST. SANITARY SEWER LINE

EXIST. STORM SEWER LINE

EXIST. SANITARY SEWER MANHOLE TOP: 106.09

EXIST. IRRIGATION LINE

PROP. DRAINAGE MANHOLE TOP: 104.79 FL: 101.44

TC: 106.50

EXIST. FENCE

WEST 300.00'

0' 20' 40'

DRAINAGE IMPROVEMENTS			
15" RCP	–	139	–
DRAINAGE MANHOLE	–	–	1
GRATE INLET	–	–	2

FILE NAME:
DATE: 7/3/18
SURVEYED BY:
DESIGNED BY: IF
DRAWN BY: IF
REVISED BY: IP
CHECKED BY: IP

TITLE: TEXAS TROPIC SITE PLAN

PARKING LOT DRAINAGE IMPROVEMENTS

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DATE: 9/27/18

SHEET NO.: 4 OF 6

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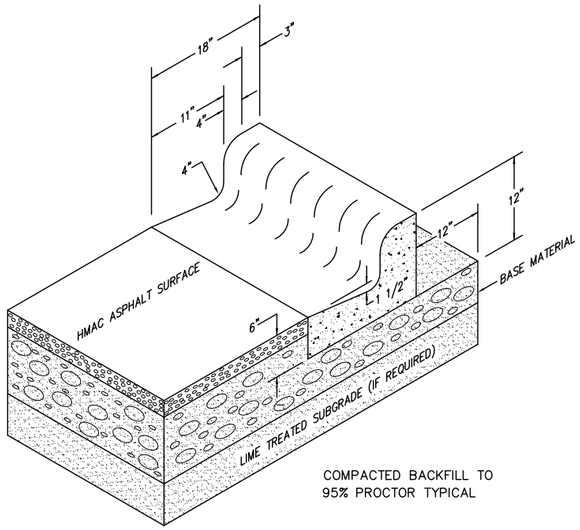
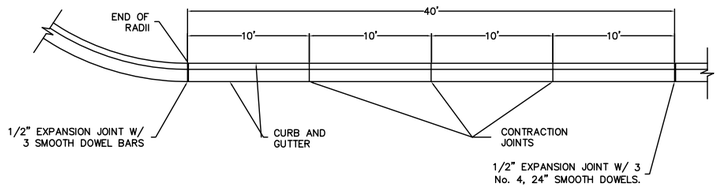


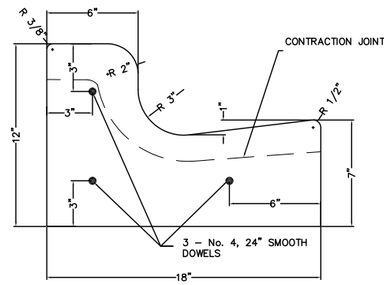
COMPACTED BACKFILL TO 95% PROCTOR TYPICAL

TYPICAL CURB AND GUTTER SECTION



TYPICAL JOINTS

NOT TO SCALE



CURB AND GUTTER DETAIL

NOT TO SCALE

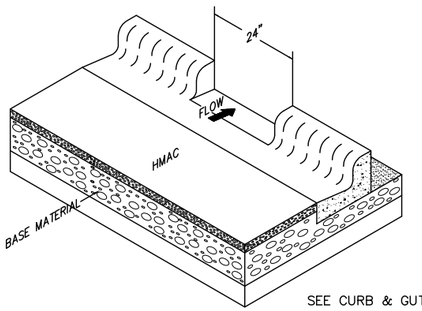
GENERAL NOTES:

1. CONCRETE SHALL BE 3000 P.S.I. COMPRESSIVE STRENGTH AT 28 DAY.

2. ALL CONCRETE WORK SHALL BE TREATED WITH MEMBRANE CURING COMPOUND TYPE 2 WHITE PIGMENTED IN ACCORDANCE w/ TEXAS DEPARTMENT OF TRANSPORTATION DEPARTMENTAL MATERIALS SPECIFICATION ITEM 4650. CONSIDERED INCIDENTAL TO CONCRETE WORK.

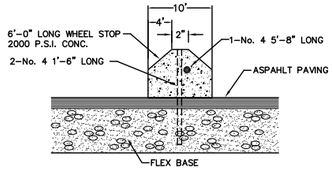
3. 1/2" EXPANSION JOINTS REQUIRED AT 40' c.c. AND AT THE BEGINNING AND END OF ALL RADII. CONTRACTION JOINTS SHALL NOT EXCEED 10' c.c.

4. EXPANSION JOINTS SHALL HAVE 1/2 EXPANSION JOINT MATERIAL, AND 3 No. 4, 24" SMOOTH DOWEL BARS COATED TO PREVENT BOND.

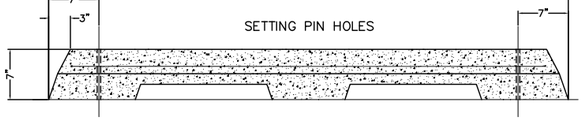


SEE CURB & GUTTER DETAIL FOR MORE INFORMATION

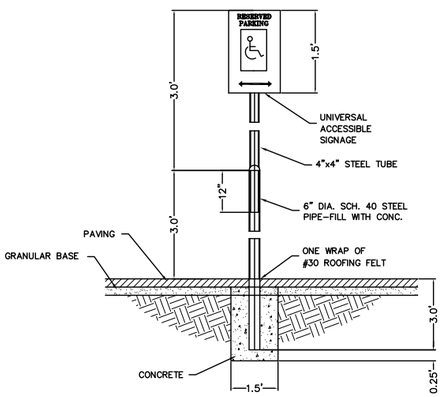
TYPICAL CURB SLOT SECTION



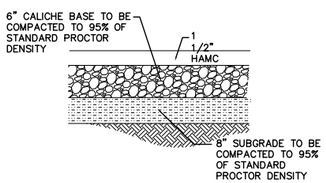
CONCRETE WHEEL STOP



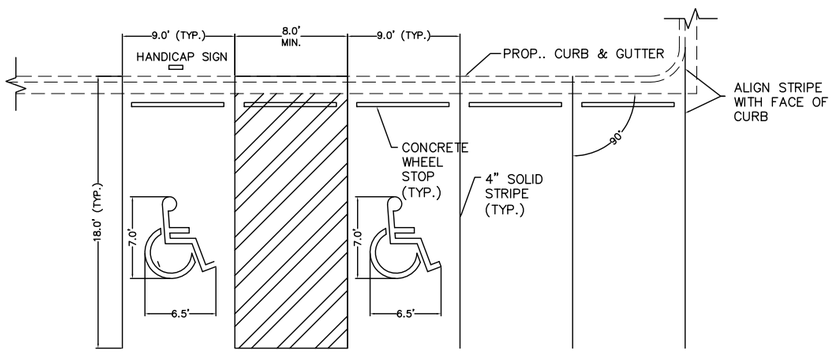
CONCRETE WHEEL STOP



ACCESSIBLE PARKING SIGN



TYPICAL ASPHALT PAVEMENT SECTION



NOTE:
REQUIRED 24.0' BACKUP DISTANCE

NOTE:
FINAL PLACEMENT OF PAVEMENT MARKINGS SHALL BE APPROVED BY THE ENGINEER IN THE FIELD PRIOR TO INSTALLATION.

