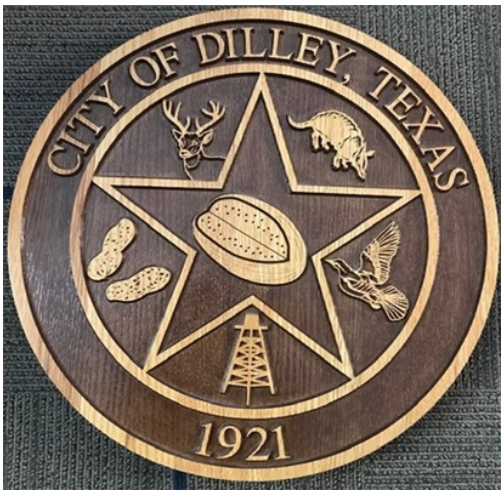
PROJECT MANUAL
CONTRACT DOCUMENTS & SPECIFICATIONS

CITY OF DILLEY
CITY PARK WALKING TRAIL IMPROVEMENTS PROJECT
(DRIVEWAY IMPROVEMENTS & SOLAR LIGHTS INSTALLATION)



Yolanda Moran, City Administrator
City of Dilley, Texas
116 E. Miller
Dilley, TX 78017
Phone: (830) 965-1624

May 18, 2026

PREMIER CIVIL ENGINEERING
5401 McPherson Rd, Suite 9
Laredo, Texas 78045, (956) 717-1199
Engineering Reg. No. F-8019 Surveying Reg. No. 100097-00

PREMIER ENGINEERING SURVEYING

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CITY OF DILLEY

CITY PARK WALKING TRAIL IMPROVEMENTS PROJECT

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ADVERTISEMENT FOR BIDS

Dilley, Texas

General Notice:

City of Dilley (Owner) is requesting Bids for the construction of the following Project:

City Park Walking Trail Improvements Project (Driveway Improvements and Solar Lights Installation)

Bids for the construction of the Project will be received at the **Office of the City Secretary – 116 E. Miller Street, Dilley, TX, 78017** until **3:00 p.m.** local time on **Monday, May 22, 2026**. At that time the Bids received will be publicly opened and read.

The Project includes the following Work:

The Construction of Three (3) Concrete Driveways & Installation of 27 solar lights (all work equipment and materials to install 27 solar lights provided by City)

Bids are requested for the following Contract:

City Park Walking Trail Improvements Project (Driveways & Solar Light Installation)

The Project has an expected duration of **30** days.

Obtaining the Bidding Documents:

The Issuing Office for the Bidding Documents is:

Premier Civil Engineering
5401 McPherson Road Ste: 9, Laredo, Texas 78041
Phone #: (956)-717-1199
Email: armando.guerra@premier-ce.com
By: Armando Guerra, P.E.

Prospective Bidders may obtain or examine the Bidding Documents at the Office of the City Secretary – 116 E. Miller Street, Dilley, TX, 78017 on Monday through Friday between the hours of **8:00 AM and 5:00 PM and** may obtain copies of the Bidding Documents from the Issuing Office by email request or download them via link provided by the City of Dilley. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither City nor Engineer will be responsible for full or partial sets of Bidding Documents, including addenda, if any, obtained from sources other than the Issuing Office.

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within 5 days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. [Evidence of Bidder's authority to do business in the state where the Project is located.]

B. [Bidder's state or other contractor license number, if applicable.]

C. [Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."]

D. [Other required information regarding qualifications]

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

B. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site. Bidder may contact Project Engineer Armando Guerra, P.E. at phone number 956-286-5197 to schedule site visit.

B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to

examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

E. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

H. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

I. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – INTERPRETATIONS AND ADDENDA

6.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 7 – BID SECURITY

7.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5% percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

7.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

7.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

7.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 8 – CONTRACT TIMES

8.01 The number of days within which the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 9 – LIQUIDATED DAMAGES

9.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10 – SUBSTITUTE AND "OR-EQUAL" ITEMS

10.01 The Contract for the Work, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or- equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids in the case of a proposed substitute and 5 days prior in the case of a proposed "or-equal." Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner. Substitutes and "or-equal" materials

and equipment may be proposed by Contractor in accordance with Paragraphs 7.04 and 7.05 of the General Conditions after the Effective Date of the Contract.

10.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

10.03 If an award is made, Contractor shall be allowed to submit proposed substitutes and "or-equals" in accordance with the General Conditions.

ARTICLE 11 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 If required by the documents, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work:

If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

11.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

11.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

11.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.06.

ARTICLE 12 – PREPARATION OF BID

12.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

12.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

12.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

12.04 A Bid by an individual shall show the Bidder's name and official address.

12.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

12.06 All names shall be printed in ink below the signatures.

12.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

12.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

12.09 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 13 – BASIS OF BID

13.01 *Lump Sum*

A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.

13.02 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

13.03 *Allowances*

A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 14 – SUBMITTAL OF BID

14.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.

14.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to the bid receiving office.

14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15 – MODIFICATION AND WITHDRAWAL OF BID

15.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 16 – OPENING OF BIDS

16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18 – EVALUATION OF BIDS AND AWARD OF CONTRACT

18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports

to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

18.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

18.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

C. Bid prices will be compared after adjusting for differences in time of Substantial Completion (total number of calendar days to substantially complete the Work) designated by Bidders. The adjusting amount will be determined at the rate set forth in the Agreement for liquidated damages for failing to achieve Substantial Completion, or such other amount that Owner has designated in the Bid Form.

1. The method for calculating the lowest bid for comparison will be the summation of the Bid price shown in the Bid Form plus the product of the Bidder-specified time of Substantial Completion (in calendar days) times the rate for liquidated damages **[or other Owner-designated daily rate]** (in dollars per day).

2. This procedure is only used to determine the lowest bid for comparison and contractor selection purposes. The Contract Price for compensation and payment purposes remains the Bid price shown in the Bid Form.

18.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

18.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19 – BONDS AND INSURANCE

19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 20 – SIGNING OF AGREEMENT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and

deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

BID FORM

CITY OF DILLEY

CITY PARK WALKING TRAIL IMPROVEMENTS

PROJECT (DRIVEWAY IMPROVEMENTS & SOLAR

LIGHTS INSTALLATION)

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Dilley, Texas, 116 E. Miller, Dilley, TX 78017, Phone: (830) 965-1624

The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum, Date

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance

of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

CITY PARK WALKING TRAIL IMPROVEMENT PROJECT-DRIVEWAYS AND SOLAR LIGHT INSTALLATION,						
ITEM	DESCRIPTION	QUANTITY	UNIT		UNIT PRICE	TOTAL
Site Improvements						
1	Mobilization	1.00	Ls.	@	$ -	$ -
DRIVEWAY 1						
2	7" Concrete Driveway 3500 psi,No. 4 Rebar 12" OCEW. This scope of work includes subgrade preparation, all labor, materials, and equipment required for a complete and fully functional installation, whether or not explicitly shown or detailed on the drawings or specifications.	810	Sf.	@	$ -	$ -
DRIVEWAY 2						
3	7" Concrete Driveway 3500 psi,No. 4 Rebar 12" OCEW. This scope of work includes subgrade preparation, all labor, materials, and equipment required for a complete and fully functional installation, whether or not explicitly shown or detailed on the drawings or specifications.	660.00	Sf.	@	$ -	$ -
DRIVEWAY 3						
4	7" Concrete Driveway 3500 psi,No. 4 Rebar 12" OCEW. This scope of work includes subgrade preparation, all labor, materials, and equipment required for a complete and fully functional installation, whether or not explicitly shown or detailed on the drawings or specifications.	770.00	Sf.	@	$ -	$ -
Traffic Control						
5	Traffic Control & Barricades.	1.00	Ls.	@	$ -	$ -
SOLAR LIGHT INSTALLATION						
6	Installation of Solar Lights as shown on the sepcifications. This scope of work shall include all work, equipment, and materials to install 27 solar lights provided by City.	27.00	EA.	@	$ -	$ -

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Total of Lump Sum and Unit Price Bids = Total Bid Price $ _____

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. List of Project References;

E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

F. Contractor's License No.: _____ **[or]** Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;

G. Required Bidder Qualification Statement with supporting data; and

H. If Bid amount exceeds $10,000, signed Compliance Statement (RD 400-6). Refer to specific equal opportunity requirements set forth in the Supplemental General Conditions;

I. If Bid amount exceeds $25,000, signed Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions (AD-1048);

J. *If Bid amount exceeds $100,000, signed RD Instruction 1940-Q, Exhibit A-1, Certification for Contracts, Grants, and Loans.*

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

Bidder's License No.: _____
(where applicable)

QUALIFICATIONS STATEMENT

THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT PERMITTED BY LAWS AND REGULATIONS

1. SUBMITTED BY:

Official Name of Firm: _____

Address: _____

_____

_____

2. SUBMITTED TO: _____

3. SUBMITTED FOR: _____

Owner: _____

Project Name: _____

_____

_____

_____

TYPE OF WORK: _____

_____

_____

4. CONTRACTOR'S CONTACT INFORMATION

Contact Person: _____

Title: _____

Phone: _____

Email: _____

5. AFFILIATED COMPANIES:

Name: _____

Address: _____

_____

_____

6. TYPE OF ORGANIZATION:

☐ SOLE PROPRIETORSHIP

Name of Owner: _____

Doing Business As: _____

Date of Organization: _____

☐ PARTNERSHIP

Date of Organization: _____

Type of Partnership: _____

Name of General Partner(s): _____

_____

_____

☐ CORPORATION

State of Organization: _____

Date of Organization: _____

Executive Officers:

- President: _____

- Vice President(s): _____

_____

_____

- Treasurer: _____

- Secretary: _____

☐ LIMITED LIABILITY COMPANY

State of Organization: _____

Date of Organization: _____

Members: _____

_____

_____

_____

☐ JOINT VENTURE

Sate of Organization: _____

Date of Organization: _____

Form of Organization: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

_____

_____

Joint Venture Managing Partner

- Name: _____

- Address: _____

_____

Joint Venture Managing Partner

- Name: _____

- Address: _____

_____

7. LICENSING

Jurisdiction: _____

Type of License: _____

License Number: _____

Jurisdiction: _____

Type of License: _____

License Number: _____

8. CERTIFICATIONS

CERTIFIED BY:

Disadvantage Business Enterprise: _____

Minority Business Enterprise: _____

Woman Owned Enterprise: _____

Small Business Enterprise: _____

Other (_____): _____

9. BONDING INFORMATION

Bonding Company: _____

Address: _____

_____

Bonding Agent: _____

Address: _____

_____

_____

Contact Name: _____

Phone: _____

Aggregate Bonding Capacity: _____

Available Bonding Capacity as of date of this submittal: _____

10. FINANCIAL INFORMATION

Financial Institution: _____

Address: _____

_____

Account Manager: _____

Phone: _____

INCLUDE AS AN ATTACHMENT AN AUDITED BALANCE SHEET FOR EACH OF THE LAST 3 YEARS

11. CONSTRUCTION EXPERIENCE:

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HEREWITH, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: _____

BY: _____

TITLE: _____

DATED: _____

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _____ DAY OF _____, 20___

NOTARY PUBLIC - STATE OF _____

MY COMMISSION EXPIRES: _____

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).

SCHEDULE A

CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name, and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:

BID

Bid Due Date:

Description *(Project Name— Include Location)*:

BOND

Bond Number:

Date:

Penal sum _____ $ _____

(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Title	Title

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ *(seal)*
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ *(seal)*
Surety's Name and Corporate Seal

By: _____
Signature *(attach power of attorney)*

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

SECTION C-1 DEFINITION OF TERMS

C-1.01 DEFINITION OF TERMS:

Whenever the terms defined herein occur on the Plans, in any other documents or instrument herein contemplated or to which the Specifications apply, the intent and meaning shall be as follows:

C-1.02 OWNER: (Or Party of the First Party):

The individual, firm corporation or the political subdivision for whom the facilities covered by these Plans and Specifications are to be constructed.

C-1.03 CONTRACTOR: (Or Party of the Second Part):

The individual, firm or corporation with whom the Contract is made by the Owner.

C-1.04 ENGINEER:

Engineer employed by the Owner, or such other Engineer, or Supervisor authorized by the Owner to act on their behalf. Engineer may be represented by Civil Engineer, Structural Engineer, and/or Geotechnical Engineer as required.

C-1.05 CONSULTANT:

Licensed Engineer or Architect employed by the Owner, and authorized by the Owner to act on their behalf. The decisions by the Owner are final.

C-1.06 BIDDER:

An individual, firm or corporation submitting a proposal.

C-1.07 SUPERINTENDENT:

An authorized representative of the Owner and Engineer.

C-1.08 INSPECTOR:

An authorized representative of the Owner and Engineer

C-1.09 LABORATORY:

A testing laboratory approved by the Owner and Engineer.

C-1.10 CONTRACT:

The Agreement between the Owner and the Contractor covering the furnishing of all materials and labor necessary to complete the work and consisting of the Plans and Specifications, together with such supplemental agreements as may be made from time to time.

C-1.11 WORKING DAY:

A "Working Day" is defined as any day not including Saturdays, Sundays, or any legal holidays, observed by the Owner, in which weather or other conditions, not under the control of the Contractor, will permit construction of the principal units of work for a continuous period of not less than seven (7) hours. If the contractor opts to work on Saturday, Sunday, or legal holiday requiring construction inspection, said days are considered working days and charged to the contract time.

C-1.12 WORK:

All structures, services, machinery, equipment, or other facilities that are described in the Plans and Specifications together with such additions or modifications as may be ordered by the Owner from time to time.

C-1.13 WORK, ORDER, OR NOTICE TO PROCEED:

A document authorized by the Owner and issued by the Engineer directing the Contractor to proceed on all or part of the work and a specified date.

C-1.14 CHANGE ORDER:

A supplemental agreement adding to or modifying the Contract, including such additional Plans and Specifications as necessary to properly describe the required change.

C-1.15 SURETY:

The corporate body which is bound with the Contractor for the faithful performance of the work covered by the Contract.

C-1.16 PLANS:

The drawings published by the Engineer showing the locations, character, dimensions and details of the work which are part of the Contract.

C-1.17 SPECIFICATIONS:

The directions, provisions and requirements contained herein pertaining to the method and manner of performing the work, or to the quantities, or to the qualities of materials to be furnished under the Contract. The term "Specifications" shall be deemed to include the Contract Documents, the Special Provisions, the General Provision, and the Technical Provisions as contained herein, together with all supplemental agreements and change orders. Specifications are part of the Contract. Plans take precedence over Specifications if in conflict.

C-1.18 CALENDAR DAYS:
A "Calendar Day" is defined as any day of the week inclusive of Saturdays, Sundays, and legal holidays.

SECTION C-2 DEFINITION OF ABBREVIATIONS

C-2.01 DEFINITION OF ABBREVIATIONS:

Whenever the abbreviations defined herein occur on the Plans, in the Specifications, Contract, Bond, advertisement, Proposal, or in any other Instrument herein contemplated or to which the Specifications apply or may apply, the intent and meaning shall be as follows:

A.A.S.H.O	American Association of State Highways Official
HP	Horsepower
K.W.	Kilowatt
Am. or Amp.	Ampere
KVA	Kilovolt
A.S.T.M.	American Society for Testing Materials
In. or "	Inch or Inches
Lin.	Linear
Asph.	Asphalt
Lb. or #	Pound
Ave.	Avenue
A.W.W.A.	American Waterworks Association
Max.	Maximum
Min.	Minimum
MH	Manhole
I.P.	Iron Pin
B & S.	Bell and Spigot
Mono.	Monolithic
Blvd.	Boulevard
No.	Number
B.T.U.	British Thermal Unit
%	Percent
B.M.	Bench Mark
PL	Property Line
C.I.	Cast Iron
R.	Radius
C.C.C.	Center to Center
Rein.	Reinforced or reinforcing
C/G	Curb & Gutter
C.L.	Center Line
V.G.	Valley Gutter
Con. or Conc.	Concrete
Rem.	Remove
C.S.P.	Concrete Sewer Pipe
Rep.	Replace
C.M.	Circular Mil
R.C.S.D.P.	Reinforced Concrete Storm Drain Pipe
C.F.M.	Cubic Feet per Minute
C.O.	Cleanout
R.P.M.	Revolutions per minute
Cond.	Conduit Minute
Corr.	Corrugated
ROW or R of W	Right of Way
Cu.	Cubic
Vol.	Volume
Culv.	Culvert
S.S.	Sanitary Sewer
Dia.	Diameter

S.D.	Storm Drain
D.S.	Double Strength
Sq.	Square
Dr.	Driveway
Std.	Standard
Elev. or El.	Elevation
T.H.D.	Texas Highway Department
F.	Fahrenheit
V.C.P.	Vitrified Clay Pipe
Ft. or '	Foot or Feet
V	Volt
Gal.	Gallon
Yd.	Yard
S.O.P .	Secretaria de Obras Publicas (Mexican Secretaries of Public Works)
Tex. D.O.T., or TxDOT	Texas Department of Transportation

SECTION C-3 INSTRUCTION TO BIDDERS

C-3.01 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF WORK:

Submission of a Proposal shall constitute prima facie evidence that the Bidder has carefully examined the site of the proposed work, the Proposal, Contract Forms, Plans and Specifications, and has satisfied himself as to the character, quality, and quantity of work to be performed, materials to be furnished, and as to the requirements of these Specifications, Special Provisions, and Contract.

Any information on the Plans or in the Specifications as to the soil, or material borings, or tests of existing materials, or location of existing utilities is for the convenience of the Bidder. The accuracy of the information is not guaranteed, and no claims for extra work or damages will be considered if it is found during construction that the actual conditions or locations vary from those indicated on the Plans or in the Specifications.

C-3.02 INTERPRETATION OF ESTIMATES:

Any estimate of quantities of work to be done and materials to be furnished in the proposal or on the Plans is given only as a basis of comparison of Proposals and the Award of the Contract. Such estimate is the result of careful calculation and is believed to be correct, but the Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith, nor shall the Bidder plead misunderstanding or deception because of such estimate of quantities, or of the character, location or other conditions pertaining to the work. Payment to the Contractor under unit price contracts will be made only for the actual quantities of work performed or materials furnished in accordance with the Plans and Specifications, and it is understood that the quantities may be increased or diminished as hereinafter provided without in any way invalidating the unit bid prices.

C-3.03 PREPARATION OF PROPOSAL:

The Bidder shall submit his proposal on the forms furnished by the Owner. All blank space in the proposal form shall be filled in for each and every item for which quantity is given, and the Bidder shall state the price (typed, or written in ink, both in words and numerals for which he

proposed to do each item of work. In case of conflict between words and numerals, the words will govern.

The Proposal shall be signed in ink by the person or persons making, or authorized to make the bid. If the Proposal is offered by an individual, his name and post office address shall be given. If the proposal is offered by a firm or partnership, the name and post office address of each member of the firm or partnership shall be given. If the Proposal is offered by a corporation, the name and title of the person signing the Proposal, and the post office address of the corporation shall be given.

Any person signing a Proposal as agent must file with the Owner legal evidence that he has the authority to do so, and that the signature is binding upon the firm or corporation.

C-3.04 REJECTION OF PROPOSAL:

A Proposal showing any alterations or of words or figures, erasures, additions not called for, alternate bids not called for, incomplete bids, condition bids, or proposals not accompanied by proposal guaranty as required, will be considered as an irregular bid and may be rejected. The Owner reserves the right to waive technicalities as to changes, alterations, or reservations, and to make the award to the best interest of the Owner.

C-3.05 PROPOSAL GUARANTY:

Each Proposal shall be accompanied a certified check, cashier's check or bid bond in the amount of five (5%) percent of the total amount bid. Checks shall be made payable unconditionally to the Owner.

C-3.06 DELIVERY OF PROPOSAL:

Each Proposal must be an <u>original</u> and must be sealed, together with the proposal guaranty, in an envelope plainly marked with the name of the project as shown on the Notice to Bidders, and the name and address of the Bidder. When submitted by mail, this envelope shall be placed in another envelope addressed as indicated in the Notice to Bidders.

Only those proposals actually in the hands of the designated official at the time set in the Notice to Bidders shall be considered. Proposals submitted by telephone, telegraph or fax, will **NOT** be considered.

C-3.07 WITHDRAWAL OF PROPOSAL:

A Bidder may withdraw his proposal provided he submits to the official designated to receive bids his request in writing to do so prior to the time set for opening of proposals.

C-3.08 PUBLIC OPENING OF PROPOSALS:

N/A

C-3.09 COMPETENCY OF BIDDERS:

Before any Contract is awarded, the Owner may require the Bidder to furnish a complete statement of his financial resources. His experience in similar work, his equipment available for the work proposed, or any other information necessary to establish his competency and reliability as a Contractor.

C-3.10 DISQUALIFICATION OF BIDDER:

Any of the following causes may be considered as sufficient for the disqualification of the Bidder and the rejection of his Proposal:

More than one proposal for the same work from an individual or corporation under the same of different name. Evidence of collusion among Bidders.

An unbalanced Proposal.

Failure to submit a unit price for each item of work shown on the Proposal.

Lack of competency as revealed by the financial statement, experience record, or plant and equipment statement furnished.

Lack of responsibility as shown by past work judged from the standpoint of workmanship and progress.