TYPICAL STRIPING DETAIL FOR ACCESSIBLE AREAS

FILE NAME:
DATE: 7/3/18
SURVEYED BY:
DESIGNED BY: IF
DRAWN BY: IF
REVISED BY: IP
CHECKED BY: IP

TITLE: TEXAS TROPIC SITE PLAN

PARKING LOT DETAILS

SDI ENGINEERING, LLC
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INFO@SDI-ENGINEERING.COM
TBPE REG. NO. F-13016

SCALE: FULL: N.T.S. HALF: 1"= 40'

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STATE OF TEXAS ISAEL POSADAS 89435 LICENSED PROFESSIONAL ENGINEER

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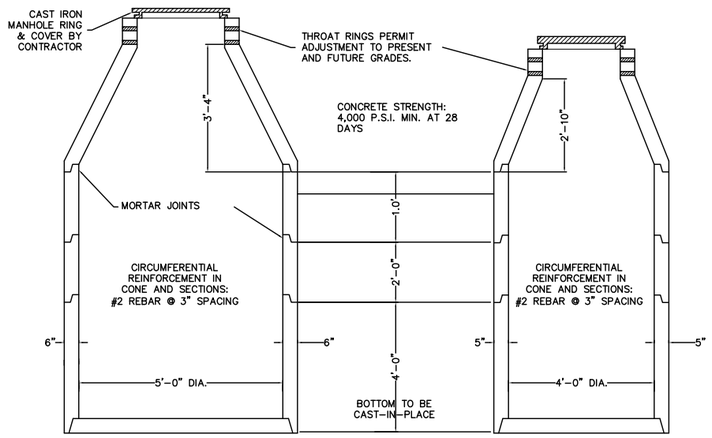
DATE: 9/27/18

SHEET NO.: 5 OF 6

Z:\SDI Files\SDI Projects\18-010 Texas Tropical\3 Drawings\Parking.dwg - Sep 27, 2018 - 11:23AM

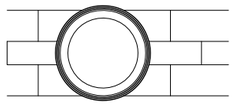


WEIGHTS OF 5'–0" DIA. MANHOLE	
THROAT RING	90 LBS.
CONE SECTION	2800 LBS.
1'–0" SECTION	1329 LBS.
2'–0" SECTION	2658 LBS.
3'–0" SECTION	3987 LBS.
4'–0" SECTION	5316 LBS.

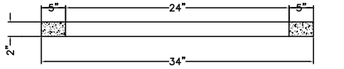
MANHOLES SECTIONS ARE CAST IN

- 1'–0" LENGTHS
- 2'–0" LENGTHS
- 3'–0" LENGTHS
- 4'–0" LENGTHS

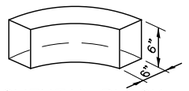
WEIGHTS OF 4'–0" DIA. MANHOLE	
THROAT RING	90 LBS.
CONE SECTION	1750 LBS.
1'–0" SECTION	875 LBS.
2'–0" SECTION	1750 LBS.
3'–0" SECTION	2625 LBS.
4'–0" SECTION	3500 LBS.



PRECAST CONCRETE SEGMENTS MAY BE USED ON LARGER DIAMETER PIPELINES IN LIEU OF BREAKING OUT LARGE HOLES IN PRECAST SECTIONS.

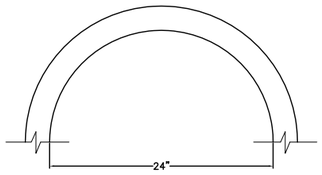


REINF. CONCRETE THROAT RING

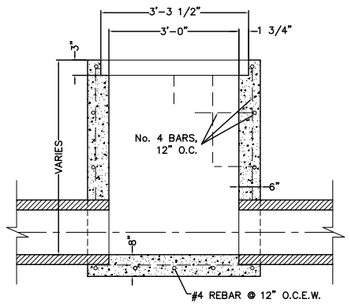


SEGMENTAL BLOCK

5'–0" DIA. – 15 BLOCKS FULL CIRCLE
4'–0" DIA. – 12 BLOCKS FULL CIRCLE



PRECAST CONCRETE MANHOLES – DETAILS



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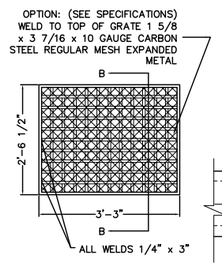
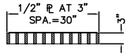


TOP VIEW OF GRATE
(BYCYCLE PROOF)



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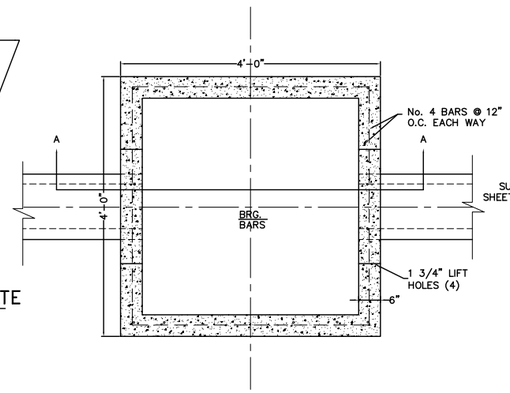
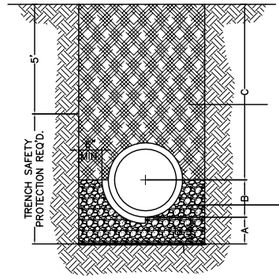


TOP VIEW OF INLET

TYPE "C" GRATED INLET

NOTE: WHEN UTILITY LOCATED WITHIN CITY R.O.W., ALL BACKFILL IS SUBJECT TO INSPECTION, TESTING AND APPROVAL BY THE CITY ENGINEER'S OFFICE



STANDARD PIPE BEDDING

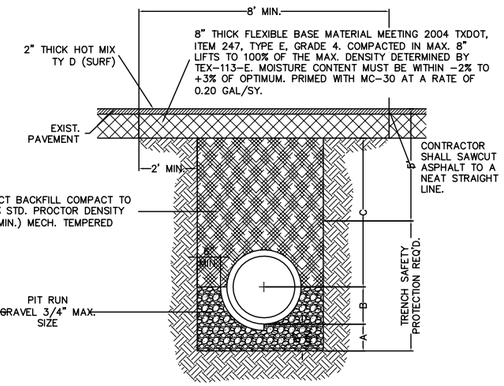
A. GRAVEL (3/4" MAX. SIZE) BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE. (MIN. THICKNESS = 6")

B. GRAVEL BACK FILL PLACED AFTER PIPE IS LAID FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE. (4" LIFTS, MECH. TAMPED).

C. FILL TRENCH W/SELECT BACKFILL (PI<20), W/12" LIFTS COMPACT TO 95% STD. PROCTOR

FOUNDATION PREPARATION (WELLPOINTS, GRAVEL AND/OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE.

BACK FILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL BE SAND, APPROVED SITE SOIL OR OTHER APPROVED SUBSTITUTE.



STANDARD PIPE BEDDING

UNDER EXISTING PAVEMENT OR PROP. PAVEMENT

A. GRAVEL (3/4" MAX. SIZE) BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE. (MIN. THICKNESS = 6")

B. GRAVEL BACK FILL PLACED AFTER PIPE IS LAID FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE. (4" LIFTS, MECH. TAMPED).

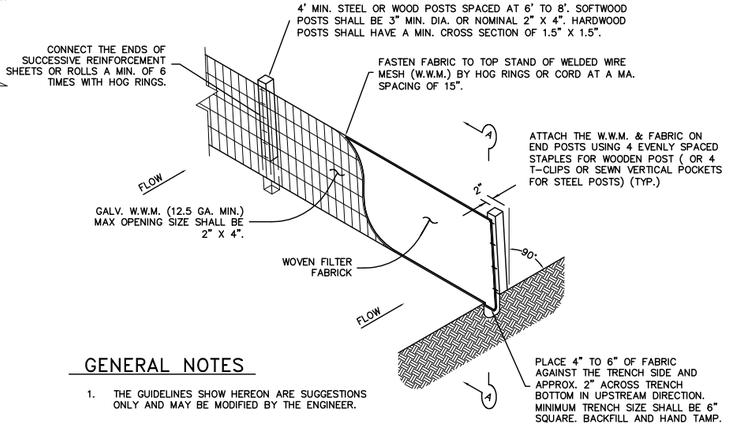
C. FILL TRENCH W/SELECT BACKFILL (PI<20), W/12" LIFTS COMPACT TO 95% STD. PROCTOR

FOUNDATION PREPARATION (WELLPOINTS, GRAVEL AND/OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE.