Uncompleted work which, in the judgment of the Owner, might hinder or prevent the prompt completion of additional work if awarded.

Being in arrears on existing Contracts.

Having defaulted on a previous Contract.

C-3.11 MATERIALS GUARANTY:

Before any Contract is awarded, the Owner may require the Bidder to furnish a complete statement of the origin, composition or manufacturer of any and all materials proposed to be used in the work, together with samples, which may be subjected to tests to determined their quality and fitness for the work.

SECTION C-4 AWARD AND EXECUTION OF CONTRACT

C-4.01 CONSIDERATION OF PROPOSALS:

For the purpose of award, after the proposals are opened and read, the bids considered the most advantageous to the Owner will be carefully studied. The bids will then be compared and the results made public. Until the award of the Contract is made, the Owner reserves the right to reject any or all proposals, to waiver technicalities, to advertise for new proposals, or to proceed to do the work otherwise when the best interests of the Owner will be thereby promoted.

C-4.02 AWARD TO CONTRACT:

Contract will not be awarded until the necessary investigations as to the competency of the low bidder are made. Award of Contract will be made by the Owner, upon recommendation by the Engineer, to the lowest responsible bidder meeting the requirements of the Owner. Award of

Contract will be made within sixty (60) days after the opening of proposals, unless stated otherwise in the Notice to Bidders.

C-4.03 RETURN OF PROPOSAL GUARANTIES:

As soon as the proposal price has been compared the Engineer may, at his discretion, return the proposal guaranties accompanying in those proposals which, in his judgment, will not be considered in making the award. When award is made, the successful bidder's proposal guaranty only will be retained until after Contract and Bond have been executed.

C-4.05 EXECUTION OF CONTRACT:

Within ten (10) days after Notification of Award of contract, the successful bidder shall sign and place in the hands of the Owner the necessary agreement entering into a Contract with the Owner.

C-4.06 NOTICE TO PROCEED:

The Notice to Proceed shall be issued within ten (10) days of the execution of the Agreement by the Owner provided that the Contractor has properly executed and submitted all Documents required by the Owner within the same period of time. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the Owner and Contractor. If the Contractor has submitted all Documents required and the Notice to Proceed has not been issued within the ten (10) day period or within the time extension, the Contractor may terminate the Agreement without further liability on the part of either party. Furthermore, should the Contractor fail to execute all the requirements within this same ten (10) days period or within the time extension, the Owner may terminate the Agreement.

C-4.07

The Owner may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request.

C-4.08 APPROVAL OF CONTRACT:

No Contract shall be binding upon the Owner until it has been signed by the Owner and returned to the Contractor.

C-4.09 FAILURE TO EXECUTE CONTRACT:

Failure to comply with any of the requirements of these Specifications, to execute Contract within ten (10) days after notification of work, or to furnish surety as required, shall be just cause for the annulment of the award. In case of annulment of award, the proposal guaranty shall become the property of the Owner, not as penalty, but as a liquidated damage.

C-4.10

After the Notice to Proceed is issued, the Owner shall provide the Contractor with three (3) complete sets of Plans and Specifications for Contractor's use during construction. In the case

that additional sets are required, the Contractor shall make arrangements to obtain the extra sets at his own expense.

C-4.11 RESPONSE TIME DURING THE PROSECUTION OF THE PROJECT:

The contractor shall furnish the owner with three (3) local telephone numbers where contractor or a responsible representative of contractor can be reached at any and all time during the prosecution of this project, and especially during weekends or holidays. Failure of contractor to respond to any such emergency which causes Owner provided personnel, equipment and materials to be used in such emergency will result in the contractor being charged an amount which shall be twice the cost incurred by the Owner in using personnel, equipment and materials to handle such emergency due to failure of the contractor to do so, and, in addition, the contractor will be charged a penalty of $500.00 for each emergency to which it does not respond. In this connection, “failure to respond” means the failure of the contractor to respond to telephone calls from the relevant staff or owner.

SECTION C-5 SCOPE OF WORK

C-5.01 INTENT OF PLANS AND SPECIFICATIONS:

It is the intent of the Plans and Specifications to describe the complete work to be performed under the Contract. Except as provided on the Plans or in the Specifications, it is also the intent that the Contractor shall furnish all materials, supplies, tools, equipment, labor and incidentals necessary to complete the work.

C-5.02 CHANGES AND INCREASED OR DECREASED QUANTITIES OF WORK:

The Owner has the right to make such changes and alterations in the Plans or in the quantities of work as he may consider necessary or desirable, and such changes and alterations shall not be considered as a waiver of any condition of the Contract, nor shall they invalidate any provision thereof. The Contractor shall perform the work as increased or decreased, and no allowance will be made for anticipated profits.

Payment to the contractor will be made for the actual quantities of work done and materials furnished at the unit prices as set forth in the Contract, except as follows:

When the total cost of work to be done, or of materials to be furnished, is more than one hundred and twenty-five 125 percent of the total contract price for the item stated in the Proposal, then either party to the Contract, upon demand, shall be entitled to a revised consideration on that portion of the work above one hundred and twenty-five (125%) percent of the total contract price stated in the Proposal.

When the total cost of work to be done, or of materials to be furnished, is less than seventy-five (75%) percent on the total contract price for the item stated in the Proposal, then either party to the Contract, upon demand, shall be entitled to a revised consideration on the work actually done.

Revised consideration shall be determined by supplemental agreement between the parties, which supplemental agreement shall be included with, and shall become a party of, the Contract.

C-5.03 OMITTED ITEMS:

The Owner may, in writing, order the omission from the work of any item found unnecessary to the project. Such omission shall be subject to all provisions of Par. C-5.02.

C-5.04 EXTRA WORK:

When the proper completion of the project requires work for which no quantities or prices were shown in the Proposal, such work shall be called "EXTRA WORK" and shall be performed by the Contractor when so directed in writing by the Owner. "EXTRA WORK" shall be performed in accordance with these Specifications and as may be directed by the Engineer.

Prices for extra work shall be itemized and covered by a supplement agreement submitted by the Contractor and approved by the Owner prior to the starting of such work.

Claims for extra work not authorized in writing by the Owner prior to the performance thereof will be rejected.

C-5.05 MAINTENANCE OF TRAFFIC:

When the work requires partial or complete closing of any driveway, alley, street, or roadway, the Contractor shall so schedule and prosecute his work that traffic will be hindered to a minimum.

C-5.06 REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS:

All structures and/or obstructions on the site of the work, which are not to remain in place or which are not to be used in the new construction shall be removed as directed by the Engineer. Such items of removal are not listed in the Proposal will not be paid for as separate items; the cost of doing such work shall be included in the unit price bid for other items.

C-5.07 TOOLS AND ACCESSORIES:

When special wrenches, gauges, or other special tools or accessories are required to properly maintain and operate any machine or equipment furnished under this Contract, the furnishing of such tools and accessories shall be deemed to have been included in the Contract and they shall be furnished by the Contractor without extra cost to the Owner.

C-5.08 GUARANTEES:

All structural, mechanical and electrical equipment or instrument shall be guaranteed against mechanical and physical defects, leakage, breakage, or other damage occurring during normal operation for a period of one (1) year after such equipment or instruments have been accepted by the Owner. The Contractor shall promptly repair or make good, at his own expense, any defect in such equipment or instruments.

C-5.09 GENERAL GUARANTEE:

All work included in the Contract shall be guaranteed against faulty material or workmanship for a period of one (1) year after the work has been accepted by the Owner.

Neither final acceptance of the work, nor final payment thereof, nor occupancy and use of the work by the Owner shall constitute a waiver of the Owner's right to require the Contractor to repair or make good any such faulty materials or workmanship.

C-5.10 FINAL CLEANING UP:

Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, tools, and materials and shall dispose of all rubbish, temporary structures, and surplus backfill. The site shall be left in a neat and presentable condition

throughout. Any land area, driveway, sidewalk, alley, street or road (concrete or asphalt) which has been cut or disturbed during the prosecution of the work shall be repaired at the Contractor's expense to a condition at least as good or better as originally existed.

C-5.11 EXISTING STRUCTURES:

The Plans show the locations of all known surfaces and subsurface structures. However, the exact location of gas mains, water mains, conduits, sewer etc., is unknown and the Owner assumes no responsibility for failure to show any of these structures on the Plans or to show them in their exact location. It is mutually agreed such failure will not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as necessitates, or requires the building of special work, provision for which is not made in the Plans and Proposal, in which case the provisions in these Specifications for extra work shall apply.

SECTION C-6 CONTROL OF WORK AND MATERIALS

C-6.01 AUTHORITY OF ENGINEER:

The work will be observed, tested and inspected by the Engineer, and performed to his satisfaction, in accordance with the Contract, Plans and Specifications. The Engineer will decide all questions which may arise as to the quality and acceptability of materials furnished and work performed, as to the manner of performance and rate of progress of said work, as to the interpretation of the Plans or Specifications relating to the work, as to the fulfillment of the Contract on the part of the Contractor and to the rights of different Contractors on the project.

The decisions of the Owner will be final.

C-6.03 ADEQUACY OF DESIGN:

It is understood that the Owner selected the Engineer named herein to prepare the Plans and Specifications, and all supplements thereto, and it is agreed that the Owner will be responsible for the adequacy of the design, sufficiency of the Plans and Specifications, and safety of structures, provided the Contractor has complied with said Plans and Specifications, all modifications thereof, and additions and alterations thereto approved by the Engineer. The burden of proof shall be upon the contractor to show that he has fully complied with the Plans and Specifications, all modifications thereof, and all additions and alterations thereof.

C-6.04 PLANS:

Plans will show the lines, grades, cross sections, details and general features of the work. Where shop drawings or working drawings are required, they shall be furnished by the Contractor and approved by the Engineer. Authorized alterations to the Plans will be endorsed on approved copies of the Plans or shown on supplementary sheets.

The approval by the Engineer of the Contractor's shop drawings or working drawings will not relieve the Contractor of any responsibility under the Contract.

The Contractor shall furnish the Engineer with such blue print copies of shop drawings or working drawings as may be required for approval and for the purposes of supervision.

The contract price shall include the cost of furnishing all such prints.

C-6.05 CONFORMITY WITH PLANS:

The finished work shall conform with the lines, grades, cross sections, details and dimensions shown on the Plans. Such deviations from the Plans as may be required will, in all cases, be determined by the Engineer and authorized in wiring.

C-6.06 COORDINATION OF PLANS AND SPECIFICATIONS AND SUPPLEMENTAL AGREEMENTS:

The Plans, Specifications, and supplemental agreements are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. In case of disagreement, Plans shall govern over "Technical Provisions," and "Special Provisions" shall govern over "Technical Provisions." The Contractor shall not take advantage of any apparent error or omission on the Plans or Specifications. In the event the Contractor discovers any apparent error or discrepancy, he shall immediately call upon the Engineer for his interpretation and decision, and such decision shall be final.

C-6.07 COOPERATION OF CONTRACTOR:

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Engineer and with other Contractors in every way possible.

The Contractor shall have on the work at all times, a satisfactory and competent English-speaking Superintendent, authorized to receive order, and act for him as his agent. The Contractor shall designate to the Engineer in writing the name of such Superintendent, and the designated Superintendent may not be removed from the work without the written permission of the Engineer.

C-6.08 CONSTRUCTION STAKES:

The Contractor shall furnish and set at his own expense any and all construction stakes and blue tops as seems necessary for the satisfactory prosecution of the work.

Any missing construction stakes which have been destroyed by the different utility companies, vandals and/or the contractor at the time of construction will be replaced by the contractor at this own expense.

The Engineer may, at his option, make spot or complete checks on all construction alignment and grades to determine the accuracy of the contractor's survey work. These checks, however, will not relieve the Contractor of his responsibility of constructing the work to the lines and grades as shown on the plans or approved change orders. Computations, sketches, and other drawings used in the design and layout of this project will be made available to the Contractor, however these items will not relieve the contractor of his responsibility.

C-6.09 QUANTITIES OF MATERIALS:

It shall be the responsibility of the Contractor to verify all quantities of materials shown on the Plans before ordering such materials. Payment is provided for acceptable materials, and materials rejected due to improper fabrication or excess quantity or other reasons within the control of the Contractor will not be paid for regardless of the quantities or dimension shown on the Plans.

C-6.10 APPROVAL OF MATERIALS:

The sources of supply of materials shall be subject to the approval of the Engineer. Representative samples of materials proposed for use shall be submitted, if required, for examination and testing by an independent testing laboratory selected by the Owner.

Results obtained from testing such samples may be used for preliminary approval, but will not be used as final acceptance of materials. All materials proposed for use may be inspected or tested at any time during their preparation or use.

If at any time, it is found that sources of supply which have been approved do not furnish a product of uniform quality, or if the product becomes unacceptable at any time, the Contractor shall furnish approved material from another source.

Any material, which after approval has for any reason become unfit for use, shall not be incorporated into the work.

C-6.11 SAMPLES AND TESTS:

Samples and testing procedures shall conform to the requirements of appropriate designations of the American Association of State Highway Officials or the American Society for Testing Materials.

Test for determining the fitness of materials; tests for the purpose of obtaining preliminary approval of materials; tests for determining concrete mixes will be at the expense of the Contractor. Tests for the actual control of the work, such as soil compacting tests and concrete compressive strength test, will be at the expense of the Owner. Any and all retesting because of failure in soil compaction or concrete compressive strength tests shall be done at the expense of the Contractor. Tested and accepted subgrade shall be covered and protected with the flexible base within a maximum of seven (7) days. Tested and accepted flexible base shall be primed and cured a minimum of seventy two (72) hours and shall be cured with asphalt within seven (7) days. Failure to comply with the seven (7) days limitations may result in the need for re-testing at the Contractors expense depending on weather conditions and at the discretion of the Engineer. The Contractor shall provide such facilities as the Engineer may require for conducting field tests and collecting and forwarding samples. All sampling and testing shall be under the control of the Engineer and shall be done in laboratories approved by him.

C-6.12 STORAGE:

Materials shall be stored as to insure the preservation of the quality and fitness for the work. Material which is not, in the opinion of the Engineer, properly stored and protected will not be included as material in hand in the estimates.

C-6.13 AUTHORITY AND DUTIES OF INSPECTORS:

Inspectors employed by the Owner shall be authorized to inspect all work done in any part of the project and all preparation, fabrication, or manufacturer of the materials to be used.

The Inspector shall be authorized to call to the attention of the Contractor any failure of the work or materials to conform to the Specifications or the Plans. He will in no case act as foreman or perform other duties for the Contractor, nor shall he interfere with the management of the work. In the event the Contractor does not comply with the requirements of the Owner and the Engineer, he may stop all work until the non-compliance is corrected.

If the progress of the work becomes unduly delayed because of negligence on the part of the Contractor, the Inspector shall notify the Owner and the Engineer, who may require the Contractor to give reasons

for the delay. If it is found that the Contractor is at fault, then it is the prerogative of the Owner to demand correction.

Inspection as provided herein shall not relieve the Contractor from any obligation to perform the work in conformity with the requirements of the Plan and Specifications. No Inspector shall be authorized to revoke, alter, enlarge or release any requirements of the Plans and Specifications, or to issue instructions contrary to the Plans and Specifications, or to approve or accept any portion of the work.

The Contractor shall furnish every reasonable facility for ascertaining whether or not the work is performed in accordance with the Plans and Specifications.

No backfill shall be made unless inspected by the Engineer or the Owner's representative designated in writing and verbal approval of field Engineer is given to such work; if the Contractor should backfill any work without such inspection and approval, the Contractor shall remove or uncover such portions of the finished work as may be directed. After examinations, the Contractor shall restore said portion of the work to the standard required by the Plans and Specifications. Should the work thus exposed and examined prove acceptable or unacceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed shall be done at the Contractor's expense.

C-6.14 SUSPENSION OF WORK:

In case of any dispute arising between the Contractor and the Inspector as to materials furnished or the manner of performing the work, the Inspector shall have authority to reject materials or suspend work until the question at issue can be referred to and decided by the Engineer.

If the Contractor refuses to suspend work on verbal order, the Inspector shall issue a written order to suspend work giving the reason for such suspension. After placing the order in the hands of the Contractor's man in charge, the Inspector shall immediately leave the job. Work done during the absence of the Inspector shall not be paid for.

C-6.15 REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK:

All work which has been rejected or condemned shall be repaired or removed and replaced as the Engineer may direct, at the expense of the Contractor. Materials not conforming to the requirements of the Plans and Specifications shall be removed immediately from the site of the work and replaced with satisfactory material at the expense of the Contractor.

Work done without lines and grades, work done beyond the lines and grade shown on the Plans, work done without inspection, or any extra or unclassified work done without written authority and prior agreement in writing as to the prices will be done at the Contractor's risk and will be considered unauthorized. At the option of the Engineer, such work may not be measured and paid for, or may be ordered removed and replaced at the expense of the Contractor.

Upon the failure of the Contractor to repair satisfactorily or to remove and replace rejected, unauthorized, or condemned work or materials immediately after receiving formal notice from the Engineer, the Owner may at his own option:

a. Recover for such defective work or materials on the Contractor's bond, or;

b. Recover from such defective work or materials by action in a court having proper jurisdiction in such matter, or;

c. Employ labor and equipment and satisfactorily repair, or remove and replace, such defective work or materials and charge the cost of same to the Contractor, which cost will be deducted from any money due him.

C-6.16 DISPUTED CLAIMS FOR EXTRA WORK:

In case the Contractor deems extra compensation is due him for work or materials not clearly covered in the Contract, or not ordered by the Engineer as "EXTRA WORK", the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim and shall afford the Engineer every facility for keeping actual cost of the work.

Failure on the part of the Contractor to give such notice or to afford the Engineer every facility for keeping account of actual cost of the work shall constitute waiver of the claim for extra compensation. The filing of such notice by the Contractor and the keeping of cost by the Engineer shall not in any way be construed to prove the validity of the claim. Extra work of any kind should only be performed by Contractor upon receipt of an approved Change Order issued by Owner. When the work has been completed, the Contractor shall within ten (10) day file claim for extra compensation with the Engineer, who will present it to the Owner for consideration.

C-6.17 FINAL INSPECTION

Whenever the work provided for under the Contract has been satisfactorily completed and the final cleaning up performed, the Contractor shall notify the Engineer to make the "Final Inspection". Such inspection will be made within ten (10) days of such notification. After such final inspection, if the work is found to be satisfactory, the Contractor will be notified in writing of the acceptance of same. No time charge will be made against the Contractor between the date of notification of the Engineer and the date of the final inspection.

SECTION C-7 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

C-7.01 LAWS TO BE OBSERVED:
The Contractor shall make himself familiar with and shall observe and comply with, all Federal, State, and local laws, ordinances and regulations which in any manner affect the conduct of the work, and shall indemnify and save harmless the Owner and the Owner's representative against any claim arising from the violation of any such law, ordinance, or regulation whether by himself or by his employees.

C-7.02 PERMITS AND LICENSES:

The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary to the due and lawful prosecution of the work.

C-7.03 PATENTED DEVICES, MATERIALS AND PROCESSES:

If the Contractor is required or desires, to use any design, device, material or process covered by letters, patent, or copyright, he shall provide for such use by suitable legal agreement with the patentee or Owner of such patent. The Contractor and his surety shall indemnify and save harmless the Owner from any and all claims for infringement by reason of the use of any such patented design, device, material, or process, or any trademark or copyright in connection with the work agreed to be performed under this Contract, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay for reasons of any such infringement at any time during the prosecution, or after the completion of the work.

C-7.04 PUBLIC, SAFETY AND CONVENIENCE:

The safety of the public and the convenience of traffic shall be regarded as of prime importance during construction and provisions thereof, made necessary by the work, shall be the direct responsibility of the Contractor, and shall be performed at his own expense. Where the Contractor is required to construct temporary crossings for streams, culverts, ditches or trenches, his responsibility for accidents shall include the approaches as well as the structures of such crossing.

C-7.05 SANITARY PROVISIONS:

The Contractor shall, at his own expense, provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the State Department of Health and of other authorities having jurisdiction.

C-7.06 BARRICADES AND WARNING SIGNS:

The Contractor shall furnish and maintain adequate barricades, warning and directing signs, red flags, lights and other traffic control devices as are necessary to comply with the latest edition of the TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS.

All provisions of barricades and warning signs shall be considered an incidental and necessary part of the work and no direct payment will be made therefore. All costs of providing such safe guards shall be included in the prices bid for other parts of the work.

C-7.07 USE OF EXPLOSIVES:

When the use of explosives is necessary in the prosecution of the work, the Contractor shall use the utmost care not to endanger life or property. All explosives shall be stored in a secured manner and all storage places shall be marked clearly with the words “DANGEROUS EXPLOSIVES”. The method of storing and handling explosives and highly inflammable materials shall conform to the requirements of Federal and State laws and regulations. The Contractor shall not use explosives until he has taken the legal precautions necessary to save harmless the Owner from any claims arising from such use of explosives.

C-7.08 PROTECTION AND RESTORATION OF PROPERTY:

The Contractor shall take all measures necessary to protect public or private property which might be injured by any process of construction, and in case of any injury or damage to said property, he shall restore at his own expense the damaged property to a condition similar or equal to the existing before such injury damage was done, or he shall make good such injury or damage in an acceptable manner.

Where the work involves excavation any public or private driveway, alley street or roadway, the Contractor shall do any work necessary to restore such driveway, alley, street or roadway to a condition similar or equal to that existing before such work was done. The Contractor shall be responsible for any subsidence of backfill or pavement failure due to such excavation, and shall promptly repair any such subsidence or failure.

C-7.09 PROTECTION OF EXISTING UTILITIES:

The Contractor shall contact the utility company for exact location prior to doing any work that might interfere with or damage present utilities.

The Contractor shall take all measures necessary to protect existing surface drains, seers, underdrains, conduits, utilities, or similar underground structures, and to provide temporary service when service in any of these is interrupted.

When such facilities are encountered, the Contractor shall notify the Engineer who will arrange for their removal, if necessary. Any utility lines cut or damaged shall be repaired and restored to working conditions as determined by the Engineer.

C-7.10 RESPONSIBILITY FOR DAMAGE CLAIMS:

The Contractor shall save harmless the Owner from all suits, action in or claims brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work by the Contractor; or on account of any claim or amount recovered for any infringement of patent or reward under the "Workmen's Compensation Laws" or any other laws. He shall be held responsible for all damage or injury to property of any character occurring during the prosecution of the work resulting from any omission, neglect, or misconduct on his part in the manner or method executing the work, or from defective work or materials.

C-7.11 RESPONSIBILITY FOR THE WORK:

Until acceptance of the work by the Engineer, in writing, it shall be under the charges and care of the Contractor. The Contractor shall rebuild and make good at his own expense all injuries and damage to the work occurring before its completion and acceptance. In case of suspension of work for any cause, the Contractor shall be responsible for all the preservation of all materials.

C-7.12 USE OF COMPLETED WORK:

Whenever, in the opinion of the Engineer, any portion of the work is in acceptable conditions, it may be entered upon and used by the Owner upon the written order of the Engineer. Such use shall be held an acceptance of that portion of the work, but not into be considered as a waiver of any of the provisions of these Specifications. Pending final completion and acceptance of the entire work, all necessary repairs and renewal of any part of the work so used, due to defective material or work, to natural causes other than wear and tear, or to the operations of the Contractor, shall be performed by the Contractor at his own expense.

C-7.13 NO WAIVER OF LEGAL RIGHT:

Inspection by the Engineer or by any of his duly representatives, any order, measurement, or certificate by the Engineer; any order by the Owner for the payment of money, any payment for or acceptance of any of work, or extension of time; or any possession taken by the Owner shall not operate as a wavier of any provision of the Contract, or any power therein preserved to the Owner, or of any right to damages therein provided. A waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach.

The Owner reserves the right to correct any error that may be discovered in any estimate that may have been paid, and to adjust that or any subsequent estimate to meet the requirements of the Contract. The Owner reserves the right to claim and recover sums as may be sufficient to correct any error or make good any deficit in the work resulting from error, dishonesty, or collusion in the work after the final payment has been made.

C-7.14 RESPONSIBILITIES OF PARTIES AS TO UTILITY WORK:

It shall be the responsibility of the Contractor to check and coordinate his work with the public and private utility companies which have authority from the Owner to own and operate lines, pipes, conduits, or other means of conveyance within the streets Right-of-Way. The Contractor shall contact the Engineer concerning any and all utility relocation work needed, and it shall be the responsibility of the Contractor to advise the Engineer of any lines or utility poles to be relocated. The Engineer shall assist in coordinating the various utility relocation activities but shall not be responsible for any delays occasioned by this work, although appropriate allowance for additional contract time will be made by the Engineer if warranted. The Owner shall not be responsible for any acts of the Contractor or any damages resulting from work done by the Contractor relating to the removal, alteration, or other activity concerning utilities.

SECTION C-8 PROSECUTION AND PROGRESS

C-8.01 RIGHT-OF-WAY:

The Owner will furnish all and or right-of-way necessary for the performance of the contract and will use due diligence in acquiring land or right-of-way. Should all necessary land or right-of-way not be acquired prior to the beginning of construction, the Contractor shall begin with work upon such land or right-of-way as the Owner may have acquired.

C-8.02 DELAYS DUE TO OWNER:

Should the Owner be prevented or enjoined from proceeding with the work or authorizing its prosecution, either before or after its commencement, by reason of any litigation or by reason of the Owner's inability to acquire necessary land or right-of-way, the Contractor shall not entitled to make or assert any claim for damage by reason of such delay, or to withdraw from the contract except by consent of Owner.

The time for completion of the work will be extended by such time as determined by the Engineer as will compensate for the time lost by reason of said delay.

C-8.03 SUBLETTING OR ASSIGNING OF CONTRACT:

The "Owner" does not allow, permit, negotiate, authorize nor approve any assignment of contract proceeds between the "Owner", the "Contractor", and/or with a bank, lending institution or any type of financial institution either before, during or after a contract award.

The "Owner" agrees to pay the "Contractor" for specified services as stated in the agreed contract. The "Owner" does not agree to pay any additional party either jointly or separately for the contract under discussion.

C-8.04 SUBCONTRACTING:

The Owner will not recognize any subcontractor on the work. The Contractor shall be fully responsible to the Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them.

C-8.05 PROSECUTION OF WORK:

Prior to beginning of the work, the Contractor shall submit to the Engineer such schedules, charts, or briefs as may be required, outlining the manner of prosecution of the work. The contractor shall begin the work within ten (10) calendar days after the date set in the "Work Order" or notice to proceed and

shall continuously prosecute same with such diligence as will enable him to complete the work within the time specified.

The contractor shall notify the Engineer at least twenty-four (24) hours prior to the beginning at any point. He shall not begin new portions of the work to the detriment of portions already begun.

Owner's normal working hours are Monday through Friday from 8:00 AM to 5:00 PM. The contractor shall notify the owner at least twenty-four (24) hours in advance for any work that is to be scheduled beyond the limits of the Owner's working hours, and he shall not begin any such work schedule unless proper inspection by the Contractor has been pre-arranged with the Owner, with the cost for such work beyond the owner's working hours borne by the Contractor.

If at any time the methods, equipment, or sequence of operations sued by the Contractor are found to be inadequate to secure the quality of the work or rate of progress required by the contract, the Engineer may in writing order such modifications in the Contractor's methods, equipment, or sequence of operations as he may deem necessary and the contractor shall comply with such order.

C-8.06 WORKMEN AND EQUIPMENT:

All workmen employed by the Contractor shall be skilled and competent. Any person employed by the Contractor who in the opinion of the Engineer does not perform his work in a proper and skillful manner or who is disrespectful, intemperate, disorderly, or otherwise objectionable shall at the written order of the Engineer be immediately removed from the work and shall not be employed again on any part of the work without written consent from the Engineer.

The Contractor shall furnish and use such suitable machinery and equipment as may be required in the opinion of the Engineer to properly prosecute the work. The Contractor shall at the written order of the Engineer remove from the work any equipment found unsuited to properly perform the work.

Upon failure of the Contractor remove the work any person or equipment as ordered by the Engineer, the Engineer may withhold all estimates which have or may become due, or may suspend the work until such orders are complied with.

C-8.07 TEMPORARY SUSPENSION OF WORK:

The Engineer shall have the authority to suspend the work wholly or in part for such period or periods as he may deem necessary due to unsuitable weather, or such other conditions as are considered unfavorable for the prosecution of the work or for such time as is necessary due to failure on the part of the Contractor to comply with orders given or to perform any or all provisions of the contract.

If work is stopped for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way, and he shall take every precaution to prevent damage or deterioration of the work performed.

The Contractor shall not suspend the work without written authority from the Engineer and shall proceed with the work promptly when notified by the Engineer to resume operations.

C-8.08 COMPUTATION OF CONTRACT TIME:

The Contractor shall complete the work within the number of days stated in the contract. The number of days used shall be the number of days from the first day of actual commencement of operations or the

10th day after the date set in the Work Order or Notice to Proceed whichever comes first, and counting that day as the first elapsed day of contract time.

If the completion of the contract requires unforeseen work, or work and materials in greater quantities than those set forth in the proposal, then additional days or suspension of time charge will be allowed the Contractor equal to the time which in the opinion of the Engineers the work as a whole is delayed.

C-8.09 FAILURE TO COMPLETE THE WORK ON TIME:

The time set forth in the proposal for the completion of the work is an essential element of the contract. If the contractor fails to complete the work in the number of working days specified, a time charge will be made for each day thereafter until the work has been satisfactorily completed.

Unless an amount per day is set forth in the "Special Provisions" to be deducted from the amount due the Contractor for each day charged in excess of the number specified, the time charge shall be based on the monetary loss suffered by the Owner as the result of such delay. Such deductions shall in no way be considered a penalty, but as compensation to the Owner for the added expense to him for engineering supervision and other costs.

C-8.10 ABANDONMENT OF WORK OR DEFAULT OF CONTRACT:

The Engineer may give notice in writing to the Contractor and his surety of delay, neglect, or default stating which if the Contractor:

- Fails to begin work within the time specified, or fails to perform the work with sufficient workmen and equipment;

- Fails to provide materials of sufficient quantity to insure the completion of the work within the contract time; or

- Performs the work unsuitable; or

- Neglects or refuses to remove materials or perform new work such as may have been rejected; or

- Discontinues the work without authority; or

- Refuses to suspend or resume operations when so directed by the Engineer; or

- Becomes insolvent or is declared bankrupt; or

- Commits any act of bankruptcy insolvency; or

- Makes an authorized assignment for the benefit of any creditor; or

- Fails from any other cause whatsoever to carry out the work in an acceptable manner.

The ten (10) days after such notice if given, if a satisfactory effort has not been made by the Contractor or his surety to correct such delay, neglect, or default, the Owner may declare the work abandoned and so notify the Contractor and his surety.

After receiving such notification of abandonment, the Contractor shall not remove from the work any machinery, equipment, tools, materials or supplies then on the site. The Owner shall have the power and authority without violating the contract to take prosecution of the work out of the hands of the contractor and to appropriate or use any or all materials and equipment on the site as may be suitable and acceptable and enter into an agreement for the completion of the contract according to the terms and provisions thereof, or use such other methods as he may elect for the completion of the contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under the contract shall be deducted from any money due or which may become due to the contractor. In the case the cost to the Owner is less than the amount which would have been payable under the contract if it had been completed by the Contractor, then the Contractor shall be entitled to receive the difference. In case the cost to the Owner exceeds the amount which would have been payable under the contract, if it had been completed by the Contractor, the Contractor and his surety shall be liable and shall pay the Owner the amount of such excess.

SECTION C-9 MEASUREMENT AND PAYMENT

C-9.01 MEASUREMENT OF QUANTITIES:

All work completed under the Contract will be measured in United States standard measures. Linear and surface measurements will be taken horizontally unless otherwise shown on the Plans. Structures will be measured to the neat lines shown on the Plans.

When any material is cubic yards in the vehicle, such measurement will be made at the point of delivery. The capacity of each vehicle shall be plainly marked on said vehicle and the capacity of marking shall not be changed without written permission of the Engineer. The Engineer shall have authority to require all vehicles to have uniform capacity.

C-9.02 SCOPE OF PAYMENT:

The Contractor shall accept the payment as provided in this Contract as full compensation for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work and for performing all work contemplated and embraced under this contract, as full compensation for loss or damage arising from the nature of the work, or from action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work; as full compensation for all expenses incurred in consequence of the suspension or discontinuance of the work; as full compensation for all expenses incurred in consequence of the suspension or discontinuance of the work herein specified; as full compensation for expenses incurred in any infringement of patent, trade-mark, or copyright; and as full compensation for completing the work in conformity with the requirements of the Plans and Specifications. Payment will be made only on items which are complete, in place, tested and accepted by the owner. Materials on hand shall be considered for payment ONLY when proper PAID invoices are submitted with Contractor's pay estimates. Materials on hand must be placed in a secured area designed for the project under this contract and be available for inspection by Owner Engineers at all times. The Contractor must provide an inventory of all materials on a form acceptable to the Owner Engineer and which must accompany each pay request. The payment of any partial or current estimate shall in no way affect the obligation of the Contractor at his own cost to repair or renew any defective parts of the construction or to replace any defective materials used in the construction and to be responsible for all damages due to such defects. Any items to complete the work indicated on plan shall be considered subsidiary to include positions of work and no further compensation will be made.

No monies payable under this contract, except the estimate for the first month or period, shall become due and payable until the Contractor shall satisfy the Owner that he has fully settled and paid for all materials and equipment used in or upon the work and labor done in connection therewith and the Owner may if he so elects pay and or all bills wholly or in part, and deduct the amount or amounts paid from any estimate(s) except the first estimate.

In event the surety on any bond given by the Contractor becomes insolvent or is placed in the hands of a receiver or has its right to do business in the State revoked by Law, the Owner may if he so elects withhold payment of any or all estimates until the Contractor shall give a good and sufficient bond in lieu of the bond so executed by said surety.

C-9.03 PAYMENT FOR ALTERED QUANTITIES:

When alterations in the Plans or quantities of work not requiring supplemental agreements are ordered and performed, the Contractor shall accept payment in full at the contract price for the actual quantities of work done. No allowance for anticipated profits will be made. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

C-9.04 PAYMENT FOR OMITTED ITEMS:

When any item ordered omitted from the Contract, the Contractor shall accept payment in full at the contract price for any work actually performed on such item prior to the date of issuance of such order. No allowance will be made for anticipated profits on work ordered omitted. Acceptable materials ordered by the Contractor, or delivered on the work prior to the date of issuance of such order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner. The Contractor shall submit immediately certified statements covering all money expended in the preparation for any item ordered omitted and shall be entitle to reimbursement for any money expended in preparation for any items when such preparation is of no value to the remaining items of the Contract.

C-9.05 PAYMENT FOR EXTRA WORK:
Extra work performed under a supplemental agreement will be paid for according to the terms of such supplemental agreement.

Extra work if performed on a force account basis will be paid for as follows:

For all labor and foreman, the Contractor will receive the wage paid on the project for each hour that said labor and foremen are actually engaged on such work to which shall be added the actual cost of premiums for public liability and workmen’s compensation insurance and social security taxes for the actual amount of such payroll.

For all materials used on such work the Contractor will receive the actual cost of such materials including freight charges.

For machinery and equipment used on such work the Contractor will receive an agreed rental price for each hour that such machinery and equipment is actually used on such work. The agreed price shall include the cost of fuel, lubrication and repairs.

To the sum of the foregoing an amount equal to fifteen (15) percent thereof will be added, as compensation for the use of small tools, Superintendent’s services, timekeeper’s services.

Premium on bond and all other overhead expenses incurred in the prosecution of the extra work including Contractor’s profit.

The sum of such payments provided for shall be accepted by the Contractor's as full compensation as provided in C-9.02.

C-9.06 PARTIAL PAYMENTS:

Once a month and within the thirty (30) days after submittal of a correct and complete estimate, the Owner shall make a progress payment to the basis of a duly certified and approved estimate of the work performed during the preceding calendar month under this Contract. To insure the proper performance of the Contract, the Owner shall retain ten (10) percent ** of the amount of each estimate until final completion and acceptance of all work covered by this Contract.

**NOTE Retainage for construction contracts over four hundred thousand ($400,000) shall be five (5) percent.

In the event that the base bid is less than twenty-five thousand ($25,000) the total contract price will be paid in one payment upon completion and acceptance of the project.

Should any defective material or work be discovered or should a reasonable doubt arise as to the integrity of any part of the work completed prior to final acceptance and payment, there will be deducted from the first estimate presented after the discovery of such work, an amount equal to the value of the defective or questionable work. Such defective work will be made from all subsequent estimates until the defects have been remedied or the cause for doubt removed.

C-9.07 TERMINATION OF THE CONTRACT BY THE CONTRACTOR:

If the work is stopped for a period of thirty (30) days under an order of any court of other public authority having jurisdiction, or as a result of an act of government, such as declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or subcontractor or their agents or employees or any other persons performing any of the work under a Contract with the Contractor, or if the work should be stopped for a period of thirty (30) days by the Contractor because the Engineer has not issued a Certificate for payment as provided in C-9.06 or because the Owner has not made payment within the ten(10) days after such stopping of work, then the Contractor may, upon seven (7) additional days written notice to the Owner and the Engineer, terminated the Contract and recover from the Owner payment for all work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment and machinery, including reasonable profit and damages.

C-9.08 TERMINATION OF THE CONTRACT BY THE OWNER:

If the Contractor is adjudged a bankrupt, or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency, or if he persistently or repeatedly refused or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen, or proper materials, or if he fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a substantial violation of a provision of the Contracts Documents, then the Owner, upon certification by the Engineer that sufficient cause exists to justify such action, may without prejudice to any right or remedy and after giving the Contractor and his surety, if any, seven (7) days written notice, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and may finish the work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished.

C-9.09

If the unpaid balance of the Contract Sum exceeds the costs of finishing the work, including compensation for the Engineer's additional services made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or to the Owner, as the case may be, shall be certified by the Engineer, upon application, and this obligation for payment shall survive the termination of the Contract.

C-9.10 ACCEPTANCE OF FINAL PAYMENT:

When the work provided for in the contract has been completed and the final inspection has been made by the Engineer, and all parts of the work have been approved and accepted, the final estimate showing all sums due the Contractor shall be prepared. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. No payment on the final estimate will be made until the Contractor furnishes satisfactory evidence that all claims growing out of lawful demands of laborers, work, men, mechanics, subcontractors, material, men, furnishers of machinery and parts thereof, and suppliers of all kinds have been satisfied. Upon final payment the Contractor shall execute a certificate and release upon the Owner on the form specified.

C-9.11 AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS AND RELEASE OF LIENS:

Each and every pay estimate must be accompanied by an "Affidavit of Payment of Debts and Claims and Release of Liens" form (sample of which follows this Section).

C-9.12 MATERIALS ON HAND INVENTORY:

When materials on hand payment is requested, and "Inventory of Materials on Hand" is required and must be included with Contractor's Pay Estimate. Proof of payment for materials on hand is also to be included with the Materials Inventory. A sample form follows this section.

C-9.13 PHOTOGRAPHS

The Contractor shall submit with each monthly progress pay estimate four (4) each 3 ½" x 5" color photographs depicting generally the work done during that month, and each photograph properly identified and dated.

AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS AND RELEASE OF LIENS

TO: _____
PROJECT: _____
_____

WEBB COUNTY, TEXAS
By this instrument the undersigned Contractor engaged in the construction of the above project hereby certified that on this date, or any time prior thereto, except listed below, the Contractor has paid the full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed and for all known indebtedness and claims against the undersigned for damages arising in any manner on or against the project, its land, improvements and equipment of every kind.

The undersigned hereby certified that he has received all payments currently due under his Contract for work on the above referred (except retainage). Therefore, the undersigned does hereby waive and/or release any and all liens against the property project and as of the _____
day of _____, 20____.

_____

_____

Contractor

_____

_____

Authorized Signature

_____

_____

Typed Signature and Title

STATE OF TEXAS
COUNTY OF WEBB

Before me, the undersigned authority, on this day personally appeared _____
_____ known to me to be the person whose name is subscribed to the foregoing instrument, and being first duly sworn, acknowledged to me that he/she executed the same for the purpose and consideration therein expressed and declared to me that the statements contained herein are true.

SWORN AND SUBSCRIBED TO before me this _____ day of __, 20____.

_____

Signature - Notary Public for the State of Texas

_____

Notary Public's Typed Signature

My Commission expires: _____

SECTION A-9 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

The Contractor shall not commence work under this Contract until he/she has obtained all the insurance required under this paragraph and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his/her Sub-Contract until the insurance required of the Subcontractor has been so obtained and approved.

a. Compensation Insurance: The Contractor shall procure and shall maintain during the life of this Contract Workmen's Compensation Insurance as required by applicable State or Territorial law for all of his/her employees to be engaged in work at the site of the project under this Contract and, in case of any such work sublet, the 5 Contractor shall require the Subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. In the case where any class of employees engaged in hazardous work on the project under this Contract and is not protected under the Workmen's Compensation Statute, The Contractor shall provide and shall cause each Subcontractor to provide adequate employee's liability insurance for the protection of such of his/her employee as are not otherwise protected.

b. Contractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance:

The Contractor shall procure and shall maintain during the life of his Contract: Contractor's Public Liability Insurance, Contractor's Property Damage Insurance and Vehicle Liability Insurance in the amount of not less than $1,00,000 for bodily injury, including accidental death, to any one person and an amount not less than $1,000,000 on account of any one occurrence: Property Damage in the amount not less than $1,000,000 per occurrence and $1,000,000 aggregate; and Vehicle Liability of $1,000,000 for any one person or $1,000,000 for each occurrence.

c. Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance:

The Contractor shall either (1) require each of his/her Subcontractor to procure and shall maintain during the life of his /her Subcontractor, Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amount specified in Subparagraph b. above or, (2) insure the activities of his/her Subcontractors in his/her policy specified in Subparagraph b. above.

d. Scope of Insurance and Special Hazards: The insurance required under Subparagraph b. and c. above shall provide adequate protection for the Contractor and his/her Subcontractor's, respectively, against damage claims which may arise from operations under this Contract, whether such operations be by the insured or by any one directly or indirectly employed by him/her and also against any of the special hazard which may be encountered in the performance of this Contract.

e. Builder's Risk Insurance (Fire and Extended Coverage): Unless otherwise provided by the Owner, the Contractor shall procure and shall maintain during the life of this Contract Builder's Risk Insurance (Fire and Extended Coverage on a 100 percent (100%) completed value basis on the insurable portion of the project. The Owner, the Contractor, and Subcontractor (as their interests may appear), shall be named as the Insured.

f. Proof of Carriage of Insurance: The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. Such certificates shall also contain substantially the following statement: "The Insurance covered by this certificate will not be cancelled or materially altered, except after ten (10) days written notice has been received by the Owner".