BACK FILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL BE SAND, APPROVED SITE SOIL OR OTHER APPROVED SUBSTITUTE.

NOTE: ALL EXISTING STREET CROSSINGS SHALL REQUIRE SAND BACKFILL OF ENTIRE TRENCH.

STANDARD PIPE BEDDING – DETAILS



GENERAL NOTES

1. THE GUIDELINES SHOW HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

GENERAL NOTES

1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MINIUM OF 4" AND WHERE POSSIBLE 1/2 THE HEIGHT OF THE BALE.
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3/8" DIA. REBAR OR 2" X 2" WOOD STAKES, DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTION ONLY AND MAY BE MODIFIED BY THE ENGINEER.

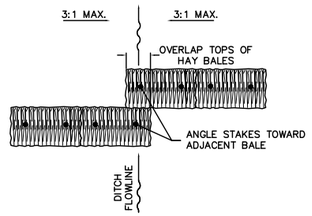
SEDIMENT CONTROL FENCE USAGE GUIDELINES

A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

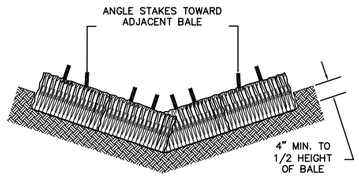
SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAX. FLOW THROUGH RATE OF 100 GPM/FT². SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

PLAN SHEET LEGEND

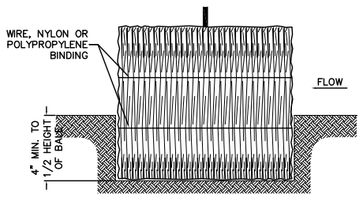
- SEDIMENT CONTROL FENCE — SCF
- BALED HAY — BH



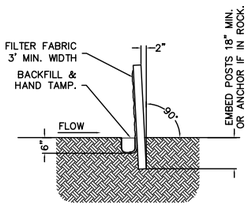
PLAN VIEW



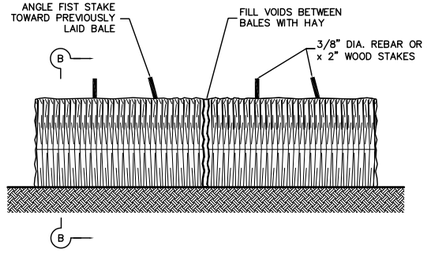
PROFILE VIEW



SECTION B–B



SECTION A–A



FILE NAME:	
DATE:	7/3/18
SURVEYED BY:	
DESIGNED BY:	IF
DRAWN BY:	IF
REVISED BY:	IP
CHECKED BY:	IP

TITLE: TEXAS TROPIC SITE PLAN

PARKING LOT DRAINAGE DETAILS

SDI ENGINEERING, LLC
CIVIL • TRANSPORTATION • PLANNING • STORMWATER
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INFO@SDI-ENGINEERING.COM
TBPE REG. NO. F-13016

SCALE:	
FULL:	N.T.S.
HALF:	1"= 40'

TBPE REG. NO. F-13016

STATE OF TEXAS — ISAEL POSADAS — 89435 — LICENSED PROFESSIONAL ENGINEER

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DATE: 9/27/18

SHEET NO.: 6 OF 6

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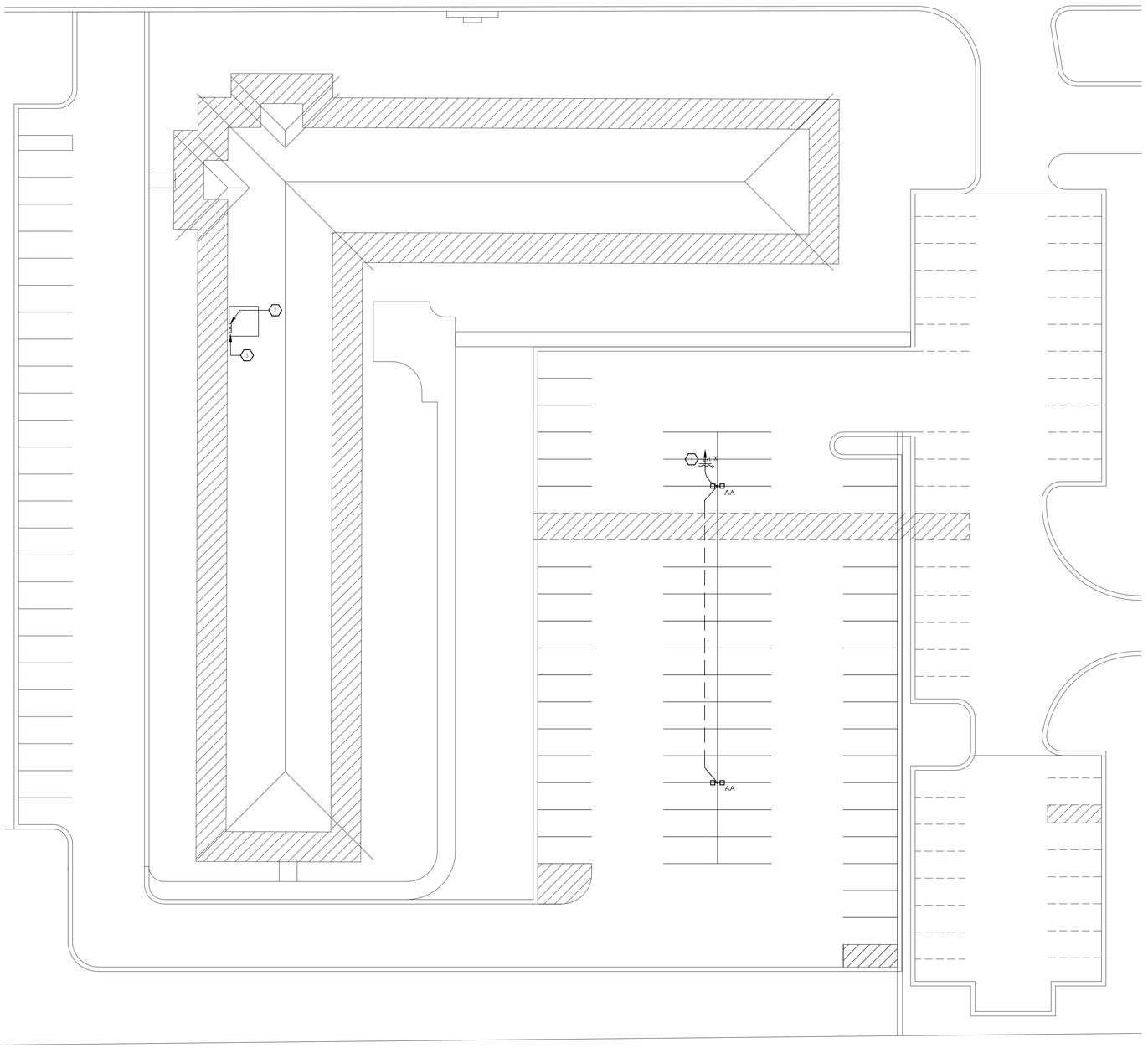

GENERAL ELECTRICAL NOTES (TO ALL SHEETS)

A. CONTRACTOR TO VERIFY ALL EXISTING MAIN POWER SERVICES. PROVIDE ALL COST IN BID TO PROVIDE A COMPLETE ELECTRICAL INSTALLATION.