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

NOTICE OF AWARD

Date of Issuance:

Owner: CITY OF DILLEY

Owner's Contract No.:

Engineer: Premier Engineering Surveying

Engineer's Project No.:

Project:

Contract Name:

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated _____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

CITY OF DILLEY
PARK AND PAVILION RESTROOM IMPROVEMENTS

_____.

The Contract Price of the awarded Contract is: **$ xxxxxxxxxxxxxxxx**

[4] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **4** counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance and payment bonds]* and insurance documentation as specified in the Instructions to Bidder.

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: _____

Authorized Signature

By:

Title:

Copy: Engineer

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Change Order No. 1

Date of Issuance:	Effective Date:
Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

The Contract is modified as follows upon execution of this Change Order:

Attachments:

CHANGE IN CONTRACT PRICE	**CHANGE IN CONTRACT TIMES**
Original Contract Price: $_____	Original Contract Times: Ready for Final Payment: _____
[Increase] [Decrease] from previously approved Change Orders No. __ to No. __: $_____	[Increase] [Decrease] from previously approved Change Orders No. __ to No. __: Ready for Final Payment: _____
Contract Price prior to this Change Order: $_____	Contract Times prior to this Change Order: Ready for Final Payment: _____
Decrease of this Change Order: $_____ Increase of this Change Order: $_____	Increase of this Change Order: 15 Working Days Ready for Final Payment: _____
Contract Price incorporating this Change Order: $_____	Contract Times with all approved Change Orders: Ready for Final Payment: _____

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (if required)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title _____	Title _____
Date: _____	Date _____	Date _____

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

Application For Payment

Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
TOTALS		
NET CHANGE BY CHANGE ORDERS		

1. ORIGINAL CONTRACT PRICE			**$**
2. Net change by Change Orders			**$**
3. Current Contract Price (Line 1 ± 2)			**$**
4. TOTAL COMPLETED AND STORED TO DATE (Column F total on Progress Estimates)			**$**
5. RETAINAGE:			
a.	**X** _____	**Work Completed**	**$**
b.	**X** _____	**Stored Material**	**$**
c. Total Retainage (Line 5.a + Line 5.b)			**$**
6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5.c)			**$**
7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)			**$**
8. AMOUNT DUE THIS APPLICATION			**$**
9. BALANCE TO FINISH, PLUS RETAINAGE (Column G total on Progress Estimates + Line 5.c above)			**$**

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:
(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;
(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and
(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor Signature

By:	Date:

Payment of: $ _____
(Line 8 or other - attach explanation of the other amount)

is recommended by: _____ _____
(Engineer) (Date)

Payment of: $ _____
(Line 8 or other - attach explanation of the other amount)

is approved by: _____ _____
(Owner) (Date)

Approved by: _____ _____
Funding or Financing Entity (if applicable) (Date)

Progress Estimate - Unit Price Work

Contractor's Application

For (Contract):								Application Number:			
Application Period:								Application Date:			
A					B	C	D	E	F		
Item		Contract Information									
Bid Item No.	Description	Item Quantity	Units	Unit Price	Total Value of Item ($)	Estimated Quantity Installed	Value of Work Installed to Date	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (F / B)	Balance to Finish (B - F)
	Totals										

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

This [preliminary] [final] Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities:
☐ None
☐ As follows

Amendments to Contractor's responsibilities:
☐ None
☐ As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

SECTION 402
CLEARING AND GRUBBING

D-402.01 DESCRIPTION: "Clearing and Grubbing" shall consist of the removal and disposal of trees, stumps, brush roots, vegetation, logs, rubbish, and other objectionable matter. Full compliance with NPDES (National Pollution Discharge Elimination System) permitting & Drainage Standard shall be maintained.

D-402.02 CONSTRUCTION METHODS: The right-of-way shall be cleared of stumps, brush, logs, rubbish, trees, and shrubs, except such trees and shrubs and certain areas designated by the Engineer for preservation. Those trees, shrubs, and other landscape features specifically designed by the Engineer for preservation shall be carefully protected from abuse, marring, or damage during construction operations. Continual parking and/or servicing of equipment under the branches of trees designated for preservation will not be permitted. Trees and shrubs designated for preservation that must be pruned shall be trimmed as directed and all exposed cuts over two (2) inches in diameter shall be treated with an approved material.

Areas required for embankment construction, for roadway, channel and structural excavation, and for borrow sites and material sources shall be cleared and grubbed. On areas required for roadway, channel, or structural excavation, all stumps, roots, etc., (except for designated trees and brush) shall be removed to a depth of at least two (2) feet below the existing ground surface. All holes remaining after clearing and grubbing shall be backfilled and tamped as directed by the Engineer and the entire area bladed to prevent ponding of water and to provide drainage, except, in areas to be immediately excavated, the Engineer may direct that the holes not be backfilled. When permitted by the plans, trees and stumps may be cut off as close to natural ground as practicable on areas which are to be covered by at least three (3) feet of embankment. On areas required for borrow sites and material sources, stumps, roots, etc., (except for designated trees and brush) shall be removed to the complete extent necessary to prevent such objectionable matter becoming mixed with the material to be used in construction.

All cleared and grubbed material shall be disposed of in a manner satisfactory to the Engineer. Unless otherwise provided, all merchantable timber removed as required above shall become the property of the Contractor.

D-402.03 MEASUREMENT: Payment will be made for this item as clearing and grubbing and the Contractor shall investigate the conditions as they exist in the field.

D-402.04 PAYMENT: Price shall be full compensation for placing removing, loading and disposing all materials, manipulation, labor, tools, equipment, dumping fees and details necessary to complete the work.

SECTION 404
GENERAL CONSTRUCTION AND PREPARATION OF SITE

D-404.01 INTENT OF PLANS AND SPECIFICATIONS: The intent of the plans and specifications is to prescribe a complete work or improvement which the Contractor undertakes to do so, in full compliance with the plans, specifications, special provisions, proposal, and contract. The Contractor shall do all work as provided in the plans, specifications, special provisions, proposal, and contract, and shall do such additional work as may be considered necessary to complete the work in a satisfactory and acceptable manner. The Contractor shall furnish all labor, tools, materials, machinery, equipment, and incidentals necessary to the prosecution of the work.

D-404.02 DESCRIPTION OF SITE: This item shall consist of the preparation of site for construction operations by the removal and disposal of all obstructions which are not otherwise provided for in the plans and specifications.

Such obstructions shall be considered to include removal of sections of existing utility lines (water, sewer, & force main), existing fences/gates, and other such materials as shown on the plans including concrete slabs.

This item shall include the removal of obstructions in accordance with the item "Clearing and Grubbing", Section 402. It is the intent of this item to provide for the disposal of all objectionable materials not specifically provided for elsewhere in the plans/specifications. All materials to be salvaged by the Owner shall be properly disposed of by the contractor as directed.

D-404.03 FINAL CLEAN-UP: Upon the completion of the work and before acceptance and final payment will be made, the Contractor shall clean and remove from the site of the work, surplus and discarded materials, temporary structures, and debris of every kind. Contractor shall leave the site of the work in a neat and orderly condition. Surplus and waste materials removed from the site of the work shall be disposed of at locations satisfactory to the Engineer. Grounds around any structures shall be dressed to final grade as shown on plans.

D-404.04 COORDINATION OF PROJECT: The plans, these specifications, the proposal, special provisions, and all supplementary documents are intended to describe a complete work and are essential parts of the contract. A requirement occurring in any of them is binding. In case of discrepancies, figured dimensions shall govern over specifications; and plans and quantities shown on the plans shall govern over those shown in the proposal. The Contractor shall not take advantage of any apparent error or omission in the plans and specifications, and the Engineer shall be permitted to make such corrections or interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specifications. In the event the Contractor discovers an apparent error or discrepancy, Contractor shall immediately call this to the attention of the Engineer.

D-404.05 COOPERATION OF CONTRACTOR: The Contractor shall give to the work the consistent attention necessary to facilitate the progress thereof, and he shall cooperate with the Engineer, his inspectors, and with other contractors in every way possible.

D-404.06 MATERIALS-GENERAL: The materials shall be the best procurable, as required by the plans, specifications, and special provisions. The Contractor shall not start delivery of materials until

the Engineer has approved the source of supply. Only materials conforming to these specifications shall be used in the work, and such materials shall be used only after approval has been given by the Engineer and only so long as the quality of said materials remains equal to the requirements of the specifications. The Contractor shall furnish approved materials from other sources, if for any reason the product from any source at any time before commencement or during the prosecution of the work proves unacceptable. After approval, any material which has become mixed with or coated with dirt or any other foreign substances during its delivery and handling will not be permitted to be used in the work.

D-404.07 MATERIALS-STORAGE: Any and all materials, such as cement, lime, mill work, or other materials or equipment subject to deterioration by exposure to weather or other factors, shall be stored in such a manner to protect them from deterioration or damage preceding the time they become a permanent part of final structure.

D-404.08 MEASUREMENT AND PAYMENT: All work performed will NOT be paid directly but shall be included in the unit price bid for other items of construction. Price shall be full compensation for furnishing and placing all materials, manipulation, labor, tools, equipment, and incidentials necessary to complete the work.

SECTION 406
CONCRETE STRUCTURES

D-406.01 GENERAL: This item shall consist of reinforced concrete structures built in accordance with the design requirements and details shown on the plans and in conformity with the requirements herein.

MATERIALS

D-406.02 CONCRETE: Concrete shall conform to the requirements of Section D-504. Unless otherwise specified on the plans or in the proposal.

D-406.03 REINFORCING STEEL: Reinforcing steel shall conform to the requirements of Section D-410. Wire mesh reinforcement shall conform to the requirements of ASTM Designation A185.

D-406.04 STRUCTURAL STEEL: Structural steel shall conform to the requirements of ASTM Designation A-36.

D-406.05 EXPANSION JOINT MATERIAL:

(a)Pre-molded expansion joint material shall conform to the requirements of Division D, Section 414, titled, EXPANSION JOINT MATERIALS.

(b)Poured joint material shall conform to requirements of Federal Specifications SS-S-156, SS-S-159, or SS-S-164.

D-406.06 FORM MATERIAL:

(a)Form lumber for all exposed concrete surfaces shall be CM concrete form lumber, Southern Yellow Pine or approved equal, S4S, grade marked in accordance with the latest grading rules of the Southern Pine Association. Form lumber not otherwise specified shall be No. 2 Common Southern Yellow Pine, S4S.

(b)Plywood form shall be of Douglas Fir Plywood, 5 ply, and at least 3/4" thick, conforming to the grading rules as required under State Department of Highways and Public Transportation Specifications.

CONSTRUCTION METHODS

D-406.07 REINFORCEMENT:

(a) Reinforcing shall be detailed, fabricated, and erected in accordance with Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACT 315-57). Shop drawings shall be submitted in triplicate for engineering approval prior to fabrication. All reinforcement shall be entirely free from rust, scale, grease, or other coating which might destroy or reduce its bond with concrete.

(b) Spacing: Unless otherwise indicated, the clear distance between parallel bars shall be not less

than one and one- half times the diameter of round bars. In no case shall the distance between bars be smaller than the maximum size of the aggregates.

(c) Protective Covering: Reinforcement shall be protected by the thickness of concrete indicated on the plans. Unless otherwise specified, the protective coverings over reinforcement shall not be less than the maximum size of aggregates.

(d) Splicing and Lapping: As per section D-410

(e) Supports: All reinforcement shall be secured in place true to the lines and grades, indicated by the use of metal supports, spacers, or ties approved by the Engineer. Such supports shall be of sufficient number and strength to maintain the reinforcement in place throughout the concreting operations. The use of pebbles, pieces of broken stones or brick, metal pipe and wooden blocks shall not be permitted.

D-406.08 FORMS:

(a) General: Forms shall conform to the shape, lines, and dimensions of the members of structures, as called for on the plans and shall be substantial and sufficiently tight to prevent leakage of mortar. All details of form construction shall be subject to the approval of the Engineer and permission to place concrete will not be given until all such work is complete to his satisfaction.

(b) Braces and Ties: Forms shall be properly braced and tied together so as to maintain position and shape. Metal form of an approved type shall be used to hold forms in place. Such ties shall be of a type especially designed for use in connection with concrete work and shall have provision to permit easy removal of the metal to a depth of at least one- half inch from the surface of the concrete. The use of wire from ties will not be permitted except for minor or special form areas where the use of rigid type metal ties would be impracticable. Where wire ties are used, all wires upon removal of the forms shall be cut back at least one-half inch from the face of the concrete.

(c) Curved Surface: In the case of exterior exposed curved surfaces, the Contractor shall use such forming as may be necessary to provide smooth forms of uniform curvature.

(d) Coating: Plywood forms and plywood form lining shall be mill-oiled according to standard practice recommended by the Douglas Fir Plywood Association. Form lumber for all other exposed surfaces shall be coated with approved non-staining mineral oil which shall be applied shortly before the concrete is deposited. In general, all forms shall be thoroughly wetted before the concrete is placed.

(e) Cleanouts: At the time of placing concrete, the forms shall be clean and entirely free from all chips, dirt, sawdust, and other extraneous matter. For narrow walls and other locations where access to the bottom of the forms is not readily obtainable otherwise, adequate cleanout openings shall be provided.

(f) Chamfers: Unless otherwise shown on the plans, fill forms at all sharp corners and edges with triangular chamfer strips measuring ¾ in. on the sides. Dress wood molding on all faces. Make

molding for chamfers strips of materials of a grade that will not split when nailed and that can be maintain to true line without warping.

D-406.09 PLACING CONCRETE-GENERAL:

(a) Supervision: The Contractor shall give the Engineer sufficient notice before starting to place concrete in any unit of the structure to permit the inspection of forms, reinforcing steel, and preparation for placing. Concrete shall not be placed in footings until the character of the foundation has been approved by the Engineer and permission has been given to proceed. When footings can be placed in dry foundation pits, forms may be omitted, if desired by the Contractor and approved by the Engineer, and the entire excavation filled with concrete to the top of the footing. Where this procedure is followed, no measurement for payment will be made for concrete placed outside of the footing dimensions shown on the plans.

(b) Placing: Place concrete according to TxDOT item 420. All concrete shall be placed before its initial set has occurred. The operation of depositing and compacting the concrete shall be conducted so as to form a compact, dense, impervious mass of uniform texture which shall show smooth faces on all surfaces. Each part of the forms shall be filled by depositing the concrete directly as near its final position as possible. The coarse aggregate shall be worked back from the face and the concrete forced under and around the reinforcement bars without displacing them. Depositing large quantities at one point in the forms and running or working it along the forms will not be permitted. Concrete in columns shall be placed monolithically unless otherwise provided. An interval of not less than 4 hours shall elapse between the placing of concrete above the tops of the columns or walls to allow shrinkage. Concrete in walls, columns, and deep foundations shall be placed in a manner that will avoid separation of the aggregates or displacement of the reinforcement. Suitable chutes or vertical pipes shall be provided.

(c) Vibrating: All concrete shall be placed with the aid of mechanical vibrating equipment unless otherwise directed. Vibration shall be transmitted directly to the concrete, and in no case shall it be transmitted through the forms of reinforcing steel. The duration of vibration shall at any location be held to the minimum necessary to produce thorough compaction. Vibration shall be supplemented by hand spading to insure the flushing of mortar to the surface of all forms.

(d) Construction Joints: Construction joints shall be formed as shown on the plans. In all cases where they are not shown on the plans, they shall be formed as directed by the Engineer. Where indicated or required dowel rods shall be used. Before placing is resumed, all water and laitance shall be removed and the concrete shall be cut away, if necessary, to insure a strong dense concrete at the joint. In order to secure adequate bond, the surface of all concrete already in place shall be cleaned and roughened and shall then be spread with a 1/2 inch layer of mortar of the same sand-cement ratio as is used in the concrete immediately before the new concrete is deposited.

D-406.10 FINISHING EXPOSED SURFACES: An ordinary surface finish shall be applied to all concrete surfaces either as a final finish or preparatory to a higher grade or class of finish. Higher grades and classes of finish shall be in accordance with TxDOT Item 427, "Surface Finishes for Concrete". Where neither a grade nor class of finish is specified, an ordinary surface finish shall be provided as follows:

After form removal, all porous or honeycombed areas and spalled areas shall be corrected by chipping away all loose or broken material to sound concrete. Holes and spalls caused by removal of metal ties, etc., as required by TxDOT Item 420, shall be cleaned and filled with adhesive grout or epoxy grout. Exposed parts of metal chairs on surfaces to be finished by rubbing shall be chipped out to depth of one-half inch and the surface repaired.

All fins, runs, drips, or mortar shall be removed from surfaces which remain exposed. Form marks and chamfer edges shall be smoothed by grinding and/or rubbing.

Grease, oil, curing compound, etc., shall be removed from surfaces requiring a higher grade of finish. Discolorations resulting from spillage or splashing of asphalt, paint, or other similar material shall be removed. Repairs shall be dense, well bonded, and properly cured, and when made on surfaces which remain exposed and do not require a higher finish, shall be finished to blend with the surrounding concrete. Unless otherwise specified on the plans, ordinary surface finish shall be the final finish for the following exposed surfaces: Inlets, manholes, and sewer appurtenances.

D-406.11 FINISHING VERTICAL SURFACES (General): After tie rods and bolts are removed, the holes shall be filled solid with cement mortar. Honeycomb and minor defects shall not be patched until approval has been given by the Engineer.

D-406.12 REMOVAL OF FORMS:

(a) Finished Concrete: Forms for surfaces required to be finished shall be removed when the concrete has aged not less than 1/2 nor more than 2 curing days after the concrete has been placed.

(b) Unfinished Concrete: Forms and false work may be removed when the concrete has attained a compressive strength of not less than 65 percent of the design strength except that forms for walls, columns, and sides of beams may be removed after 48 hours.

(c) Curing Day: The term "curing day" will be interpreted as any calendar day on which the temperature is above 50 F for at least 19 hours. In continued cold weather, the Engineer will determine when sufficient time has elapsed to permit the removal of forms and false work.

D-406.13 DEFECTIVE WORK: Any defective work discovered after the forms have been removed shall be repaired immediately. If the surface of the concrete is bulging, uneven, or shows excess honeycombing or form marks, which, in the opinion of the Engineer, cannot be repaired satisfactorily, the entire section shall be removed before the repair work is started. No extra compensation will be allowed for extra work or materials involved in repairing or replacing defective concrete.

D-406.14 CURING: Concrete shall be maintained in a moist condition for at least five (5) days after placement. Curing shall be commenced as soon as possible after the concrete has been finished. This shall be either by means of approved curing compound, sprinkling, or by damp curing by means of wet mats, sand, etc. Adequate protection shall be provided to prevent damage from extreme weather conditions shall they be either hot or cold temperatures, wind, or other conditions which

would cause evaporation of moisture from the fresh concrete. The ACI recommendations for hot or cold weather shall be followed.

D-406.15 ADDITIONAL CONCRETE FINISH FOR EXPOSED SURFACES: Concrete shall be finished pursuant to 2004 TxDOT Specification Item 427 or latest revision.

D-406.16 CONCRETE STRUCTURE REPAIRS: For all repairs, provide materials suitable for the appropriate horizontal, vertical or overhead application. Approval from the engineer for any proposed repair is required unless a repair material type is indicated in the plans. Remove unsound concrete, repair spalled or delaminated concrete, and replace concrete with repair materials. All concrete repairs shall be as per TxDOT Item 429, 2004 edition or latest revision.

D-406.17 MEASUREMENT AND PAYMENT: No separate measurement or payment will be made under this item, but all such work done shall be deemed a subsidiary obligation of the Contractor, having been taken into account and included in price bid for the complete job.

SECTION 408
RIPRAP

D-408.01 GENERAL: This item shall govern the furnishing and placing of riprap.

D-408.02 MATERIALS:

1. Concrete: Unless otherwise shown in the plans, concrete shall be Class "A". The riprap will consist of a minimum of 4 inch slab with a 6 x 6- W2.9 x W2.9 welded wire fabric or No. 3 or No. 4 reinforcing steel bars spaced at maximum 18-inch centers each way , and per requirements of specifications entitled, "CONCRETE", Division D, Section 504. Grout shall be in accordance with TxDot item 421

2. Stone shall be as large as can be conveniently placed in a layer of the required depth. The stones, excepting small stones and spalls used to chink interstices shall weigh not less than 10 pounds and at least 50 percent of the stone shall weigh not less than 100 pounds.

3. Sacks shall be made of burlap not lighter than 10 ounce and shall be approximately 19 1/2 inches by 36 inches measured inside the seams when the sack is laid flat. Sound reclaimed sacks may be used.