B. CONTRACTOR IS RESPONSIBLE FOR ALL EXCAVATION, TRENCHING AND BACKFILLING. COORDINATE WITH ALL UTILITIES PRIOR TO EXCAVATION.

C. CONTRACTOR IS RESPONSIBLE CALL DIG-TESS; 1-1800-DIG-TESS 2-BUSINESS DAYS IN ADVANCE.

D. ALL ELECTRICAL EQUIPMENT OUTDOORS SHALL BE RATED TYPE NEMA 3R UNLESS OTHERWISE NOTED.

E. CONTRACTOR SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES. ALL WORK SHALL CONFORM TO NATIONAL ELECTRICAL CODES AND ALL OTHER AUTHORITY HAVING JURISDICTION. OBTAIN PERMITS AND PAY ALL FEES. PERFORM MODIFICATIONS TO MEET CODE AND ORDINANCE REQUIREMENTS AT NO ADDITIONAL COST TO OWNER OR ENGINEER. VERIFY PRIOR TO BID DATE.

F. VERIFY AT JOB SITE THE EXACT LOCATIONS OF STRUCTURAL MEMBERS SUCH AS BEAMS, COLUMNS, ETC. TO LOCATE EQUIPMENT CONDUIT, PANELS AND DEVICES. IF DEVIATIONS FROM THE DRAWING ARE NECESSARY TO MEET STRUCTURAL CONDITIONS MAKE DEVIATIONS WITHOUT ADDITIONAL COST, TO OWNER, ARCHITECT, OR ENGINEER.

G. IN COOPERATION WITH OTHER CONTRACTORS, DETERMINE THE EXACT LOCATION OF EQUIPMENT AND DEVICES AND CONNECTIONS THERETO BY REFERENCE TO THE SUBMITTALS AND ROUGH-IN DRAWINGS, AND BY MEASUREMENTS AT THE SITE. REFER TO ALL OTHER TRADES SUBMITTAL FOR ELECTRICAL INFORMATION.

H. GROUND ENTIRE ELECTRICAL SYSTEM IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

I. VERIFY AT JOB SITE GENERAL WORK TO BE DONE AS SPECIFIED, AS NOTED, OR AS REQUIRED FOR INSTALLATION ELECTRICAL SYSTEMS PRIOR TO SUBMISSION OF BIDS.

J. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND EQUIPMENT TO BE REMOVED AND REPLACED BEFORE SUBMITTING HIS BID.

K. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND SMALL SCALE ONLY. THEY CONVEY THE INTENT OF THE WORK BUT DO NOT SHOW DETAIL SUCH AS JUNCTION AND PULL BOXES REQUIRED BY THE SPECIFICATIONS AND THE NATIONAL ELECTRICAL CODE(NEC). PROVIDE ALL MATERIALS AND METHODS CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED IN THE NEC TO PROVIDE A COMPLETE INSTALLATION OF ALL WORK.

L. ALL WIRING SHALL BE COPPER.

M. ALL SLEEVES, PENETRATIONS, ETC. SHALL BE SEALED SOLID NON-SHRINKING MATERIAL IMMEDIATELY UPON FILLING OF THE OPENING WITH PIPE OR CONDUIT.

N. ARRANGE FOR SOURCES OF TEMPORARY CONSTRUCTION SERVICES. SUCH SERVICES SHALL BE NOMINALLY 120/240V, 1-PHASE, 3-WIRE FROM WHICH A COMPLETE SYSTEM OF TEMPORARY POWER AND LIGHTING SHALL BE PROVIDED FOR ALL CONSTRUCTION NEEDS.

O. CONTRACTOR IS RESPONSIBLE TO VERIFY AND COORDINATE WITH EXISTING/NEW UNDERGROUND UTILITIES PRIOR TO ANY WORK.

KEYED NOTES: ELECTRICAL

1. ROUTE NEW SITE LIGHTING CIRCUIT TO PANEL-L. PROVIDE 1-20AMP, 1 POLE BREAKER WITH CIRCUIT WIRING 2#8,1#10G, 1"C. ROUTE CIRCUIT THROUGH BUILDING LIGHTING RELAY PANEL. PROVIDE NEW 20AMP, 1 POLE RELAY AND PROGRAM RELAY FOR OPERATIONS.

2. PANEL-L LOCATION PER REMODEL PLANS IN THE ELECTRICAL ROOM. FEILD VERIFY EXISTING CONDUIT ROUTE FOR THE NEW PARKING LOT LIGHTING.

3. LIGHTING RELAY PANEL PER REMODEL PLANS IN THE ELECTRICAL ROOM. FEILD VERIFY EXISTING CONDUIT ROUTE FOR THE NEW PARKING LOT LIGHTING. CONTRACTOR SHALL INCLUDE COST TO PROGRAM RELAY LIGHITNG PANEL FOR THE NEW CIRCUIT.

1 ELECTRICAL SITE PLAN
SCALE: 1"=20'-0"

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p:956.973.0500 I f:956-351-5750
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Texas Registered Engineering Firm - F10362
Project number: 18.3.38

09/27/18
STATE OF TEXAS
LEONARDO MUNOZ
97157
LICENSED PROFESSIONAL ENGINEER

FILE NAME:	
DATE:	09/27/18
SURVEYED BY:	
DESIGNED BY:	TRINITY CAD
DRAWN BY:	TRINITY CAD
REVISED BY:	FA
CHECKED BY:	FA

TITLE: TEXAS TROPIC SITE PLAN
ELECTRICAL SITE PLAN

SDI ENGINEERING, LLC
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TBPE REG. NO. F-13016

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DATE: 09/27/18

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ES1.0 OF 1

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ELECTRICAL ABBREVIATIONS:

ABBV:	DESCRIPTION	ABBV:	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	MFR. (S.C.)	MANUFACTURER SHARE CIRCUIT
BFC	BELOW FINISHED CEILING	QRCPT(S)	QUAD RECEPTACLE(S)
C	CONDUIT	RCPT(S)	DUPLEX RECEPTACLE(S)
CB	CIRCUIT BREAKER	CRCPT(S)	I.G. RECEPTACLE(S)
EC	EMPTY CONDUIT	QCRCPT(S)	QUAD I.G. RECEPTACLE(S)
EX	EXISTING	PNL	PANEL
F	FUSE	SO (S.O.)	SPACE ONLY
G	GROUND (EQUIPMENT)	SP	SPARE
GFI	GROUND FAULT INTERRUPTER	ST (S.T.)	SHUNT TRIP
MTD	MOUNT OR MOUNTED	SW	SWITCH
NF	NONFUSED	UF	UNDERFLOOR
NIC	NOT IN CONTRACT	UG	UNDERGROUND
H.D	HEAVY DUTY	UNO(U.N.O.)	UNLESS NOTED OTHERWISE
NL	NIGHT LIGHT	WG	WIRE GUARD
AC	ABOVE COUNTER	WP	WEATHERPROOF
HT.	HEIGHT	XFMR	TRANSFORMER
MTD.	MOUNTING	MB	MAIN BREAKER
FDR.	FEEDER	MLO	MAIN LUGS ONLY
CKT.	CIRCUIT	RMC	RIGID METAL CONDUIT
LTG.	LIGHTING	RNC	RIGID NONMETALLIC CONDUIT
LC	LIGHTING CONTACTOR	EMT	ELECTRICAL METALLIC TUBING CONDUIT
IG	ISOLATED GROUND	S/N	SOLID NEUTRAL
EA.	EACH	AC	ABOVE COUNTER
N1	NEMA-1	AHJ	AHJUTHORITY HAVING JURISDICTION
N3R	NEMA-3R		
N4X	NEMA-4X		
SS	STAINLESS STEEL		

NOTES:

1.) 48" AFF INDICATES TO TOP OF DEVICE;
15" AFF INDICATES TO BOTTOM OF DEVICE;
ALL OTHER MOUNTING HEIGHTS REFER TO CENTERLINE OF DEVICE.
AC INDICATES 6" ABOVE COUNTER TO BOTTOM OF DEVICE.

GENERAL ELECTRICAL NOTES

1. ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.
2. USE DIRECTIONAL ARROW ON EXIT SIGNS AS REQUIRED.
3. IEEE STANDARD C37.2-1991, ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS.
4. CONTRACTOR SHALL NOT INSTALL MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A COMMON RACEWAY. IF CONTRACTOR IS PLANNING ON GROUPING MULTIPLE CIRCUITS IN A SINGLE RACEWAY, THE CONTRCATOR MUST SUBMIT ALL DERATING CALCULATIONS FOR THE PROPOSED INSTALLATION IN ACCORDANCE WITH NEC ARTICLE 310.15 (B) (2) FOR APPROVAL PRIOR TO INSTALLATION. NON APPROVED INSTALLATIONS WILL BE REMOVED AND REINSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE NEC AT NO ADDITIONAL COST TO THE OWNER.
5. THERE SHALL NOT BE MORE THAN THE EQUIVALENT OF THREE 90° BENDS (270 DEGREES TOTAL) BETWEEN PULL POINTS. WHERE THERE ARE MORE THAN THREE QUARTER BENDS, CONTRACTOR SHALL PROVIDE PULL BOXES AS SPECIFIED AND SIZED IN ACCORDANCE WITH NEC.
6. COMPLY WITH NEC REQUIREMENTS FOR ELECTRICAL INSTALLATIONS. ALL ELECTRICAL EQUIPMENT AND MATERIAL TO BE APPROVED, LISTED, LABELED, IDENTIFIED AND INSTALLED PER RECOGNIZED ELECTRICAL TESTING LABORATORY.
7. ALL RECEPTACLES, SWITCHES AND JUNCTION BOXES SERVED BY EMERGENCY BRANCH CIRCUITS SHALL BE "RED" IN COLOR. COVERPLATES SHALL BE LABELED IN ACCORDANCE WITH SPECIFICATIONS TO INDICATE PANELBOARD AND CIRCUIT NO. (IE: ET*LA-3).

ELECTRICAL LEGEND-GENERAL

---ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
	NEW LED LIGHT FIXTURE ON A POLE, REFER TO LUMINAIRE SCHEDULE.
	SWITCH LEG
	ELECTRICAL CONDUIT
	UNDERGROUND ELECTRICAL CONDUIT
X, X, X	MULTI-POLE DEVICE CIRCUIT NUMBERS
X/X/X	THREE SINGLE POLE DEVICE CIRCUIT NUMBERS
A-1	CONDUIT AND WIRE HOMERUN TO PANEL. SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATES OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
A-1	UNDERGROUND CONDUIT AND WIRE HOMERUN TO PANEL. SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATED OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
J	JUNCTION BOX - SIZE & MOUNTING AS REQUIRED. VERIFY CONDITIONS PRIOR TO ORDERING ANY BOX.
PB	CONCRETE ELECTRICAL INGRADE JUNCTION BOX - REFER TO DETAILS AND KEYED NOTES.

LUMINAIRE SCHEDULE

MARK	VOLTAGE	LAMP	MOUNTING	DESCRIPTION	MODEL NO.
AA	120V	2 - AREA LED FIXTURE 20295 LM EA. 4000K 366W TOTAL	25'POLE	LED AREA LUMINAIRE, POLE MOUNT LUMINAIRE. INCLUDE BASE COVER, RATED FOR WET LOCATION, TYPE 4, INCLUDE DRIVER. POLE SHALL BE RATED MIN. 150MPH, INCLUDE VIBRATION DAMPER. FINISH TO BE SELECTED BY OWNER.	FIXTURE MFR. LITHONIA DSX1 LED P7 40K T4M MVOLT-RPA-DNAXD POLE MFR. KW INDUSTRIES #RTSP25-7.0-11-NA-DM2090-BC-VD

NOTE:
1.) EQUAL MANUFACTURER SHALL BE ACCEPTABLE WITH EQUAL PERFORMANCE OF SPECIFIED EQUIPMENT AND APPROVED BY ENGINEER.
2.) SUBMIT EQUAL MANUFACTURERS TO ENGINEER 10 DAYS PRIOR TO BID DATE.
3.) SUBMIT LIGHT FIXTURES CUTSHEETS TO OWNER FOR APPROVAL PRIOR TO ORDER.
4.) CONTRACTOR SHALL VERIFY THAT ANY IRRIGATION SPRINKLER HEAD IS AWAY FROM ANY LIGHT POLE A MINIMUM OF 75' TO AVOID CONSISTENT WATER TO LIGHT POLE. COORDINATE WITH IRRIGATION CONTRACTOR PRIOR TO ANY WORK.
5.) POLE ANCHOR BOLTS SHALL BE STAINLESS STEEL, BOLTS SIZE PER POLE MANUFACTURER.
6.) CONTRACTOR SHALL VERIFY EXISTING VOLTAGE FOR EACH LIGHT FIXTURE PRIOR TO ORDERING.
7.) ALL POLES SHALL INCLUDE VIBRATION DAMPERS.

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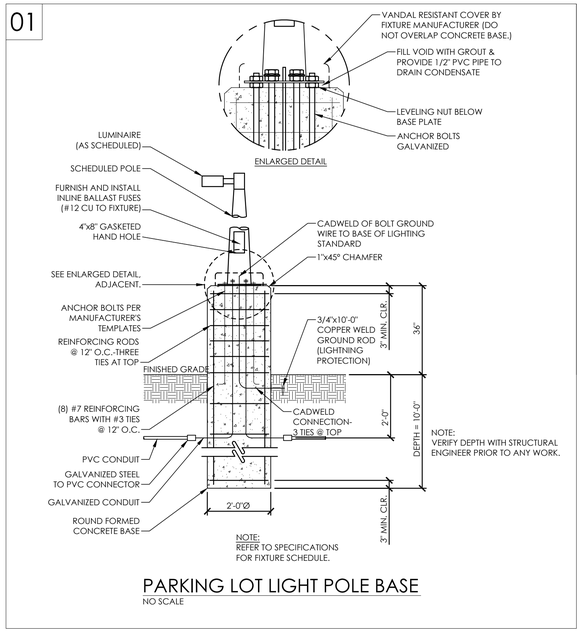

PARKING LOT LIGHT POLE BASE

NO SCALE

FILE NAME:	
DATE:	09/27/18
SURVEYED BY:	
DESIGNED BY:	TRINITY CAD
DRAWN BY:	TRINITY CAD
REVISED BY:	FA
CHECKED BY:	FA

TITLE: TEXAS TROPIC SITE PLAN — ELECTRICAL DETAILS

SDL ENGINEERING, LLC
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TBPE REG. NO. F-13016

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	HALF:	AS SHOWN

TBPE REG. NO. F-13016

DATE: 09/27/18

SHEET NO.: E1.0 OF 2

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Texas Registered Engineering Firm - F10362
Project number: 18.3.38

09/27/18
STATE OF TEXAS
LEONARDO MUNOZ
97157
LICENSED PROFESSIONAL ENGINEER

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EXTERIOR LIGHTING - SPECIFICATION

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the furnishing, installation, and connection of exterior fixtures, poles, and supports. The terms "lighting fixtures", "fixture" and "luminaire" are used interchangeably.

1.2 RELATED WORK

A. Section CAST-IN-PLACE CONCRETE.
B. Section SCHEDULE FOR FINISHES: Finishes for exterior light poles and luminaires.
C. Section REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: General electrical requirements and items that are common to more than one section of Division 26.
D. Section LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.
E. Section GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
F. Section RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.
G. Section UNDERGROUND ELECTRICAL CONSTRUCTION: Underground handholes and conduits.
H. Section LIGHTING CONTROLS: Controls for exterior lighting.