D-408.03 CONSTRUCTION METHODS: If the slopes and bottom of the trench for toe walls are dry and not consolidated properly, the Engineer may require the entire area to be sprinkled, or sprinkled and consolidated before the concrete is placed. All surfaces shall be moist when concrete is placed.

1. The concrete riprap shall have a toe ditch as specified on plans. Concrete slab shall be placed, finished, and cured in accordance with the item, "CONCRETE STRUCTURES" Division D, Section 406 of these specifications.

2. Stone: for plain and grouted riprap shall be sound and durable, free from seams and coatings, and of such characteristics that it will not disintegrate when subjected to the action of water. Stone shall be of shapes which will form a stable protection structure of the required depth. Rounded boulders or cobbles shall not be used on slopes steeper than 2 to 1 unless grouted. Angular shapes may be used on any slope. Flat or needle shapes will not be acceptable unless the thickness of the piece is more than 1/3 the length. Do not place grout when air temperature is below 35° F. Protect work for rapid drying for at least 3 days after placement. For non grouted rock riprap and when the voids are going to be filled only with spalls or small stones, use filter fabric with the length running up and down the slope with a minimum of 2 feet overlap. Non grouted rock riprap shall be constructed as per design and engineer's recommendations. Waste concrete may be used, if the pieces are sound free from coatings, steel and meet the size requirements specified for a stone.

3. Sacks: the capacity of each sack shall be 1.25 cubic feet. Each sack shall contain 1 cubic foot of

concrete loosely placed so as to leave room for folding the open end, the fold just enough to retain the concrete at the time. The filled sacks are placed immediately after filling. The sacks shall be placed and lightly trampled to cause them to conform with the ground surface and with adjacent sacks in place.

4. Riprap other than concrete shall have a perimeter toewall of reinforced concrete a minimum of 18 inches deep and 9 inches wide placed adjacent to the existing or proposed finish grade.

D-408.04 MEASUREMENT: Riprap of any type shall be measured by the square foot as measured in the plan view, there shall be no separate measurement for toewalls.

D-408.05 PAYMENT: Riprap shall be paid for on a unit price basis as meassured. The price bid shall be considered to include furnishing, hauling, and placing all materials and for labor, tools, equipment, and incidentals necessary to complete the work. There shall be no separate payment for toewalls.

SECTION 410
REINFORCING STEEL

D-410.01 DESCRIPTION: This item shall provide for the furnishing and placing of bar reinforcing steel of the size and quantity designated for use in structures and other concrete items that require reinforcing steel as shown on the plans and in accordance with these specifications.

D-410.02 MATERIALS: Reinforcing steel shall conform to the requirement of Item 440, "Reinforcing Steel" of the TxDOT latest Provisions. Reinforcing steel bars produced outside of the United States are acceptable if such bar reinforcement conforms to the requirements of the ASTM Designations.

D-410.03 PLACING REINFORCEMENT: All steel reinforcing shall be accurately placed in the position shown on the plans and firmly held during the placing and setting of concrete. All reinforcement shall be inspected and approved before placement to be free from dust, rust, mill scale, paint, oil, or foreign material. When stored, it shall not be in direct contact with the ground. Bars shall be tied at all intersections. Distances from forms shall be maintained by means of stays, precast blocks, ties, hangers, metal chairs, or other approved supports. Blocks for holding reinforcement from contact with the form shall be precast concrete blocks of approved shape and dimensions or other equally suitable devices. The use of pebbles, pieces of broken stones or brick, metal pipe and wooden blocks shall not be permitted. Reinforcement in any sections shall be placed and then inspected and approved by the Inspector before the placing of concrete begins.

D-410.04 SPLACING AND LAPPING: Unless otherwise indicated, all spliced bars shall be staggered. Laps shall be in accordance with Table No. 1.

Table 1
Minimum Lap Requirements for Bar Sizes through No. 11

Bar size No. (in)	Bar size No. (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 11in	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.

SECTION 412
WELDED WIRE FABRIC

D-412.01 DESCRIPTION: This item shall govern the furnishing and placing of the various sizes of welded wire fabric as indicated on the plans or as directed by the Engineer.

D-412.02 MATERIAL: All welded wire fabric used in construction shall conform to the requirements of ASTM Designation A-185. It shall be 6 x 6- W2.9 x W2.9 welded wire fabric, plain electric welded reinforcing fabric or as indicated on the plans.

D-412.03 CONSTRUCTION METHODS: All splices in the wire fabric shall overlap sufficiently to allow two (2) pairs or transverse wires to be tied together and no splices of less than six (6) inches will be permitted.

At the edge of the construction, the wire fabric shall not be less than one (1) inch nor more than three (3) inches from the edge of the concrete and shall have no wires projecting beyond the last member parallel to the edge of the concrete. The wire fabric shall be straightened to lie flat in place without bulges or excessive vertical displacement and shall be supported properly throughout to insure its proper position in the finished construction.

D-412.04 MEASUREMENT: No measurement of welded wire fabric will be made.

D-412.05 PAYMENT: No direct payment for furnishing and placing welded wire fabric will be made. All materials and labor required will be considered subsidiary to the item in which it is used and shall be included in the unit price bid for said item.

SECTION 414
REINFORCING FIBERGLASS

D-414.01 DESCRIPTION: This item shall govern for the furnishing and placing of concrete reinforced with fibrous mesh in accordance with these specifications and with details as shown on the plans.

D-414.02 MATERIALS:

(1) Concrete

All concrete shall conform to the requirements of Section D-406, "Concrete for Structures". Unless otherwise shown on the plans or in the bid item, the concrete shall be class A concrete.

(2) Reinforced

Reinforcement shall be 100% virgin polypropylene fibrillated fibers specially manufactured for use as concrete reinforcement and meeting the requirements of ASTM C1116. The fibrous material shall not contain reprocessed olefin. Each container of fibrous material shall bear the manufacturer's name and/or trademark and the net weight of fibrous material in the package. The specific gravity of the fibrous material shall be 0.91 plus or minus .05. The tensile strength shall be 80 to 110 ksi. The lengths of the fibrous material shall be 1/2, 3/4, 1- 1/2 and 2 inches in the length. Unless otherwise shown on the plans, each cubic yard of concrete shall contain no less than 1- 1/2 pounds of fibrous material. The fibrous material shall be added to the concrete mix at the time the mix is batched. The fiber-reinforced concrete shall be furnish either by batch mixing or continuous mixing, and shall be free of fiber balls when delivered to the point designated by the purchaser.

D-414.03 Excavation, Placing of Concrete, Finishing, Curing and Backfill

All excavation, placing of concrete, finishing, curing and backfilling shall be in accordance with the Section D-302, "Structural Excavation and Backfill", and Section D-406, "concrete Structures".

D-414.04 MEASUREMENT: No measurement of fiberglass will be made.

D-412.05 PAYMENT: No direct payment for furnishing and placing fiberglass will be made. All materials and labor required will be considered subsidiary to the item in which it is used and shall be included in the unit price bid for said item.

D-410.05 MEASUREMENT AND PAYMENT: No separate measurement or payment will be made under this item, but all such work done shall be deemed a subsidiary obligation of the Contractor, having been taken into account and included by him in price bid for the complete job.

SECTION 416
EXPANSION JOINT MATERIALS

D-416.01 DESCRIPTION: This item shall govern for furnishing and placing of all expansion joint material as herein specified in the various items of these specifications or as shown on the plans or as directed by the Engineer.

D-416.02 MATERIAL: The material used for expansion joints shall conform to either of the following:

(1) Preformed Bituminous Fiber Material shall be formed from cane or other suitable fibers of a cellular nature securely bound together and uniformly impregnated with a suitable asphaltic binder and shall meet the requirements of the Standard Specifications for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction, ASTM Designation D-1751.

(2) Boards for expansion joints shall be obtained from Redwood or Cypress timber and shall be sound heartwood, free from sapwood, knots, clustered birds-eye, checks, and splits. Occasional sound or hollow birds-eye when not in clusters will be permitted provided the board is free from any other defects that will impair its usefulness as a joint filler.

D-416.03 CONSTRUCTION METHODS: All materials used shall extend the full depth of the concrete and shall be perpendicular to the exposed face. All joints shall be shaped to conform to the contour of the finished section in which they are installed. All material shall be a minimum of one-half (1/2") inch thick.

D-416.04 MEASUREMENT: Expansion Joint Materials will not be measured for payment.

D-416.05 PAYMENT: No direct payment will be made for Expansion Joint Materials. All material supplied and installed as specified herein shall be considered subsidiary work to the various items of these specifications calling for Expansion Joint Materials.

SECTION 418
MEMBRANE CURING

D-418.01 DESCRIPTION: This item shall consist of curing by the impervious membrane method of all curbs, sidewalks, drive approaches, concrete riprap, concrete structures, and other concrete as specified in the various items of these specifications or as indicated on the plans.

D-418.02 MATERIALS: The membrane curing compound shall comply with the requirements as set forth under "Membrane Curing, Type 2, White Pigmented" of the TxDOT latest provisions.

Type 1-D (Resin Base Only) is required for bridge slabs and top slabs of direct traffic culverts and all other surfaces that required a higher grade of surface finish.

D-418.03 CONSTRUCTION METHODS: The membrane curing compound shall be applied after the surface finishing has been completed, and immediately after the free surface moisture has disappeared. The surface shall be completely sealed with a uniform coating of the curing compound applied at the rate of coverage recommended by the manufacturer or as directed by the Inspector.

Do not apply membrane curing compound on projections of reinforcing steel or concrete that will later form a construction joint.

Do not apply membrane curing to dry surfaces. Dampen formed surfaces and surfaces that have been given a first rub so that they are moist at the time of application of membrane.

The liquid-membrane forming compound must not disintegrate, check, peel, or crack during the required curing period. It must not peel or pick up under traffic and must disappear from the surface of the cured concrete by gradual disintegration.

D-418.04 MEASUREMENT: "Membrane Curing" will not be measured for payment.

D-418.05 PAYMENT: The work and materials prescribed herein will not be paid for directly, but shall be included in the unit price bid for the items of construction in which these materials are used.

SECTION 420
CHAIN LINK FENCE

D-420.01 DESCRIPTION: Work includes: providing chain link fence system where shown on the drawings, as specified herein, and as needed for a complete and proper installation.

D-420.02 PRODUCT:

Dimensional Data:

General: Pipe size indicated are commercial pipe sizes.

Galvanizing: On steel framework and appurtenances, provide galvanized finish with not less than the following weight of zinc per square foot.

1. Pipe: 1.8 oz., complying with ASTM A120.
2. Hardware and Accessories: Comply with Table 1 of ASTM A153.
3. Fabric: 1.2 oz, complying with Class I of ASTM A392.

Fabric:

A. Provide number 9 gauge or 0.148" wires in two (2) mesh with top and bottom knuckled finish.

B. Place fabric in one piece width.

Posts, Rails, and Associated Items:

A. End, corner, slope, and pull posts: provide at least the following minimum sizes and weights:

Material and dimensions:		lbs./ft.
Pipe:	2.875" outside dimension	5.79

B. Line posts: provide minimum sizes and weights.

Material and dimensions:		lbs./ft.
Pipe:	1.900" outside dimension	2.75

C. Gate posts: provide gate posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:

Material and dimensions:		lbs./ft.
Pipe:	2.875" outside dimension	5.79

D. Top rails:

Material and dimensions:		lbs./ft.
Pipe:	1.660" outside dimension	1.80

1. Provide in manufacturer's longest lengths, with expansion type couplings approximately 6" long for each joint.

2. Provide means for attaching top rail securely to each gate, corner, pull, slope, and end posts.

E. Post brace assemblies: Provide at end and gate posts, at both sides of corner, slope and pull posts, with the horizontal brace located at mid-height of the fabric.

Material and dimensions:	lbs./ft.
Pipe: 1.660" outside dimension	1.80

Use 3/8" diameter rod with turnbuckle for diagonal truss.

F. Tension wire: Provide number 9 gauge galvanized coiled spring wire at bottom of fabric.

G. Post tops:
1. Provide steel, wrought iron or malleable iron, designed as weathertight closure cap.
2. Provide one cap for each post.
3. Provide caps with openings to permit through passage of top rail.

H. Stretcher Bars:

1. Provide one-piece lengths equal to full height of fabric with a minimum cross section of 3/19" x 3/4".
2. Provide one stretcher bar for each gate and end post, and tow of each corner, slope and pull post, except where fabric is woven integrally into the post.

I. Stretcher Bar Bands:

1. Provide steel, wrought iron or malleable iron, spaced not over 15" on centers, to secure stretcher bars to end, corner, pull, slope, and gate posts.
2. Bands may be used also with special fittings for securing rails to end, corner, pull, slope, and gate posts.

D-420.03 GATES:

A. General:
1. Provide additional horizontal and vertical member to assure proper operation of the gate, and for attachment of fabric hardware and accessories.

2. Space frame members not more than 8 feet apart.

Material and dimensions:		lbs./ft.
Pipe:	1.660" outside dimension	2.27

B. Gate Hardware: Provide the following for each gate:

1. Hinges:
   a. Pressed or forged steel or malleable iron, to suit the gate size; non-lift-off type, offset to permit 180E opening.
   b. Provide 1-11/2 pr. of hinges for each leaf over 6 feet in nominal height.

2. Latches:
   a. Provide forked type or plunger-bar type to permit operation from either side of the gate.
   b. Provide padlock eye as integral part of latch.
3. Keeper: Provide keeper for vehicle gates, which automatically engages the gate leak and holds it in the open position until manually released.
4. Double gates:
   a. Provide gate stops for double gates consisting of mushroom or flush plat with anchors.
   b. Set in concrete to engage the center drop rod or plunger bar.
   c. Provide locking device and padlock eyes as an integral part of the latch, requiring both gate leaves.

D-420.04 MISCELLANEOUS MATERIALS AND ACCESSORIES:

A. Wire ties:

   1. For tying fabric topline posts, use number 9 gauge wire ties spaced 12" on centers.
   2. For tying fabric to rails and braces, use number 9 gauge wire ties spaced 24" on centers.
   3. For tying fabric to tension wire, use number 11 gauge hog rings spaced 24" on centers.
   4. Manufacturer's standard wire ties will be acceptable if of equal strength and durability.

B. Concrete: Comply with provisions for 2500 psi concrete.

D-420.05 EXECUTION:

Surface Conditions: Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

Installation:

A. General:
   1. Install posts at a maximum spacing of 10 feet on centers.
   2. Install corner or slope posts where changes in line or grade exceed a 30° deflection.

B. Excavating:
   1. Drill holes for post footings in firm, undisturbed or compacted soil, strictly adhering to the dimensions and spacing shown.
   2. Post hole dimensions.
      a. Provide 30" deep by 8" diameter foundations for line post for 5 foot fabric height and less.
      b. Provide 36" deep by 8" diameter foundations for line posts for fabric heights exceeding 5 feet.
      c. Provide 35" deep by 12" diameter foundations for all other posts.

   3. Spread soil from excavations uniformly adjacent to the fence line, or on adjacent areas of the site if so directed.

C. Setting Posts:

1. Remove loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.
2. Center and align post in holes.
3. Place concrete around posts in a continuous pour, and vibrate and tamp for consolidation.
4. Check each post for vertical and top alignment and hold in position during placement and finishing operations.
5. Trowel tops of footings, and slope or dome to direct water away from posts.
6. Extend footing for gate posts to the underside of bottom hinge.
7. Set keeps, stops, sleeves, and other accessories into concrete as required.
8. Keep exposed concrete surfaces cured with membrane curing material.

D. Concrete Strength:
   1. Allow concrete to attain at least 75% of its minimum 28-day strength before rails, tension wires, and/or fabric is installed.

E. Rails and Bracing:
   1. Install fence with top rail and bottom tension wire.
   2. Install tip rails continuously through post caps or extension arms bending to radius for curved runs.
   3. Provide expansion couplings as recommended by the fencing manufacturer.
   4. Provide bracing to the midpoint of the nearest line post or posts at all end corners, slope, pull, and gate posts.

   5. Install tension wires parallel to the line of fabric by weaving through the fabric and tying to each post with not less than number 6 gauge galvanized wire, or by securing the wire to the fabric.

F. Installing Fabric:

   1. Leave approximately 2" between finish grade and bottom salvage.
   2. Excavate high points in the ground to clear the bottom of the fence.
   3. Place and compact fill to within 1" of the bottom of the fabric in depressions.
   4. Pull fabric taut and tie to post, rails, and tension wires.
   5. Install fabric on outward side fencing side of fence and anchor to framework so that the fabric remains in tension after pulling force is removed.
   6. Install stretcher bars by threading through or clamping to fabric on 4" centers and secure to posts with metal bands spaced 15" on centers.

G. Installing Gates:

   1. Install gates plumb, level, and secure for full opening without interference.
   2. Install ground-set items in concrete for anchorage in accordance with the fence manufacturer's recommendations.
   3. Lubricate and adjust the hardware for smooth operation.

H. Miscellaneous:
   1. Use U-shaped tie wires, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns.

2. Bend ends of wire to minimize hazards to persons and clothing.
3. Fasteners.
   a. Install nuts for tension bank and hardware bolts on side of fence opposite fabric side.
   b. Peen the ends of bolts to prevent the removal of nuts.
4. Repair coatings damaged in the shop or field erection, using a hot-applied repair compound applied in accordance with its manufacturer's recommendations.

D-420.06 Measurement and Payment:

1. **Measurement**: Chain link fence of each height specified will be measured by the linear foot measured including gates. Gates will be measured as linear footage of fence complete in place.

2. **Payment**: T he work performed and material furnished as prescribed by this Item, measured as provided under "Measurement" will be paid for at the unit price bid for "Chain Link Fence".

SECTION 422
CONDUITS

D-422.01 DESCRIPTION

This item shall govern for the furnishing and placing of conduit of the types and sizes indicated on the plans, including junction boxes, fittings, expansion joints, attachments, and incidentals.

D-422.02 MATERIALS

All conduit and fittings shall meet the requirements of the National Electrical Code and shall be listed by Underwriters Laboratories, and shall be marked in accordance with the applicable requirements of the NEC.

Junction boxes, expansion joints, and conduit fittings shall be fabricated from a material similar to the connection conduit unless indicated otherwise on the Plans and shall be listed by Underwriters Laboratories.

Rigid metal conduit shall be steel, hot dipped galvanized inside and outside. When tested in accordance with ASTM Designation: A 90, zinc coating shall be minimum of 1.5 ounces per square foot. Electronic metallic tubing and intermediate metal conduit shall be steel, hot dipped galvanized on the outside and protected on the inside with a suitable corrosion-resistant materials. Fittings shall be rain-tight. Set screw and pressure cast fittings will not be permitted.

Polyvinyl chloride and high-density polyethylene conduit shall meet the requirements of NEMA Standard TC-2 and UL 651, and the requirements of NEC for Rigid Nonmetallic Conduit. Unless otherwise noted on the Plans, PVC and HDP conduit shall be heavy wall (Schedule 40).

Flexible conduit shall liquid-tight metal meeting requirement of NEC and be UL-listed. Where conduit system metallic, all lengths of flexible metal conduit shall be fitted with bonding jumpers.

D-422.03 CONSTRUCTION METHODS

Conduit systems for new street crossings shall be installed prior to the subgrade compaction and the Curb & Gutter construction.
All conduit systems for street crossings shall be installed at least two (2') feet away from the existing or future sidewalk or extended to the Right of Way line.

The conduit, junction boxes, fitting, and incidentals shall be placed in accordance with the lines, grades, details, and dimensions shown on the Plans, or as directed by the Engineer. Installation of conduit shall be in accordance with the requirements of NEC. Conduit placed for concrete encasement shall be secured and supported in such a manner that the alignment will not be disturbed during placement of the concrete. No concrete shall be placed until all of the conduit ends have been capped and all box openings closed.

For electrical conduits a 12" of clearance in all directions shall be used when close to any water carrier pipe.

Where conduit is treated in the field, a standard conduit cutting die with a 3/4 inch taper per foot

shall be used. Conduit placed on structures shall be firmly fastened with three (3) feet of each outlet box, junction box or fitting and at other locations as required by the NEC.

When required by the Engineer, immediately prior to installation of conductors or final acceptance, a spherical template having a diameter of not less than 75 percent of the inside diameter of the conduit shall be drawn through the conduit to insure that the conduit is free from obstruction. Than all conduit ends shall be closed using permanent type caps.

D-422.04 SAMPLING AND TESTING

When tests are required, sampling and testing will be in accordance with the Department's Manual of Testing Procedures.

D-422.05 CURB MARKINGS

The location, size, and purpose of all conduits shall be clearly marked on street curbs.

D-422.6 MEASUREMENT

Conduit of the types and sizes specified on the plans will be measured by the linear foot along the main line of the conduit except that flexible metal conduit will not be paid for directly but will subsidiary to the various pay items. No measurement will be allowed under this item for conduit used in circuit protector assemblies, service poles, transformer stations, or roadway illumination assembly foundations.

D-422.07 PAYMENT

Conduit, measured as provided under "Measurement", will be paid for at the unit price bid in linear feet for "Conduit", of the types and sizes specified, which prices shall each be full compensation for furnishing and installing all conduit, jacking, boring, excavation, backfilling, replacing pavement , or surface treatment and marking location of conduit; for furnishing and installing all fittings, outlet boxes, bends, expansion devices, junction boxes, attachment devices and incidentals, and for all labor tools, equipment and incidentals as necessary to complete the work.