1.3 qualITY ASSURANCE

A. Refer to Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES), in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.4 SUBMITTALS

A. Submit six copies of the following in accordance with Section REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.
1. Shop Drawings:
   a. Submit the following information for each type of lighting fixture designated on the LIGHTING FIXTURE SCHEDULE, arranged in order of lighting fixture designation.
   b. Material and construction details, include information on housing and optics system.
   c. Physical dimensions and description.
   d. Wiring schematic and connection diagram.
   e. Installation details.
   f. Energy efficiency data.
   g. Photometric data based on laboratory tests complying with IES Lighting Measurements testing and calculation guides.
   h. For LED lighting fixtures, submit US DOE LED Lighting Facts label, and IES L70 rated life.
   i. Submit site plan showing all exterior lighting fixtures with fixture tags consistent with Lighting Fixture Schedule as shown on drawings. Site plan shall show computer generated point-by-point illumination calculations. Include lamp lumen and light loss factors used in calculations.
2. Manuals:
   a. Submit, simultaneously with the shop drawings, complete maintenance and operating manuals, including technical data sheets, wiring diagrams, and information for ordering replacement parts.
   b. If changes have been made to the maintenance and operating manuals originally submitted, submit updated maintenance and operating manuals two weeks prior to the final inspection.
3. Certifications: Two weeks prior to final inspection, submit the following.
   a. Certification by the Contractor that the exterior lighting systems have been properly installed and tested.

1.5 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.
B. Aluminum Association Inc. (AA):
AAH35.1-06 Alloy and Temper Designation Systems for Aluminum
C. American Association of State Highway and Transportation Officials (AASHTO):
32-LTS-6 Structural Supports for Highway Signs, Luminaires and Traffic Signals
D. American Concrete Institute (ACI):
318-05 Building Code Requirements for Structural Concrete
E. American National Standards Institute (ANSI):
C81.61-09 Electrical Lamp Bases - Specifications for Bases (Caps) for Electric Lamps
F. American Society for Testing and Materials (ASTM):
A123/A123M-12 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
A153/A153M-09 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
B108-03a-08 Aluminum-Alloy Permanent Mold Castings
C1089-13 Spun Cast Prestressed Concrete Poles
G. Federal Aviation Administration (FAA):
AC 70/7460-1K-07 Obstruction Lighting and Marking
AC 150/5345-43F-06 Obstruction Lighting Equipment
H. Illuminating Engineering Society of North America (IESNA):
HB-9-00 Lighting Handbook
RP-8-05 Roadway Lighting
LM-52-03 Photometric Measurements of Roadway Sign Installations
LM-72-10 Directional Positioning of Photometric Data
LM-79-08 Approved Method for the Electrical and Photometric Measurements of Solid-Sate Lighting Products
LM-80-08 Approved Method for Measuring Lumen Maintenance of LED Light Sources
TM-15-07 Backlight, Uplight and Glare (BUG) Ratings
I. National Electrical Manufacturers Association (NEMA):
C78.41-06 Electric Lamps - Guidelines for Low-Pressure Sodium Lamps
C78.42-07 Electric Lamps - Guidelines for High-Pressure Sodium Lamps
C78.43-07 Electric Lamps - Single-Ended Metal-Halide Lamps
C78.1381-98 Electric Lamps - 70-Watt M85 Double-Ended Metal-Halide Lamps
C82.4-02 Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps (Multiple-Supply Type)
C136.3-05 For Roadway and Area Lighting Equipment - Luminaire Attachments
C136.17-05 Roadway and Area Lighting Equipment - Enclosed Side-Mounted Luminaires for Horizontal-Burning High-Intensity-Discharge Lamps - Mechanical Interchangeability of Refractors
ICS 2-00 (R2005) Controllers, Contactors and Overload Relays Rated 600 Volts
ICS 6-93 (R2006) Enclosures
J. National Fire Protection Association (NFPA):
70-11 National Electrical Code (NEC)
K. Underwriters Laboratories, Inc. (UL):
496-08 Lampholders
773-95 Plug-In, Locking Type Photocontrols for Use with Area Lighting
773A-06 Nonindustrial Photoelectric Switches for Lighting Control
1029-94 High-Intensity-Discharge Lamp Ballasts
1598-08 Luminaires
8750-09.....Light Emitting Diode (LED) Equipment for Use in Lighting Products

1.6 delivery, storage, and handling

Provide manufacturer's standard provisions for protecting pole finishes during transport, storage, and installation. Do not store poles on ground. Store poles so they are at least 305 mm (12 inches) above ground level and growing vegetation. Do not remove factory-applied pole wrappings until just before installing pole.

PART 2 - PRODUCTS

2.1 General REQUIREMENTS

Luminaires, materials and equipment shall be in accordance with NEC, UL, ANSI, and as shown on the drawings and specified.

2.2 POLES

A. General:
1. Poles shall be as shown on the drawings, and as specified. Finish shall be as specified on the drawings.
2. The pole and arm assembly shall be designed for wind loading of / (120 mph)// // // minimum, as required by wind loading conditions at project site, with an additional 30% gust factor and supporting luminaire(s) and accessories such as shields, banner arms, and banners that have the effective projected areas indicated. The effective projected area of the pole shall be applied at the height of the pole base, as shown on the drawings.
3. Poles shall be anchor-bolt type designed for use with underground supply conductors. Poles shall have handhole having a minimum clear opening of 65 x 125 mm (2.5 x 5 inches). Handhole covers shall be secured by stainless steel captive screws.
4. Provide a steel-grounding stud opposite handhole openings, designed to prevent electrolysis when used with copper wire.
5. Provide a base cover that matches the pole in material and color to conceal the mounting hardware pole-base welds and anchor bolts.
6. Hardware and Accessories: All necessary hardware and specified accessories shall be the product of the pole manufacturer.
7. Provide manufacturer's standard finish, as scheduled on the drawings. Where indicated on drawings, provide finishes as indicated in Section 09 06 00, SCHEDULE FOR FINISHES.
8. ANCHOR BOLTS SHALL BE STAINLESS STEEL.

B. Types:
1. Pole - refer to light fixture schedule.

2.3 FOUNDATIONS FOR POLES

A. Foundations shall be cast-in-place concrete, having 3000 psi minimum 28-day compressive strength.
B. Foundations shall support the effective projected area of the specified pole, arm(s), luminaire(s), and accessories, such as shields, banner arms, and banners, under wind conditions previously specified in this section.
C. Place concrete in spirally-wrapped treated paper forms for round foundations, and construct forms for square foundations.
D. Rub-finish and round all above-grade concrete edges to approximately 6 mm (0.25-inch) radius.
E. Anchor bolt assemblies and reinforcing of concrete foundations shall be as shown on the drawings. Anchor bolts shall be in a welded cage or properly positioned by the tewire to stirrups.
F. Prior to concrete pour, install electrode per Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Refer to Detail.

2.4 LUMINAIRES

A. Luminaires shall be weatherproof, heavy duty, outdoor types designed for efficient light utilization, adequate dissipation of lamp and ballast heat, and safe cleaning and relamping.
B. Illumination distribution patterns, BUG ratings and cutoff types as defined by the IESNA shall be as shown on the drawings.
C. Incorporate ballasts in the luminaire housing, except where otherwise shown on the drawings.
D. Lenses shall be frame-mounted, heat-resistant, borosilicate glass, with prismatic refractors, unless otherwise shown on the drawings. Attach the frame to the luminaire housing by hinges or chain. Use heat and ageng-resistant, resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
E. Lamp sockets for high intensity discharge (H.I.D) fixture shall have locking-type porcelain enclosures in conformance to the applicable requirements of ANSI C81.61-09 and UL 496-08.
F. Pre-wire internal components to terminal strips at the factory.
G. Bracket-mounted luminaires shall have leveling provisions and clamp-type adjustable slip-fitters with locking screws.
H. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.
I. Provide manufacturer's standard finish, as scheduled on the drawings. Where indicated on drawings, match finish process and color of pole or support materials. Where indicated on drawings, provide finishes as indicated in Section 09 06 00, SCHEDULE FOR FINISHES.
J. Luminaires shall carry factory labels, showing complete, specific lamp and ballast information.

2.5 LAMPS

F. LED sources shall meet the following requirements:
1. Operating temperature rating shall be between -40 degrees C (-40 degrees F) and 50 degrees C (120 degrees F).
2. Correlated Color Temperature (CCT): 4000K.
3. Color Rendering Index (CRI): 85.
4. The manufacturer shall have performed reliability tests on the LEDs luminaires complying with Illuminating Engineering Society (IES) LM79 for photometric performance and LM80 for lumen maintenance and L70 life.//

G. Mercury vapor lamps shall not be used.

2.6 LED drivers

A. LED drivers shall meet the following requirements:
1. Drivers shall have a minimum efficiency of 85%.
2. Starting Temperature: -40 degrees C (-40 degrees F).
3. Input Voltage: 120 to 480 (±10%) volt.
4. Power Supplies: Class I or II output.
5. Surge Protection: The system must survive 250 repetitive strikes of "C Low" (C Low: 6kV/1.2 x 50 μs, 10kA/8 x 20 μs) waveforms at 1-minute intervals with less than 10% degradation in clamping voltage. "C Low" waveforms are as defined in IEEE/ASNI C62.41.2-2002, Scenario 1 Location Category C.
6. Power Factor (PF): ≥ 0.90.
7. Total Harmonic Distortion (THD): ≤ 20%.
8. Comply with FCC Title 47 CFR Part 18 Non-consumer RFI/EMI Standards.
9. Drivers shall be reduction of hazardous substances (ROHS)-compliant.//

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install lighting in accordance with the NEC, as shown on the drawings, and in accordance with manufacturer's recommendations.
B. Pole Foundations:
1. Excavate only as necessary to provide sufficient working clearance for installation of forms and proper use of tamper to the full depth of the excavation. Prevent surface water from flowing into the excavation. Thoroughly compact backfill with compacting arranged to prevent pressure between conductor, jacket, or sheath, and the end of conduit.
2. Set anchor bolts according to anchor-bolt templates furnished by the pole manufacturer.
3. Install poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.
4. After the poles have been installed, shimmed, and plumbed, grout the spaces between the pole bases and the concrete base with non-shrink concrete grout material. Provide a plastic or copper tube, of not less than 9 mm (0.375-inch) inside diameter through the grout, tight to the top of the concrete base to prevent moisture weeping from the interior of the pole.

C. Install lamps in each luminaire.
D. Adjust luminaires that require field adjustment or aiming.

3.2 GROUNDING

Ground noncurrent-carrying parts of equipment, including metal poles, luminaires, mounting arms, brackets, and metallic enclosures, as specified in Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially-treated or lined connectors suitable and listed for this purpose.

3.3 Acceptance Checks and Tests

Verify operation after installing luminaires and energizing circuits.

E N D

Code Information:
Applicable codes include but are not limited to: City of Harlingen Electrical Code, National Electrical Code (2017N.E.C), International Building Code, Life Safety Code (NFPA 101), Texas Accessibility Standards, American with Disabilities Act.

16010 Basic Electrical Requirements:
Permits and Codes: Obtain and pay for all necessary permits and required inspections. Comply with all national, state and municipal laws, codes and ordinances relating to building and public safety. Provide any required temporary power and utilities for all trades and all construction trailers. Provide temporary construction lighting and power. Electrical Contractor shall include Temporary Electric: All temporary elictric shall be in accordance with OSHA Construction standards 29FCR, Part 1926 and Article 590 of the 2008 National Electrical Code. Temporary lighting and power shall be provided in accordance with OSHA standards. The OSHA minimum illumination Is 5 footcandles in general construction areas, and 10 FC in mechanical/electrical rooms and workrooms. Included are connections to all construction trailers. The cost of this work is to be included in the base electrical bid for the project.

VISITING THE JOB SITE:
Visiting the site of the proposed construction in order to fully understand the facilities, difficulties and restrictions attending the exectuion of the work. No additional compensation will be allowed this Contractor for work or items omitted from his original proposal due to his failure to inform himself regarding such matters affecting the performance of the work in this contract or necessary for the installation and completion of the work included herein.

DRAWINGS:
Drawings are diagrammatic; confirm dimensions and locations in the field. If conflicting dimensions are shown, use larger dimensions and verify with Architect. See architectural plans and elevations for exact locations of fixtures and wall mounted devices.

MATERIAL:
All material shall be new, made in the USA and U.L listed. Material installation shall comply with NEC requirements and perform by craftsmen skilled in this particular work.

EQUIPMENT PROTECTION:
Protect equipment and work from damage during handling and installation until completion of construction.

COOPERATION WITH OTHER TRADES:
Cooperation with trades of adjacent, related or affected materials or operations, and with trades performing continuations of this work under subsequent contracts, is considered a part of this work in order to effect timely and accurate placing of work and to bring together, in proper and correct sequence, the work of such trades. Provide other trades, as required, all necessary templates, patterns setting plans and shop details for the proper installation of the work and for the purpose of coordinating adjacent work. Electrical power connections for mechanical and plumbing equipment are in this Division unless noted otherwise. Verify electrical characteristics of all equipment with Division 15 and other special Divisions (elevators, etc.) before roughing in the electrical connection and energizing the equipment. Mechanical/Plumbing/Special Equipment access and clearance areas: Remove any improperly installed electrical equipment and conduit that are limiting proper access for equipment service and maintenance.

ACCESS PANEL:
Provide access panels or doors for all devices requiring adjustment. Similarly for all junction boxes, pull boxes, etc.; that are required to be accessible per Code and/or the local authority having jurisdiction. Panel/doors shall be designed for the fire rating of wall or ceiling in which they are installed. All access panels shall be lockable and shall be keyed alike (same keying as panels for other divisions).

LOSS OR DAMAGE TO FACILITIES:
The Contractor shall be responsible for loss or damage to the facilities caused by him and his workmen, and shall be responsible for repairing or replacing such loss or damage. The Contractor shall send proper notices, make necessary arrangement, and perform other services required for the care, protection an in-service maintenance of all electrical services for the new facilities. The Contractor shall erect temporary barricades, with necessary safety devices, as required to protect personnel and the general public from injury, removing all such temporary protection upon completion of the work.

The Contractor shall modify and/or replace all materials and items so indicated on the drawings or required by the installation of new facilities. Salvage materials shall remain on the property of the Owner and shall be delivered to such destination as directed by the Owner. Dispose of salvage materials if not retained by Owner.

WORK IN OCCUPIED AREAS:
Work in, above, below or near occupied areas shall be at Owner's convenience and may be during evenings or weekends. Schedule all required power outages a minimum of seven (7) days in advance with Facility Engineer. Do not turn off any power sources. Only Facilities Engineer or his authorized representative may do so.

CLEAN UP:
A. Provide for isolation of work areas and daily removal of debris;
B. Clean all equipment and fixture lenses;
C. Replace all burned out lamps; and
D. Touch up with paint where required.

SUBMITTAL DATA:
Submittals are required but not limited to the following equipment:
Lighting Fixtures
Conduit/Fittings
Wire

16195 ELECTRICAL IDENTIFICATION
Identification: Label all junction and pull boxes with panels and circuit numbers. All junction and pull boxes in ceiling pleum shall be labeled with circuits. Mark all branch conduit with circuit numbers at each surface mounted panel location.
Color Code: Conductors shall be color coded as follows: Refer to detail.