SECTION 428
CONCRETE DRIVEWAYS

D-428.01 GENERAL: Applications for driveway permits shall be made in writing to the Building Development Services Department to construct, reconstruct, alter, remove, or replace any driveway section within the public R.O.W. (Right-of-way).The application shall include the location of the proposed improvements, together with a plot plan drawn to scale (or approved site plan) fully describing the nature of the proposed improvements and the locations as well as the traffic control plan. Construction of driveways within the R.O.W. shall be in compliance with ADA. Any existing obstructions as traffic signs, fire hydrants, street lights, etc. shall be relocated outside the proposed driveway at the owner's expense. Water meters, water valves and manholes shall be relocated or adjusted as shown on plans.

All driveways shall intersect the public street at essentially right angles except that one-way limited movement driveways may intersect at angles no less than 45 degrees as shown in Detail No.

No entrance nor exit driveway or curb cut for any property shall be allowed within twenty feet (20') from the intersecting property line at street intersection, measured along and parallel with the curb of such street Detail No.

Driveways within the ROW (right- of- way) shall not exceed a grade of 10%. Maximum "break over" angles, being the algebraic difference in successive grade changes, shall be 12% for summit conditions and 2% on sidewalk area, as shown in Detail No.

Minimum Thickness

Type of Driveway	Concrete thickness including sidewalk area
Residential	6 inch
Commercial	7 inch
Industrial	8 inch

D- 428.02 MATERIALS

A. Concrete: Conform to material and proportion requirements for concrete Section 504- Concrete and Section 406- Concrete Structures.

B. Reinforcing Steel: Conform to material requirements for welded wire fabric Section 410 - Reinforcing Steel.

C. Preformed Expansion Joint Material: Conform to material requirements for preformed

expansion joint material of Section 416- Expansion Joint Material.

D. Expansion Joint Filler: Conform to material requirements for expansion joint material of Section 406- Concrete Structures.

D-428.03 PREPARATION:

A. Identify and protect utilities which are to remain.
B. Protect living trees, other plant growth, and features designated to remain.
C. Conduct clearing and grubbing operation in accordance with Section 402 - Clearing and Grubbing.
D. Excavate subgrade to the line, grade and cross-section shown on plans. Remove soft spots and pumping soils and replace with fill material having a Plasticity Index between 7 and 20.
E. If there is an existing curb and gutter, saw cut the curb leaving the gutter radius or reconstruct as the existing.

D-428.04PLACEMENT: Place and finish concrete in accordance with applicable portions of Section 406 - Concrete Structures. No exposed materials shall be allowed as finish surface within the R.O.W.

D-428.05 JOINTS: Install joints in concrete driveway in accordance with Section 406- Concrete Structures.

D-428.06 CONCRETE CURING: Cure concrete in accordance with Section 406- Concrete Structures.

D-428.07 PROTECTION: Conform to applicable requirements of Section 406- Concrete Structures.

D-428.08 MEASUREMENT AND PAYMENT: Payment for concrete driveways is on square foot basis. Refer to Division C, General Provisions, Section 9 Measurement and Payment for unit price procedures

SECTION 430
CONCRETE SIDEWALKS

D-430.01 GENERAL: Section includes reinforced concrete sidewalks and accessible ramps. Applications for sidewalk permits shall be made in writing to the Building Development Services Department to construct, reconstruct, alter, remove, or replace any sidewalk section within the R.O.W. (Right-of-Way). The application shall include the location of the proposed improvements, together with a plot plan drawn to scale (or approved site plan) fully describing the nature of the proposed improvements and the locations as well as the traffic control plan. Construction of sidewalks and accessible ramps shall be in compliance with ADA. Any existing obstructions as water meters, traffic signs, fire hydrants, water valves, street lights, etc. shall be relocated outside the proposed driveway at the owner's expense.

D- 430.02 REFERENCES:

A. ASTM C 31-Standard Practice for Making and Curing Concrete Test Specimens in the field.
B. ASTM C 39-Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
C. ASTM C 42- Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
D. ASTM C 138 -Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.
E. ASTM C 143 - Standard Method for Slump of Hydraulic Cement Concrete.
F. ASTM C 172 - Practice for Sampling Freshly Mixed Concrete.
G. ASTM C 698 - Standard Test Methods for Moisture - Density Relations of Soils and Soil Aggregate Mixtures Using 5.5 - Pound Rammer and 12-inch Drop.

D- 430.03 SUBMITTALS: Submit certified testing results and certificates of compliance.

D- 430.04 MATERIALS

A. Concrete: Conform to material and proportion requirements for concrete Section 406.

B. Reinforcing Steel: Conform to material requirements in section 410 & 412.

C. Reinforcing Fiberglass: Conform to material and proportion requirements as per Section 414. Approval from the City engineer is required.

D. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 416 - Expansion Joint Material.

E. Expansion Joint Filler: Conform to material requirements for expansion joint material of Section 406- Concrete Structures.

F. Forms: Use straight, unwrapped wood or metal forms with nominal depth equal to or greater

than the proposed sidewalk thickness. The use of 2" by 4" lumber as forms will be allowed.

EXECUTION

D-430.05 REPLACEMENT: Replace sidewalks and accessible ramps that are removed or damaged during construction as per this specification to the next joint. Provide replaced and new sidewalks with accessible ramps if sidewalk intersects curb at street or driveway as per the latest ADA standards.

D-430.06 PREPARATION:

A. Identify and protect utilities which are to remain.

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

C. Conduct clearing and grubbing operation in accordance with Section 402 - Clearing and Grubbing.

D. Excavate subgrade to the line, grade and cross-section shown on plans. Remove soft spots and pumping soils and replace with fill material having a Plasticity Index between 7 and 20.

D-430.07 PLACEMENT:

A. *Setting Forms:* Securely stake forms to line and grade. Maintain position during concrete placement.

B. *Reinforcement:* Install 6 x 6, W2.9 x W2.9 welded wire fabric or No. 3 reinforcing steel bars on 18-inch centers longitudinally and transversely. Lay longitudinal bars in walk continuously, except through expansion joints. Support reinforcement in manner to maintain reinforcement in center of slab vertically during placement.

C. *Expansion Joints:* Install expansion joints at 40' to 80' in accordance with Section 416 - Expansion Joint Material.

D. Place concrete in forms to specified depth and tamp thoroughly with "jitterbug" tamp, or other acceptable method. Bring mortar to surface. Where a sidewalk crosses a driveway, ensure that the sidewalk depth and reinforcement are not less than the driveway cross-sectional details shown on the plans.

E. Strike off to smooth finish with wood strike board. Finish smoothly with wood hand float. Brush across sidewalk with fine-haired brush. Exposed material shall not be allowed as finish surface.

F. Unless otherwise indicated on plans, mark off joints ¼ inch deep, at spacing equal to 5 feet and matching C&G joints. Use joint tool equal in width to edging tool.

G. Finish edges with tool having ¼ inch radius.

H. After concrete has set sufficiently, refill space along side of sidewalk to top of walk with

suitable material. Tamp until firm and solid. Dispose of excess material in accordance with Section 128 - Waste Material Disposal. Repair driveways and parking lots damaged by sidewalk excavation in accordance with Section 430.

D-430.08 CURING: Conform to requirements of Section 406 - Concrete Curing.

D-430.09 FIELD QUALITY CONTROL:

A. Testing will be performed under provision of Division C, General Provisions, Section 6 Control of Work and Materials.

B. Compressive Strength Test Specimens: Four test specimens for compressive strength test will be made in accordance with ASTM C 31 for each 30 cubic yards or less of sidewalk that is place in one day. Two specimens will be tested at 7 days. The remaining two specimens will be tested at 28 days. Specimens will be tested in accordance with ASTM C 39. Minimum compressive strength shall be 3000 pounds per square inch at 28 days.

C. Yield test for cement content per cubic yard of concrete will be made in accordance with ASTM C 138. If such cement content is found to be less than that specified per cubic yard, reduce batch weights until amount of cement per cubic yard of concrete conforms to requirements.

D. If the Contractor places concrete without notifying the laboratory, the City will have the concrete tested by means of a core test as specified in ASTM C 42. If the concrete does not meet the specification, the cost of the test will be deducted from payment due the Contractor.

E. Sampling of fresh concrete shall be in accordance with ASTM C 172.

F. Take slump tests when cylinders are made.

G. Concrete shall be acceptable if the average of the two 28 day compression tests is equal to or greater than the minimum 28-day strength specified.

H. If either of the two tests is less than the average of the two tests by more than 10 percent, that entire test shall be considered erratic and not indicative of the concrete strength. Core samples will be required of this concrete.

I. If any 28-day laboratory test indicates that concrete of low strength has been placed, the concrete in question shall be tested by taking cores as directed by the City Engineer may direct. At least three representative cores shall be taken and tested as specified in ASTM C 42. Cost for any additional testing required due to a failed test will be paid by the contractor.

D-430.10 NONCONFORMING: Remove and replace areas of sidewalk that fail compressive strength tests, with concrete of thickness shown on plans. Nonconforming sidewalk sections shall be replaced at no additional cost to the City.

D-430.11 PROTECTION: Maintain sidewalks in good condition until completion of work. Replace damaged sidewalks in accordance with Paragraph D-430.06 - Replacement.

D-430.12 MEASUREMENT: Sidewalks will be measured by the square foot or by the foot of different widths. Accessible ramps will be measured by each unit. The unit will consist of the curb ramp, landing, adjacent flares or side curb, and detectable warning surface as show on the plans**.**

D-430.13 PAYMENT: Will be paid by the unit price bid for concrete sidewalks for the depth specified and accessible ramps. This price is full compensation for surface preparation of base; materials; removal and disposal of excavated material; drilling and doweling into the existing concrete curb, sidewalk and pavement; repair of the adjacent street or pavement structure damaged by the operations; and equipment, labor, materials, tools and incidentals.

SECTION 502
EXCAVATION AND EMBANKMENT OF STREETS

D-502.01 DESCRIPTION: This item shall consist of doing all required excavation within the limits of the roadway (except for excavation otherwise classified such as excavation for drainage structures, etc.): the removal and proper utilization or disposal of all excavated materials; the erection of all embankments; and the constructing, shaping, compacting, and finishing of all earthwork on the entire roadway and approaches thereto in conformity with the lines, grades, and typical sections as shown on the plans and established by the Engineer.

D-502.02 GENERAL: Soil material for street subgrade or embankment with a PI > 20 shall be stabilized as shown on the plans. The method shall be approved by the City Engineer. All material encountered of whatever nature within the limits indicated shall be removed and disposed of as directed. The Contractor shall inform and satisfy himself as to the character, quantity, and distribution of all material to be excavated. No payment will be made for any excavated material which is used for purposes other than required in the plans or proposal or as directed by the Engineer.

The rough excavation shall be carried to such depth that sufficient material will be left above the designated grade to allow for compaction. Likewise on embankments, sufficient material shall be placed above the designated grade to allow for compaction and settlement. Should the Contractor excavate below the designated lines, Contractor shall replace such material excavated with approved material in an approved manner and condition at own expense.

The Engineer shall have complete control over the excavation, moving, placing, and disposition of all material, and he shall determine the suitability of material to be placed in embankments.

Stakes set by the Engineer as provided in the "General Provisions" shall include only one set of offset alignment and grade stakes. All slope stakes, bluetops, and additional alignment stakes shall be furnished and set by the Contractor.

EQUIPMENT

D-502.03 GRADING EQUIPMENT: The Contractor may use any type of earth-moving equipment the contractor wishes to use or has available, provided such equipment is in satisfactory condition and of such capacity that the grading schedule as planned by the Contractor and approved by the Engineer can be maintained.

D-502.04 COMPACTING EQUIPMENT:

(a) Tamping rollers shall consist of two metal rollers, drums, or shells or 40 " minimum diameter, each not less than 42 " in length and unit-mounted in a rigid frame in such manner that each roller may oscillate independently of the other; and each roller, drum, or shell shall be surmounted by metal studs with tamping feet projecting not less than seven (7) inches from the surface of the drum and spaced not less than six (6) inches nor more than ten (10) inches measured diagonally from center to center. The area of each tampering foot shall be not less than five (5) feet square inches nor more than eight (8) square inches. Each unit shall be provided with a suitable tamper foot cleaning device.

Where more than one rolling unit is used, the rolling units shall be pivoted on the main frame in a manner which will permit the rolling units to adapt themselves to uneven ground and to rotate individually. When empty, the weight of the roller shall be such that the unit pressure applied by the tamping foot in contact with the ground is not less than 120 pounds per square inch.

(b) Pneumatic rollers shall consist of not less than nine pneumatic tired wheels running on two axles in such manner that the rear group of tires will not follow in the tracks of the forward group and shall be mounted on a rigid frame provided with platform or body suitable for ballast loading. The front axle shall rotate around the kingpin so located that the roller may be turned within a minimum circle. The pneumatic tire roller under working conditions shall have an effective rolling width of approximately sixty (60) inches and shall give a minimum compression of three hundred and twenty-five (325) pounds per inch of width of tire trend

(c) Smooth self-propelled rollers shall weigh at least ten tons and may be tandem or three-wheel type. The wheels of the roller shall be equipped with adjustable scrapers.

CONSTRUCTION METHODS

D-502.05 EXCAVATION: The excavation material shall be handled in such a manner as to allow the selected material to be properly placed in embankment and in the capping of the pavement subgrades as determined by the Engineer. Any suitable surplus material shall be stock-piled in approved areas for later use as directed by the Engineer.

The contractor shall make the distribution as indicated on the plans, and the widening or narrowing of the section or raising or lowering of the grade to avoid haul will not be permitted. During the process of excavation, the grade shall be maintained in such condition that it will be well drained at all times. When directed, temporary drains and drainage ditches shall be installed to intercept and divert surface water.

In cut areas, the top of the subgrade shall be scarified and compacted to a minimum depth of six (6) inches to not less than 95% compaction as per TEX. 113-E or 114 -E, or ASTM 1557 or ASTM 698, as appropriate to the extent of at least 12” inches behind the back of the curb or edge of pavement. When the required density cannot be obtained, the material shall be undercut and replaced with suitable material as directed. The material placed to refill and undercut portion shall be handled and compacted as specified for embankments.

During compacting operations, water shall be added to the subgrade material. Such watering shall be done by approved methods and using approved equipment. This moisture shall not be more than 2% above or below the optimum. Approved subgrade shall be primed, cured and after primed will be covered with base within maximum seven (7) days.

D-502.06 BORROW: Borrow excavation shall consist of excavation made outside the normal grading limits to obtain material for the completion of embankments and for other purposes.
It shall be the Contractor's responsibility to locate and obtain the supply, and the Contractor shall notify the Engineer sufficiently in advance to permit tests and measurements to be made.

All borrow pits shall be opened up immediately to expose the vertical face of various strata of acceptable material to obtain a uniform product. Borrow pits shall be excavated to regular lines to permit accurate measurements, and shall be drained and left in a neat and presentable condition with all slopes dress uniformly.

D-502.07 PREPARATION OF EMBANKMENT AREA: Immediately prior to the placing of material, the entire area upon which the embankment is to be placed shall be striped of all grass, weeds, brush and other organic materials, and shall be scarified and broken to a depth of six (6) inches. All roots, debris, large stones or objectionable material that would interfere with the compaction of fill will be moved and disposed of as directed. A thin layer (approximately three (3) inches) of fill material shall be spread over the scarified foundation, and the whole area compacted as required herein. When embankments are to be placed on natural slopes steeper than 3 to 1, horizontal benches shall be constructed as directed by the Engineer. Material excavated in the construction of such benches will be included in the total yardage of excavation.

D-502.08 CONSTRUCTION OF EMBANKMENTS: Embankments shall be formed of satisfactory materials placed in successive horizontal layers of not more than six inches in loose depth for the full width of the cross section. The material in the layers shall have the proper moisture content before rolling to obtain the required compaction. Wetting or drying of the material and manipulation to secure a uniform moisture throughout the layer shall be required. Should material be too wet to permit proper compaction, corrective work on all portions of the embankment thus affected shall be done with the proper equipment and methods approved by the Engineer.

Each layer placed as specified above shall be compacted to not less than the comparable density of the adjoining material. Compaction shall extend through the entire depth of each layer and the embankment, when complete, shall be homogeneous and uniformly compacted mass. The moisture shall not be more than 2% above or below the optimum.

Under all paved areas and for a depth of six inches below the surface of the subgrade, the embankment shall be compacted to not less than ninety-five percent of the maximum density as determined by procedures set out under TEX-113E or 114 -E to the extent of at least 12" inches behind the back of the curb or edge of pavement. Backfill behind back of curb shall be properly compacted. However, any areas inaccessible to a roller shall be consolidated and compacted with approved mechanical tampers. Stones or rock fragments larger than four inches in their greatest dimension will not be permitted in the top six inches of the embankment.

The Contractor shall be responsible for the stability of all embankments made under this contract and shall replace any portion which is the opinion of the Engineer has become displaced due to negligence on the part of the Contractor.

D-502.09 TRUENESS TESTS: In those areas upon which a sub-base or base course is to be placed, the surface of the subgrade shall be of such smoothness that when tested with a sixteen (16) foot straightedge, it shall show no deviation in excess of five- hundredths (0.05) of a foot from true grade as established by grade pins or hubs. In areas not under sub-base or base course, the surface shall not deviate more than one tenth (0.10) of a foot from true grade as established by grade pins or hubs.

D-502.10 COMPACTION TESTS: Subgrade materials shall be compacted to the required density and moisture content as shown below, unless otherwise shown on the plans:

The maximum dry density and optimum moisture content shall be determined in accordance with TxDOT Tex- 113-E or Tex- 114-E.
Test for in place density shall be made in accordance with TxDOT Test-115-E and within 24 hours after compacting operations are completed. If the material fails to meet the density specified, it shall be re-worked as necessary to obtain the density and moisture required.

Materials

PI	Max. Dry Density	Percentage of moisture
≤ 20	95%	- 2% of Optimum or grater
≥ 20	95%	≥ Optimum moisture

For materials with a PI > 20, just prior to placing any base materials or stabilization, the top 4 inches of compacted subgrade shall be tested for density and moisture content. If test show the density to be more than 2% below the specified minimum or the moisture content more than 3% above or below the specified minimum, the course shall be reworked as necessary to obtain the specified compaction and moisture content.

MEASUREMENT

D-502.10 ROADWAY EXCAVATION: The number of cubic yards of street excavation to be paid for shall be computed by the method of average end areas. The width of these areas shall be the distance measured from edge of asphalt to edge of asphalt or from back of curb to back of curb plus two (2.0) feet. The depth shall be that staked in the field by the Engineer.

D-502.11 BORROW EXCAVATION: The number of cubic yards of "Borrow Excavation" to be paid for shall be computed by the method of average and areas. The width of these areas shall be the distance measured from back of curb to back of curb plus two (2.0) feet. The depth shall be that staked "in the field by the Engineer."

D-502.12 EMBANKMENT: No separate measurement for embankment will be made.

D-502.13 HAUL: No separate measurement of haul will be made other than that specifically approved in the plans.

PAYMENT

D-502.14 STREET EXCAVATION: The cubic yards of street excavation measured as provided in these specifications will be paid for at the contract unit price per cubic yards (dense measurement) for "Street Excavation" which payment shall constitute full compensation for excavation, haul, embankment, watering and compaction; and for furnishing all materials, labor and equipment for

doing the work as specified herein and to the liens and grades shown on the plans. Payment for fifty percent (50%) of street excavation will be paid at the time initial excavation (rough grading) is completed. The balance of fifty percent (50%) is to be paid when the street subgrade is tested and approved.

SECTION 504
CONCRETE

D-504.01 DESCRIPTION: These specifications shall govern for the materials used, for the storing, measuring, and handling of materials, and for the proportioning and mixing of Portland Cement Concrete.

MATERIALS

D-504.02 CEMENT: Portland Cement shall conform to the requirements of the latest revision of ASTM Designation C150, Type 1, or Type II. Only one brand or kind of cement shall be used in any one structure except as permitted in writing by the Engineer. All cement shall be delivered in bags plainly marked with the brand and name of the manufacturer.

D-504.03 COARSE AGGREGATE: The coarse aggregate shall conform to the requirements of the latest revision of ASTM Designation C-33 and ASTM Designation D-448. Coarse aggregate for the various classes of concrete shall conform to the requirements of the following table:

Table 1 COARSE AGGREGATE GRADATION CHART
Percent Retained on each sieve

Aggregate Grade No.	Nominal Size	2-1/2"	2"	1-1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8
1	21/2	0	0-	15-50	-	60-80	-	-	95-100	-
2 (467)*	11/2		0	0-5	-	30-65	-	70-90	95-100	-
3	1		0	0-5	-	10-40	40-75	-	95-100	-
4(57)*	1			0	0-5	-	40-75	-	90-100	95-100
5(67)*	3/4				0	0-10	-	45-80	90-100	95-100
6(7)*	1/2					0	0-10	30-60	85-100	95-100
7	3/8						0	5-30	75-100	-
8	No.4						0	0-5	35-60	90-100

* Numbers in parenthesis indicate that these gradations conform to corresponding ASTM gradation form ASTM C-33.

The amount of deleterious substances in coarse aggregate shall not exceed the following percentages by weight:

Material removed by decantation	1.0%
Shale, slate and similar materials	1.0%
Clay lumps	0.25%
Soft fragments	3.0%
Other deleterious substances (Including friable, thin, elongated or laminated pieces)	5.0%

The sum of all deleterious materials exclusive of materials removed by decantation shall not exceed 5% by weight.

D-504.04 FINE AGGREGATE: The fine aggregate shall conform to the requirements of the latest revision of ASTM Designation C-33.

	Percent Retained on Each Sieve							
AGGREGATE	3/8 in.	No.4	No.8	No.16	No. 30	No. 50	No.100	No.200
GRADE #1	0	0-5	0-20	15-50	35-75	65-90	90-100	97-100

The amount of deleterious substances in fine aggregate shall not exceed the following percentages by weight:	
Materials removed by decantation	3.0%
Clay Lumps	0.5%
Other deleterious substances (Such as coal, shale, coated or soft flaky particles) Material finer than No. 200 sieve (a) In concrete subject to surface abrasion	2.5%
(b) All other concrete	3.0%

D-504.05 WATER: Water shall be clean and free from deleterious amounts of acids, alkalies, and organic materials.

EQUIPMENT

D-504.06 GENERAL: All equipment will be inspected by the Engineer and only equipment approved by him may be used. Any equipment disapproved shall be removed from the job site within 24 hours after it has been inspected.

D-504.07 CEMENT STORAGE FACILITIES: All cement shall be stored in well ventilated, weatherproof buildings which will protect the cement from dampness. The floor supporting the cement shall clear the ground a sufficient distance to prevent the absorption of moisture by the cement. Provision for storage shall be ample, and the shipment of cement shall be segregated in such manner as to provide easy access for identification of each shipment.

The Engineer may permit small quantities of cement to be stored in the open for periods not exceeding 48 hours, if a raised platform and adequate waterproof coverings are provided.

D-504.08 AGGREGATE STORAGE FACILITIES: If the aggregates are stored on the ground, the sites for the stockpiles shall be grubbed clear of all weeds and grass, and leveled off. The bottom layer of aggregate shall not be disturbed nor used without cleaning.

When the contract requires the use of two or more sizes of aggregate, the different sizes shall be stored in a manner as to prevent intermixing.

Materials in all stockpiles shall be handled and placed in such manner that segregation of materials within the stockpile will be avoided.

D-504.09 MEASURING EQUIPMENT: Equipment for measuring concrete materials shall be such that the proportions can be accurately controlled and easily checked at any time during the work, preferably measurement by weight rather than by volume.

D-504.10 MIXING EQUIPMENT: The mixing shall be done in a batch mixer of approved type and size which will insure the uniform distribution of the material throughout the mass so that the mixture will be uniform in color and smooth in appearance. Whenever a concrete mixer is not suitable or adequate for the work, it shall be removed from the site upon written order from the Engineer. Pick-up and throw-over blades in the mixer drum which are worn down more than ten percent (10%) in depth shall be repaired or replaced.

D-504.11 CLASSIFICATION AND MIX DESIGN: It shall be the responsibility of the Contractor to furnish the mix design, using a Coarse Aggregate Factor acceptable to the Engineer, for the class(es) of concrete specified to conform with the requirements contained herein and in accordance with TxDOT Standards. The contractor shall perform, at his own expense, the work required to substantiate the design, except the testing of strength specimens, which will be done by the Department. Complete concrete design data shall be submitted to the Engineer for approval and shall be less than 1 year old signed and sealed by a licensed professional engineer in the State of Texas.

It shall also be the responsibility of the Contractor to determine and measure the batch quantity of each ingredient including all water, not only for batch designs, but for all concrete produced for the project, so that the mix conforms to these specifications and other requirements shown on the plans.

In lieu of the above mix design responsibility, the Contractor may accept a design furnished by the Engineer, however, this will not relieve him of the responsibility of providing concrete meeting the requirements of these specifications.

Trial batches will be made and tested using all the proposed ingredients prior to placing of concrete, and when the aggregate, and/or type, brand or source of cement, or admixture is changed. When the brand and/or source of cement only is changed, the Engineer may waive trial batches only if a prior record of satisfactory performance of the cement has been established.

Trial batches shall be made in the mixer to be used on the job. When Transit Mix concrete is to be used, the trial designs will be made in a transit mixer representative of the mixers to be used. Batch size shall not be less than fifty percent (50%) of its rated mixing capacity.

Mix designs from previous or concurrent jobs may be used without trial batches if it is shown that no substantial change in any of the proposed ingredients has been made. Mix design shall be current or less than one (1) year old.

The coarse aggregate factor shall not be more than 0.82, but when the voids in the coarse aggregate exceed 48 percent of the total dry loose volume, the coarse aggregate factor shall not exceed 0.85.

The coarse aggregate factor shall not be less than 0.68 unless authorized by the Engineer in writing.

Water reducing or retarding agents may be used ~~will~~ with all classes of concrete at the option of the Contractor, and will be required for hot weather concreting for cased drilled shafts and for continuous slab placement.

When a retarding admixture is required for hot weather concreting, must meet the requirements of ASTM C 94 When used in continuous slab placement, the amount to be used will be established by several trial batches with varying retarder content and simulating the placing conditions to be encountered. When water reducing or retarding agents are used at the option of the Contractor, reduced dosage of the admixture will be permitted.

Entrained air materials shall comply with ASTM C 260 and will be required in accordance with Table 7 TxDOT item 421. Specimens will be tested in accordance with Tex-414-A or Tex-416-A

D-504.12 QUALITY OF CONCRETE: The concrete shall be uniform, workable, and of a consistency acceptable to the Engineer. The cement content, maximum allowable water/cement ratio, the desired and maximum slump, the proper amount of entrained air and the strength requirements for all classes of concrete shall conform to the requirements of these specifications. It shall be the responsibility of the Contractor to provide concrete meeting these specifications.

During the progress of the work, the Engineer will cast test cylinders or beams, perform slump and entrained air tests, and will make temperature checks, as required, to insure compliance with the specifications.

A strength test shall be defined as the average of the breaking strength of two cylinders or two beams as the case may be. Specimens will be tested in accordance with Test Methods TEX-418- A or Tex-448- A.

If the required strength or consistency of the class of concrete being produced cannot be secured with the minimum cement specified or without exceeding the maximum water/cement ratio, the Contractor will be required to furnish different aggregates, use a w ater-reducing agent, an air-entraining agent, or increase the cement content in order to provide concrete meeting these specifications.

All test specimens, beams or cylinders, representing tests for removal of forms and/or false work shall be cured using the same methods, and under the same conditions as concrete represented.

"Design Strength" beams and cylinders shall be cured in accordance with TxDOT Bulletin C-11 and Supplement thereto.

The Contractor shall provide and maintain curing facilities as described in TxDOT Bulletin C-11 and Supplement thereto, for the purpose of curing test specimens. Provision shall be made to maintain the water in the curing tank at temperatures between 70°F and 90°F.

When control of concrete quality is by twenty-eight day compressive tests, job control will be by seven day compressive tests which are shown to provide the required twenty-eight day strength. based on results from trial batches. Thereafter, if the required seven day strength is not secured with the quantity of cement specified in Table 5, changes in the batch design will be made as specified in this article.

Table 5- Concrete Classes TxDOT Item 421

Class of Concrete	Design Strength, Mim. 28-day f'c (psi)	Maximum W/C Ratio[1]	Coarse Aggregate Grades[2, 3]	General Usage[4]
A	3,000	0.60	1—4, 8	Inlets, manholes, curb, gutter, curb & gutter. conc. Retards, sidewalks, driveways, backup walls, anchors
B	2,000	0.60	2—7	Riprap, small roadside signs and anchors
C	3,600	0.45	1—6	Drilled shafts, bridge substructure , bridge railing, culverts except top slab of direct traffic culverts, headwalls, wing walls, approach slabs, concrete traffic barrier (cast-in-place)
D	1,500	0.60	2—7	Riprap
E	3,000	0.50	2—5	Seal concrete
F[5]	Note 6	0.45	2—5	Railroad structures; occasionally for bridge piers, columns, or bents
H[5]	Note 6	0.45	3—6	Prestressed concrete beams, boxes, piling, and concrete traffic barrier (precast)
S[5]	4,000	0.45	2—5	Bridge slabs, top slabs of direct traffic culverts
P	See Item 360	0.45	2—3	Concrete pavement
DC[5]	5,500	0.40	6	Dense conc. overlay
CO[5]	4,600	0.40	6	Conc. overlay

LMC[5]	4,000	0.40	6—8	Latex-modified concrete overlay
SS[5]	Note 7	0.45	4—6	Slurry displacement shafts, underwater drilled shafts
K[5]	Note 6	0.45	Note 6	Note 6
HES	Note 6	0.45	Note 6	Note 6

1 . Maximuin water-cement or water-cementitious ratio by weight.
2. Unless otherwise permitted, do not use Grade 1 coarse aggregate except in massive foundations with 4-in. minimum clear spacing between reinforcing steel bars. Do not use Grade 1 aggregate in drilled shafts.
3 . Unless otherwise approved, use Grade 8 aggregate in extruded curbs.
4. For information only.
5 . Structural concrete classes.
6. As shown on the plans or specified.
7. Cementitious material content shall be minimum 658 lb/cy of concrete.

D-504.13 CONSISTENCY: The consistency of the concrete as placed should allow the completion of the finishing operation without the addition of water to the surface. When field conditions are such that additional moisture is needed for the final concrete surface finishing operation, the required water shall be applied to the surface by fog spray only and shall be held to a minimum. The concrete shall be workable, cohesive, possessing satisfactory finishing qualities, and of the stiffest consistency that can be placed and vibrated into a homogeneous mass. Excessive bleeding shall be avoided. Slump requirements will be as specified in TxDOT item 421 Table 8.

Table 8
Slump Rerquirements

CONCRETE DESIGNATION	RECOMMENDED DESIGN AND PLACEMENT SLUMP (in.)	MAXIMUM ACCEPTABLE PLACEMENT SLUMP (in.)
Drilled Shafts	See item 416	See item 416
Thin walled section (9 in. or less)	4	6-1/2
Approach slabs, concrete overlays, caps, columns, piers, wall sections (over 9 in.)	3	5
Bridge slabs	4	5-1/2
Prestressed Concrete Members[1]	4	6-1/2
Concrete Traffic Barrier, concrete bridge railing	4	6-1/2
Dense concrete overlay	3/4	2

CONCRETE DESIGNATION	RECOMMENDED DESIGN AND PLACEMENT SLUMP (in.)	MAXIMUM ACCEPTABLE PLACEMENT SLUMP (in.)
Latex-modified concrete for bridge deck overlays	3	7-1/2
Concrete Placed Under Water	6	8-1/2
Concrete pavement (slip-formed)	1-1/2	3
Concrete pavement (formed)	4	6-1/2
Riprap, Curb, Gutter, and other Miscellaneous Concrete	As approved	As approved

1. If a high-range water reducer (HRWR) is used, maximum acceptable slump will be 9 in.

NOTE: No concrete will be permitted with slump in excess of the maximums shown.

(a) The mortar will cling to the coarse aggregate
(b) The concrete is not sufficiently fluid to segregate when transported to the place of deposit
(c) The concrete, when dropped directly from the discharge chute, will flatten out at the center of the pile but the edges of the pile will stand up and not flow
(d) The mortar will show no free water when removed from the mixer
(e) The concrete will settle into place when deposited in the forms, and when transported in metal chutes at an angle of 30 degrees horizontal, it will slide and not flow into place
(f) The surface of the finished concrete will be free from "laitance", or a surface film of free water

Any concrete failing to meet the requirements although meeting the slump requirements will be considered unsatisfactory; and the mix shall be changed to correct such unsatisfactory conditions.

D-504.14 MIXING: The first batch of materials placed in the mixer for each placement shall contain an extra quantity of sand, cement, and water sufficient to coat the inside surface of the drum without diminishing the mortar content or the mix. Upon cessation of mixing for any considerable period of time, the mixer shall be thoroughly cleaned.

The entire contents of the drum shall be discharged before any materials are placed therein for the succeeding batch. The concrete shall be mixed in quantities required for immediate use, and any concrete which is not in place within one (1) hour after water is added to the batch will not be used. Re-tempering of concrete will not be permitted.

After all the ingredients are assembled in the drum the mixing shall continue for a minimum time of one and one-half minute for 14 cubic foot mixers and smaller, and for a minimum time of one minute for 21 cubic foot mixers and larger. During the mixing time the drum shall revolve at a speed of 14 to 20 revolutions per minute. The mixer shall be equipped with a speed regulator to hold the mixer to the required speed of revolution. The absolute volume of the concrete batch shall not exceed 120 percent of the NRMCA-rated capacity of the mixer.

D-504.15 READY MIX CONCRETE: Concrete forms from a central plant of mixed-in-transit mixer trucks may be used if it complies with these specifications. The Engineer shall have free access at all times to the batching and mixing plant for sampling of all materials and inspection of work performed at this project. Concrete shall be delivered in water-tight containers which will not permit segregation of the materials. When delivered, the concrete shall be uniform throughout the mass.

The delivery ticket shall include the date, time, strength, slump, and amount of batch delivered. If an extra charge of water is required at the job site because of too low a slump, the drum shall be turned a minimum of 30 revolutions after addition of such water. Mixer shall be completely emptied before recharging. Trucks shall not be loaded greater than NRMCA-rated capacity. The maximum time interval between the addition of the cement to the batch and the placing of the concrete in the forms shall conform to the requirements set up under TxDOT specifications, Item 421. Overwet mixers shall be rejected and shall not be corrected by the addition of either aggregate or cement to the particular batch in question.

D-504.16 ADVERSE WEATHER: In threatening weather which, in the opinion of the Engineer, may result in conditions which will adversely affect the quality of the concrete to be placed, the Engineer may order postponement of the work. Where work has been started and changes in weather conditions require protective measures to be used, the Contractor shall furnish adequate shelter to protect the concrete against damage from rainfall, wind, or damage due to freezing temperature. In case it is necessary to continue mixing operation during rainfall, the Contractor shall provide protective coverings for the material stockpiles as well as the concrete being placed. The covering for aggregate stockpiles will be required only to the extent as may be necessary to control the moisture conditions in the aggregate so that adequate control of the consistency of the concrete mix may be maintained.

No concrete shall be mixed without the approval of the Engineer when the air temperature is at or below 40 degrees Fahrenheit taken in the shade away from artificial heat and falling. If authorized by the Engineer, concrete may be mixed when the air temperature is 35 degrees Fahrenheit and rising. When permission is given for mixing when the temperature is below 40 degrees Fahrenheit, the Engineer will specify the special precautions which shall be taken.

In case the air temperature is at or above 85 degrees Fahrenheit, concrete may be mixed in accordance with the requirements set up in TxDOT, Specifications.

Hand mixing of concrete will be permitted only for small placements or in the case of an emergency and then only when authorized by the Engineer. The Engineer will also specify the proportioning and methods of mixing to be used.

D-504.17 TESTING AND INSPECTION OF MATERIALS:

(a) Concrete testing of mix designs shall be made by a commercial testing laboratory approved by the Engineer. One copy of the test reports shall go to the Engineer and one copy of same shall go to the Contractor.

(b) Selection of the testing laboratory by the Engineer shall be understood as in no way relieving the

Contractor's responsibility for the satisfactory performance of the work in full conformance with the requirements of the contract. Excluding written protest by the Contractor, in advance of processing or use of materials, services of the testing laboratory shall be understood as constituting full acceptance by an approval of the Contractor.

(c) Tests of concrete and materials shall be made under the direction of the Engineer who shall have access to all places where materials are stored, proportioned, or mixed.

(d) The Contractor shall submit to the Engineer the mixes he/she intends to use which have been proven by preliminary compression test prior to commencement of work. Proving tests shall consist of at least six 6" x 12" cylinders for each mix specified. Three cylinders shall be tested at 7 days and three at 28 days.

(e) During the progress of the work one set of 3 (4) each 6" x 12" cylinders for compression tests shall be cast for each 50 c.y. or day's pour. Cylinders shall be tested for compression at seven 7 days, 14 days, and at 28 days, and one cylinder will be reserved as "stand-by" or as per engineer's recommendation.

Samples used for testing must be representative of the batch tested and should be taken from the middle third portion of the batch. Samples shall be mixed with a shovel to insure uniformity throughout the sample and immediately molded into test specimens.

If test cylinders fail to meet specified strength at 28 days by more than 5%, core tests of the structure may be ordered by the Engineer at the Contractor's expense. These tests shall be made by an approved laboratory.

(f) Slump tests: Slump tests shall be made on each sample taken for compression tests and shall comply with Table 8 "Slump Requirements". Additional slump tests shall be as required by the Engineer.

D-504.18 TEST METHODS:

(a) ASTM Designation C-17 "Standard Method of Sampling Fresh Concrete."

(b) ASTM Designation C-143 "Standard Method of Slump Test for Consistency of Portland Cement Concrete".

(c) ASTM Designation C-31 "Standard Method of Making and Curing Compression and Flexure Test Specimens in the Field".

(d) ASTM Designation C-39 "Standard Method of Test for Compressive Strength of Molded Concrete Cylinders".

(e) ASTM Designation C-42 "Standard Methods of Securing, Preparing, and Testing Specimens from Hardened Concrete for Compressive and Flexural Strengths".

All tests shall conform to the requirements of the latest revisions of the applicable ASTM Designations.

D-504.19 PLACING, CURING, AND FINISHING: The placing of concrete including construction of forms and falsework, curing and finishing, shall be in accordance with Division D, Section 406, CONCRETE STRUCTURES.

D-504.20 MEASUREMENT AND PAYMENT: No separate measurement or payment will be made under this item, but all such work done shall be deemed a subsidiary obligation of the Contractor, having been taken into account and included in price bid for the complete job.

SECTION 506
CONCRETE CURB AND GUTTER

D-506.01 DESCRIPTION: This item shall consist of curb and gutter composed of Portland Cement concrete, constructed as herein specified on an approved subgrade or base course, in conformity with the lines and grades established by the Engineer and the details and sections shown on the plans.

MATERIALS

D-506.02 CONCRETE: Concrete shall be Class "A" and shall conform to the requirements of Division D, Section 504, titled "CONCRETE" in the specifications.

D-506.03 EXPANSION JOINT MATERIAL: Filler for expansion joints shall be preformed bituminous fiber type and shall conform to the requirements of Division D, Section 416, titled "EXPANSION JOINT Materials".

D-506.04 FORMS: Forms shall be of metal and of a section satisfactory to the Engineer, straight, free from warp and of a depth equal to the depth of the finished work. Forms shall be securely staked to line and grade and maintained in true position during the placing of concrete.

D-506.05 REINFORCING STEEL: Reinforcing steel shall conform to the requirements of Division D, Section 410, titled REINFORCING STEEL.

CONSTRUCTION METHODS

D-506.06 SUBGRADE OR BASE COURSE: The subgrade and base course shall be excavated and shaped to line, grade and cross-section, compacted as specified. The subgrade and base course shall be moist at the time concrete is placed. The specified subgrade and base materials and specifications for the roadway shall extend 1 foot beyond the back of curb.

D-506.07 PLACING CONCRETE: Placement of concrete shall comply with TxDOT Item 420.Where reinforcing is required, it shall be placed and supported upon suitable chairs or concrete spacer blocks before concrete is poured.

D-506.08 FINISHING AND JOINTING: The surface of the concrete shall be struck off to the required line and grade with an appropriately shaped screed and shall be floated smooth while the concrete is still soft. The surface shall be floated with a wood float until a slight excess of sand appears. The outer edges and joints shall be rounded with approved tools to the radii shown on the plans. When the concrete has taken sufficient set, the inside form shall be carefully removed, and the surface thus exposed shall be pointed up where necessary, then wetted and rubbed with a wooden block to remove all form marks and other irregularities, producing a finish similar in appearance to the finished upper surfaces. Mortar finishing will not be permitted. Where the location of expansion joints is not indicated, joints shall be placed at spacing of not more than forty (40) feet. Expansion joint material shall be of the thickness shown on the plans and shall conform to the required section of the curb. Expansion joint material shall be placed between the curb and any abutting structures, and around all obstructions protruding through the curb and gutter as shown on the plans.

Dummy groove contraction joints shall be placed at intervals of approximately ten (10) feet. Joints shall be made so that the joint is perpendicular to the line of the curb.

D-506.09 CURING: As per Division D, Section 418. Other methods of curing if approved by the Engineer may be used at the Contractor's option.

D-506.10 BACKFILLING: The curb shall be backfilled to the full height of the concrete, tamped, and sloped as directed.

D-506.11 MEASUREMENT: The footage of concrete curb and gutter to be paid for shall be the number of linear feet, measured along the back of the curb in place, completed, and accepted. The various types and classes of curb and gutter shall be measured separately.

D-506.12 PAYMENT: The footage of concrete curb and gutter, measured as provided in Division D, Section 506, Paragraph D-506.11 will be paid for at the contract unit price per linear foot for concrete curb and gutter of the various types and classes.

SECTION 536
PARKING LOTS

D - 536.01 DESCRIPTION: This item shall govern for the different type of materials and wearing surfaces used in the construction of parking lots for commercial, office, business, industrial, institutional, multi- family and other uses.