GENERAL NOTES: (APPLY TO ALL ELECTRICAL SHEETS)
G1. Wires oversized to alleviate voltage drop: Where oversized wires are used to alleviate voltage drop, Contractor to provide reducer lugs and/or J-boxes as required to terminate wires in equipments.

G2. All conduit and wire must be concealed from view. Exposed conduit and wire are not acceptable, exceptions are Mechanical/Electrical Rooms.

All weatherproof/wet location and/or outdoor receptacles shall have "wheaterproof-in-use" covers (NEC Article 406.8(B)). Provide Raco Bell Rayntite II covers or equal.

SHOP DRAWINGS:
Shop drawings as required shall be provided by the Electrical Contractor at no additional cost to the Architect. These shop drawings shall be prepared to indicate installation at major equipment where special coordination problems exist. Overcurrent & Safety Disconnect Devices for HVAC Eqpt: Overcurrent & disconnect devices shown on plans are based on a specific HVAC equipment manufacturer. HVAC Contractor may submit other manufacturers, different models or ratings. It is the responsibility of the Electrical Contractor to coordinate OC/Disconnect devices with the HVAC Contractor prior to submitting such devices for Engineer's review. Any deviations from sizes shown on drawings must be noted in submittals. The Electrical Contractor must certify that he has reviewed and coordinated with the HVAC Contractor and that all OC/Disconnect devices submitted match the HVAC equipment requirements. Shop drawings without such certification will be returned to the Contractor. Only submittals with such certification will be reviewed.

COMPLETE SYSTEMS:
All systems shall be complete and working at completion of construction.

GUARANTEE:
Guarantee all work and material furnished under this contract for a period of one year from the date of acceptance by the Owner and Architect. Guarantee shall include: All labor, parts, travel/subsistence, software changes/re-programming, etc.

RECORD DRAWINGS:
Provide Record Drawings in AutoCad 2008 or higher and on e hard copy on reproducible media showing exact dimensions and location for all under-slab conduit, switchgear, panelboards, transformers, equipment, and revised homerun circuit locations, Electrical CAD backgrounds may be available from Redding Linden Burr Engineers for a fee.

16111 CONDUIT
Conduit: Shall be rigid galvanized steel (RGS) or electrical metallic tubing (EMT) as manufactured by Allied, Triangle or Wheatland.
Indoors above grade: EMT or RGS
Outdoors above grade; stub-ups, or on roof: RGS, IMC
Below grade: Schedule 40 or 80 PCV or RGG. Provide transition fittings from PVC Sch. 40 or 80 to RGS for all above grade conduit. All underground metallic conduit shall have 409-mil thick external PVC coating for corrosion protection. Underground conduit minimum size 3/4". Minimum 24" burial depth from finished grade to top of conduit, provide deeper burial depth if required by local codes. Provide concrete easement for all incoming service conduit unless specifically noted otherwise. Provide red detectable warning tape over entire run of service and major conduit runs.
Under slab: RGS, Schedule 80 PVC.
Install underground wire where shown on the drawings. Set-screw type fittings may be used for EMT. Minimum conduit size ½", however, homerun to panel shall be minimum 3/4".

MC Cable, if approved, however, may be used only for drops from ceiling plenum junction boxes to receptacles and light switches in walls. MC cable may also be used as fixture whips from ceiling plenum junction boxes to light conduit, MC homerun to panels are not acceptable.

Type "AC" armored cable (commonly referred to as "BX") is not acceptable and shall not be used.

Electrical nonmetallic tubing (ENT, NEC Article 362) shall not be used unless specifically approved by the Engineer. Flexible conduit shall be utilized as final connections (3'-5' only) at the following equipment: motors, lighting, fixtures, heater, power supplies, and other vibration producing equipment. Utilize ½" flexible metallic conduit minimum and include a green ground wire. Use seattite in wet locations such as outdoor condensing units, walk-in cooler/freezer, kitchen, rooftop HVAC equipment, etc. Conduit shall be supported from structure every 5 feet and within 3 feet of all boxes. Use locknuts inside and out at boxes. Maintained minimum 12" separation from all high temperature pipes. All conduit runs shall be installed either parallel or perpendicular to building lines. Route conduit as directly as possible with largest radius bends possible. Make bends with standard ells or bends per NEC. Provide expansions fittings if conduit crosses structural expansion joint. All conduit on roof shall be supported by an engineered, prefabricated portable pipe system specifically designed to be installed above finished roof without roof penetrations, flashings or damage to roof membrane. Provide pipe support system by Erico, model "Caddy Pyramid" or equal by Cooper B-Line. Support at interval not to exceed 10' on center, and within 5' of any deflection of conduit. Clean conduit interior after installation; coat scratches with zinc paint.

16123 BUILDING WIRE AND CABLE:
Wire: (Triangle, American Insulation Cable Co., or Cablec)
All wiring shall be in conduit (except plenum rated low voltage cables). All Wires must be 75°C rated ampacity.

(a) Minimum size #12 except controls may be #14. Use #10 conductors for 20ampere, 120 volt branch circuits longer than 100 feet. Use #10 conductors for 20 ampere, 277 volt branch circuits longer than 150 feet.
(b) Type THHN/THWN stranded copper thermoplastic in dry locations.
(c) Type THWN in wet locations (outdoor, underground, on roof, ...).
(d) All wire shall be 98% conductivity copper, 600 volt. NO ALUMINUM WIRES.
(e) Wire #10 and smaller may be solid or stranded, #8 or larger shall be stranded.

16170 GROUNDING AND BONDING
Grounding: All conduit work and electrical equipment shall be effectively and permanently grounding in accordance with NEC requirements. Provide green equipment grounding conductor with all power and receptacle and lighting circuits. Green equipment grounding conductor shall be routed from panel ground bus to final devices.
Grounding electrodes: Provide ¾" x 10-ft long, copper-clad, steel grounding rod. For below-grade connections provide exothermic welded type; for above grade connections provide mechanical bolted-type connections utilizing high conductive copper alloy or bronze lugs or clamps. Service ground resistance: Must be less than 25 ohms. Provide additional ground rods as required to obtain 25 ohms or less.

FINAL INSPECTION & OPERATING TESTS:
All electrical systems must be checked for proper polarity and sequence; all motors must be checked for proper rotation and all equipment (including HVAC, elevator and special equipment) check for proper voltage and phasing requirements. Prior to the application of any power, the Contractor must certify that all connected equipment match the characteristics of the supply circuit voltage, phasing and feeder requirements.

At the time designated by the Architect, the entire system shall be inspected by the Architect and the Engineer. The Contractor or his representative shall be present at this inspection.

After all systems have been completed and put into operation, subject each system to an operating test under design conditions to ensure proper sequence and operation throughout the range of operation, make adjustments as required to ensure proper functioning of all systems. Special tests on individual systems are specified under individual sections.

The Contractor shall provide a set of as-built drawings and mylar reproducible to the Owner/Architect. After the inspection, any items which are noted as needing to be changed or corrected in order to comply with these specifications and the drawings shall be accomplished without delay.

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Texas Registered Engineering Firm - F10362
Project number: 18.3.38

09/27/18
STATE OF TEXAS
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FILE NAME:
DATE: 09/27/18
SURVEYED BY:
DESIGNED BY: TRINITY CAD
DRAWN BY: TRINITY CAD
REVISED BY: FA
CHECKED BY: FA

TITLE: TEXAS TROPIC SITE PLAN — ELECTRICAL DETAILS

SCALE: FULL: AS SHOWN; HALF: AS SHOWN

TBPE REG. NO. F-13016

DATE: 09/27/18

SHEET NO.: E2.0 OF 3

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