D - 536.02 GENERAL:

(a) These standards differentiate the construction requirements between materials systems allowed in parking space areas and interior drives and loading areas. While all the following methods are permitted within the defined parking space area, some are restricted from use in the interior drive and loading areas. This is due to the higher load frequencies and vehicle turns within the interior drive areas.

(b) The American Disabilities Act (ADA) must be considered when utilizing these standards. Certain surface materials (particularly aggregate, concrete grid and geotextile) can not be used in designated handicapped parking spaces or along accessible routes as defined by the ADA.

(c) Aggregate, concrete grid and geotextile can not be use in designated fire lanes or emergency vehicle rout.

D - 536.03 MATERIALS: Materials shall be in accordance with:

Asphalt	Section 520
Flexible Base	Section 510
Concrete	Section 504
Concrete Pavers	ASTM C936 and the Interlocking Concrete Paver Institute (ICPI)
Geotextile or Geogrid	
Aggregate	
Chip Seal	

D - 536.04 CONSTRUCTION:

1. Hot Mix Asphalt:

a. Sub-grade: In-situ material or fill material approved by the Engineering Department as necessary. Fine graded and compacted to a density not less than 95% of maximum dry density per Tex-113E or Tex-114E

b. Base Course: Minimum 8” graded aggregate base per Standard Technical Specification Manual Division D Section 510 or as per plans.

c. Surface: Hot Mix Asphalt Pavement per Standard Technical Specification Manual Division D Section 520. Consisting of a minimum of two inches (2") of either type "C" or "D".

d. On Industrial parking lots a reinforced concrete running board three feet (3') wide and twelve inches (12") of thickness will be required to rest the landing legs of the trailers.

e. Maintenance: The property owner is responsible for properly maintaining the pavement surface. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed, ruts and potholes must be repaired immediately.

2. Portland Cement Concrete:

a. Sub-grade: In-situ material or fill material. Fine graded and compacted to a density not less than 95% of maximum dry density per Tex 113E or Tex-114E

b. Base Course: Not required, however a 4" graded aggregate base is recommended.

c. Surface: 3600 psi Portland cement concrete pavement. Minimum between four (4") and eight inches (8") thick reinforced with minimum # 3 or # 4 rebar @ 24 o.c. as per Land Development Chapter 24.78 and Standard Technical Specification Manual Division D Section 504. Colored and/or imprinted concrete is acceptable.

d. Maintenance: The property owner is responsible for properly maintaining the pavement surface. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed. Ruts and potholes must be repaired immediately.

3. Concrete Unit Pavers – Standard:

a. Sub-grade: In-situ material or fill material approved by the Engineering Department. Fine graded and compacted to a density not less than 95% of maximum dry density per Tex 113E. or Tex-114E

b. Base Course: Minimum eight inch (8") graded aggregate base as per Standard Technical Specification Manual Division D Section 510.

c. Surface: Interlocking Concrete Unit Payers (ASTM C936). Minimum thickness 2-3/8" over a 1" thick sand bed. Install per Interlocking Concrete Paver Institute (ICPI) standards. Edge entire perimeter with edge restraint system approved by ICPI.

d. Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver's manufacturer's recommendations. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed. Ruts and potholes must be repaired immediately.

4. Concrete Unit Pavers – Permeable:

a. Sub-grade: In-situ material or fill material approved by the Engineering Department. Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard percolation test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge. Lack of well draining soil may prevent the use of this method.

b. Base Course:

i. Option 1: With piped under drain system: 4" thick graded aggregate base course per Standard Technical Specification Manual Division D Section 510.

ii. Option 2: Open graded base: 6" thick (8" preferred) # 57 stone per Standard Technical Specification Manual Division D Section 504. Install a layer of filter fabric between the base course and the bedding material.

iii. Where permeable pavers adjoin an asphalt surface, the pavers shall be bordered by a flush concrete curb. It is recommended that the base course beneath the asphalt surface within 4' of the curb be graded stabilized aggregate base to a depth of not less than 6" in order to avoid future settlement of the asphalt pavement adjacent to the border Curb.

c. Surface: Interlocking Concrete Unit Paver system (ASTM C936) with void area per square foot of between twelve and twenty percent (12%-20%). Minimum paver thickness of 2-3/8" over a minimum 1" # 8 a ggregate bedding layer per Standard Technical Specification Manual Division D Section 504. Fill void material with poorly graded aggregate as recommended by the paver's manufacturer. Install per Interlocking Concrete Paver Institute (ICPI) standards. Edge entire perimeter with edge restraint system approved by ICPI.

d. Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver's manufacturer's recommendations. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed. Ruts and potholes must be repaired immediately. All stone must be contained within the parking/driveway area.

5. Concrete Grid Pavers – *Parking Areas Only:*

a. Subgrade: In-situ material or fill material approved by the engineer. Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard percolation test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.

b. Base Course:

i. Option 1: With piped under drain system: 4" thick graded aggregate base course per Standard Technical Specification Manual Division D Section 510.

ii. Option 2: Open graded base: 6" thick (8" preferred) # 57 stone per Standard Technical Specification Manual Division D Section 504. Install a layer of filter fabric between the base course and the bedding material.

iii. Where permeable pavers adjoin an asphalt surface, the pavers shall be bordered by a flush concrete curb. It is recommended that the base course beneath the asphalt surface within 4' of the curb be graded stabilized aggregate base to a depth of not less than 6" in order to avoid future settlement of the asphalt pavement adjacent to the border curb.

c. Surface Course: Concrete Grid Pavers per National Concrete Masonry Association (NCMA) A-I 5-82. Void area per square foot between twenty and fifty percent (20%-50%). One inch (1") thick #8 aggregate bed per Standard Technical Specification Manual Division D Section 504 (voids filled with stone) or a 1" sand bed (voids filled with topsoil and vegetation). Install per grid manufacturer's recommendations.

d. Maintenance: The property owner is responsible for properly maintaining the pavement surface and edge restraints per the paver's manufacturer's recommendations. The surface grade shall be maintained as installed. Ruts and potholes must be repaired immediately. All stone must be contained within the parking/driveway area and immediately removed from the sidewalk or public street areas. All vegetation must be properly maintained and cut to a height not exceeding nine inches.

6. Geotextile Grid System –*Parking Areas Only:*

a. Subgrade: In-situ material or fill material approved by the Engineering Department. Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard percolation test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.

b. Base Course: 4" thick graded aggregate base course as per Standard Technical Specification Manual Division D Section 510.

c. Surface Course: Geotextile or plastic grid type system with voids filled with either stone or vegetation. Minimum load rating of 40.000 pounds gross vehicle weight. Submit system specifications, manufacturer literature and sample to City Engineer for approval. Install per manufacturers recommendations.

d. Maintenance: The property owner is responsible for properly maintaining the pavement surface per the geotextile manufacturer recommendations. All stone must be contained

within the parking driveway area and immediately removed from the sidewalk or public Street areas. The surface grade shall be maintained as installed. Ruts and potholes must be repaired immediately. All vegetation must be properly maintained and cut to a height not exceeding six inches.

7. Aggregate Surface – *On Temporary spill-over Parking Areas Only:*

a. Subgrade: In-situ material or fill material. Sub-grade soil must have a minimum infiltration rate of one half inch (1/2") per hour as determined by a standard percolation test with a plasticity index of zero. Fine graded and moderately compacted such that the permeability of the soil is not negatively impacted but soil is able to support the expected vehicular load surcharge.

b. Base Course: 4" graded aggregate base as per Standard Technical Specification Manual Division D Section 510.

c. Surface: Minimum 4" thickness aggregate material with 0% fines (no material passing a # 200 sieve). All material to be contained with perimeter edging consisting of either concrete curbing, treated landscape timbers, or masonry. Submit aggregate sample and sieve analysis to City Engineer for approval.

d. Maintenance: The property owner is responsible for properly maintaining the stone surface and edge restraint. All stone must be contained within the parking area and immediately removed from the sidewalk, public street, or travel/back-up areas. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed. Ruts and potholes must be repaired immediately. Add stone as necessary to maintain grading and drainage. The surface shall be kept moist as necessary to prevent dust and debris from becoming airborne.

8. Chip Seal Pavement – *On Temporary Parking Areas Only:*

a. Sub-grade: In-situ material or fill material (approved by the engineer as necessary. Fine graded and compacted to a density not less than 95 % of maximum dry density per Tex-113E or Tex-114E.

b. Base Course: Not required, however a 4" graded aggregate base is recommended.

c. Surface: Chip seal surface treatment per TxDot Item 316. Consisting of a single prime coat and two seal coats.

d. Maintenance: The property owner is responsible for properly maintaining the pavement surface. The surface must be kept free of weeds and other vegetation. The surface grade shall be maintained as installed Ruts and potholes must be repaired immediately.

9. Pavement Overlays:

a. Existing impermeable pavements may be overlaid from time to time for maintenance purposes. Pavement overlays shall not increase the authorized impervious area of any parking lot.

i. Existing pavements constructed per above standard section 2.02, 2.03 or 2.04: Minimum of 1" thickness of Type "D" or minimum of 1-1/2" thickness of Type "C". Construct overlays in accordance with Standard Technical Specification Manual Division D Section 520.

ii. Existing impermeable pavements constructed with a minimum of 2" hot-mix asphalt or 4" concrete: Minimum of 1" thickness of Type "D" or minimum of 1-1/2" thickness of Type "C" Construct overlays in accordance with Standard Technical Specification Manual Division D Section 520.

iii. Existing pavements not constructed per these standards nor with a minimum 2" hot-mix asphalt or 4" concrete pavement thickness and not required to be permeable for stormwater management purposes: Minimum of 1-1/2" thickness of Type "D" .Construct overlays in accordance with Standard Technical Specification Manual Division D Section 520.

b. Permeable pavement areas shall not be overlaid. Repairs and maintenance to pervious pavement materials shall be per the pavement manufacturer's recommendations and shall not decrease the design porosity or functionality of the pavement system.

10. Drainage: All parking lots shall be design with the appropriate drainage system. Evidence of poor drainage, which includes ponding (bird baths) or standing water that does not drain from surface of parking lot, is an unacceptable consequence of poor parking construction. The City will require that the contractor rectify any ponding susceptible areas at their cost and at the schedule and method acceptable to the city engineer.

D - 536.05 MEASUREMENT AND PAYMENT: Regardless of the type of materials used for the construction of the parking lot, this item will be measure and pay by the square yard. The unit bid price shall include all work and materials for subgrade, base, base protection, wearing surface course as shown in the plans and bid, labor, equipment and incidentals.

SECTION 538
PEDESTRIAN RAILING

D - 538.01 DESCRIPTION: This Item shall govern for the construction of steel pipe pedestrian railing, on bridges, culverts, walls, or incidental structures as shown on the plans.

D - 538.02 GENERAL: In general, railing shall include that portion of the structure erected on and above the roadway or along the edges of walks, walls, curbs and/or slabs for the protection of pedestrians and shall include any tie-in anchorage to approach railing or guard fence. Railing, including the necessary anchorage, shall be in accordance with these specifications and the details shown on drawings 543-1 to 543-6 as well as with ADA.

D - 538.03 MATERIALS: All materials shall conform to the requirements of the TxDot items "Concrete Structures", "Reinforcing Steel", "Metal for Structures", "Steel Structures" and "Concrete".

D – 538.04 QUALITY ASSURANCE: Bridge railings shall meet the requirements of the Texas Department of Transportation's, "Standard Specifications for Construction of Highways Streets and Bridges" 2004 edition and as hereinafter amended.

D - 538.05 SUBMITTALS: Contractor shall submit fabrication drawings for metal railing, showing construction and materials.

D - 538.06 FABRICATION: Fabrication and erection of railing shall conform to the pertinent provisions of the Item "Steel Structures" and to the requirements of these specifications.

Splicing of members will be permitted only as provided by the plans. All splice locations and details shall be shown on the shop or erection drawings. For metal railings, shop or erection drawings shall be prepared and forwarded for approval in accordance with the requirements of the Item "Steel Structures".

Shop welding shall be in accordance with the Item "Steel Structures" while field welding, when required, shall be in accordance with the Item "Structural Welding".

Pipe rail and posts, shop fabricated into panels shall be mounted in a jig clamped in their true relative position, accurately spaced with respect to each other and while assembled shall be completely welded or bolted, as the case may be. When required by the plans, as each rail section is completely assembled and connection, the adjacent section shall be set in its proper relative position with the ends engaged and remain in this position until completely connected. Each pair of sections shall be matchmarked so they may be erected in the same order in which they were fabricated.

The fabricated elements for deep beam railing shall conform to the dimensions and cross- section shown on the plans. The rail shall be straight and free from warp. The maximum deviation for straightness of either edge of a full length section shall be one-half of an inch. Rail elements shall be jointed and connected to the rail posts as shown on the plans. Lapped elements shall have the

lap in the direction of traffic in the adjacent lane.

D - 538.07 PROTECTIVE COATING: Unless otherwise noted on the plans, all portions of steel railing shall be galvanized.

Galvanized railing shall be hot dipped galvanized after fabrication, in accordance with ASTM Designation A123 and A153.

After erection, any damaged galvanizing on steel posts and rail elements shall be thoroughly cleaned and painted with two coats of zinc dust-zinc oxide paint conforming to the requirements of Federal Specification TTP- 641b or repaired by the application of repair compounds meeting Federal Specification O-G-93.

When fabrication is done after galvanizing and when specifically required by the plans, the cut edges and bolt holes shall be cleaned by brushing and the cleaned area shall be treated as specified above.

D - 538.08 MEASUREMENT: Measurement Railing, of the type designated, shall be measured by the linear foot, in accordance with the dimensions and details shown on the plans. Measurement will be made upon the face of the rail in place.

D - 538.09 PAYMENT: Payment will be made at the contract unit price bid per linear foot for railing of the type indicated on the plans, complete in place, measured as provided herein, which price shall be full compensation for furnishing, preparing and placing of all concrete, expansion joint material, reinforcing steel, structural steel, pipe, anchor bolts, anchorage devices and all other materials required in the finished railing and for all labor, tools, hardware, equipment, galvanizing and all other incidentals necessary to complete the work in the manner and in accordance with the plans and these specifications.

SECTION 540
VALLEY GUTTER

D-540.01 DESCRIPTION: This work shall consist of the construction of conventionally formed Portland Cement concrete valley gutter in accordance with these specifications and in reasonably close conformity with the pavement design report for the concrete thickness but not less than the minimum standards shown in Detail No. and the lines and grades shown on the plans or established by the Engineer.

D-540.02 GENERAL:

1. Valley gutters crossing local street intersection with collectors shall be minimum five (5) foot wide.

2. Valley gutters will not be allowed to cross Arterials and collectors.

3. Mid-Block valley gutters shall only be permitted at local streets when drainage conditions require this structure, and shall be minimum ten (10) foot wide.

4. Asphalt valley gutters will not be allowed on any street.

D-540.03 MATERIALS:

Concrete: Conform to material and proportion requirements for concrete Section 406.

Reinforcing Steel: Conform to material requirements in section 410 & 412.

Curing: Conform to requirements of Section 406 - Concrete Curing.

D-540.04 CONSTRUCTION:

1. Al valley gutters shall be constructed monolithic with curb& Gutter at radii of return. No concrete shall be poured until forms, steel and grades are inspected and approved.

2. Contractor shall “blue-top” along flow line and the connection with gutter tangent elevation and valley gutter.

3. Place concrete in forms to specified depth. Bring mortar to surface. Curb depressions and adjacent flares for accessible ramps shall be constructed.

4. Strike off to smooth finish with wood strike board. Finish smoothly with wood hand float. Brush across with fine-haired brush.

5. A water flow test shall be required to detect depressions during finishing of concrete.

6. Concrete testing will be performed under provision of Division C, General Provisions, Section 6 Control of Work and Materials. Compressive Strength Test Specimens will be tested in accordance with ASTM C 39. Minimum compressive strength shall be 3000 pounds per square inch at 28 days or as shown on the plans.

D-540.05 MEASUREMENT: Valley gutter will be measured by the unit for the length (tangent to tangent) and different widths specified.

D-540.05 PAYMENT: Will be paid by the unit price bid for concrete valley gutter for the width specified. This price is full compensation for surface preparation of base; materials; removal and disposal of excavated material; drilling and doweling into the existing concrete curb, the curb ramp depression, adjacent flares and pavement; repair of the adjacent street or pavement structure damaged by the operations; and equipment, labor, materials, tools and incidentals.

SECTION 602
SILT FENCE

D-602.01 DESCRIPTION: This item shall govern for the material of silt fence fabric and related fencing materials used for control of sediment in surface runoff waters.

D-602.02 MATERIAL REQUIREMENTS:

A. Fabric. Fabric may be manufactured from polyester, polypropylene, or polyamide and shall be resistant to ultraviolet degradation, mildew and rot and shall be suitable for use in a wet soil and stagnant water environment. The edges of woven fabric shall be sealed or salvaged to prevent raveling. Fabric shall be at least 36 inches wide with 6 to 8 inches of the width buried in a trench to prevent undercutting, unless specified otherwise on the plans. The fabric shall exhibit the following physical properties when sampled and tested using the specified methods.

Physical Property	Test Method	Silt Fence
1. Tensile Strength, lb	ASTM D 4632	90 Min
2. Elongation @ Yield, %	ASTM D 4632	100 Min
3. Trapezoidal Tear, lb	ASTM D 4533	35 Min
4. Apparent Opening Size	ASTM D 4751	50-80 Min
5. Permittivity, sec^{-1}	ASTM D 4491	1 Min
6. Ultraviolet Stability original tensile strength retained after 500 hours exposure, %	ASTM D 4355	80 Min

B. Silt Fence: This system consists of fence posts, spaced no more than 8.5 feet apart, and fabric with and attached reinforcing net. Fence posts shall be a minimum of 42 inches long, embedded at least 1 foot, and constructed of either wood or steel. Soft wood posts shall be at least 3 inches in diameter or nominal 2 in. x 4 in. and essentially straight. Hardwood posts shall be a minimum of 1.5 in. x 1.5 in. Net reinforcement shall be a galvanized welded wire mesh of at least 12.5 gauge wire with maximum opening size of 4 in^2. The fabric shall be attached to the top of the net by crimping or cord at least every 2 feet, or as otherwise specified.

D-602.03 CERTIFICATION AND IDENTIFICATION: Each lot or shipment shall be accompanied by a certification of conformance to this specification. The shipment must be identified by a ticket or labels securely affixed to the fabric rolls. This ticket or label must list the following information:

a. Name of manufacturer or supplier
b. Brand name and style
c. Manufacturer's lot number or control number
d. Roll width in inches
e. Roll length in yards

D-602.04 MEASUREMENT AND PAYMENT:

A. Unless indicated in the PROPOSAL FORMS as a pay item, no separate payment for work performed under this Item. Include cost of work performed under this Item in Contract prices bid for items of which this work is a component. When indicated in PROPOSAL FORMS as pay item measure and pay for the filter fabric fence by the linear feet of completed and accepted filter fabric fence between the limits of the beginning and ending of wooden stakes. Filter fabric fence, measured as stated will be paid for at the unit price bid for **"FILTER FABRIC FENCE, COMPLETE IN PLACE".**

B. Payment for filter fabric fence will include and be full compensation for all labor, equipment, materials, supervision, and all incidental expenses for construction of these items, complete in place, including, but not limited to, protection of trees, maintenance requirements, repair and replacement of damaged sections, removal of sediment deposits, and removal of erosion and sedimentation control systems at the end of construction.

SECTION 604
EROSION CONTROL BLANKETS

D- 604.01 APPLICATION: To protect the side slope of a natural channel and to reduce erosion. The following specification should be met for the erosion control blankets.

The mats should be made of 100% biodegradable agricultural straw/woods netting on top and bottom sides with a minimum thickness of 0.25 inch. Material should not contain any chemical additives. The blanket should be durable and flexible to work with the following information:

- Flow velocity: greater that 5 fps
- Permissible shear strength: greater than 1.5 lbs. sq. ft.
- Weight: greater than 0.5 lbs. sq. yd.
- Tensile strength/elongation: greater than 30%
- Should be capable to control side slope of 3:1 to 2:1
- Netting shall be light photodegradable polypropylene (greater than 1.5 lbs./1000 sq. ft.)

Approved Material Suppliers (to date):

COMPANY NAME	CITY, STATE	MODEL No.	PHONE No.
North American Green	Evansville, Indiana	S150	812-867-6632
BonTerra America	Genesse, Idaho	S1	800-882-9489
American Excelsior Co.	Dallas, Texas	Curlex I	817-640-2161 800-777-2691

CONSTRUCTION SPECIFICATIONS

D-604.02 SITE PREPARATION

A. Proper site preparation is essential to ensure complete contact of the protection matting with the soil.

B. Grade and shape area of installation.

C. Remove all rocks, clods, vegetative or other obstructions so that the installed blankets, or mats will have direct contact with the soil.

SECTION 606
NPDES REQUIREMENTS

D-606.01 GENERAL: This section describes the required documentation to be prepared and signed by the Contractor before conducting construction operations, in accordance with the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) Permit, as stated in the Federal Register Vol. 57 No. 175, issued by the Environmental Protection Agency on September 2, 1992.

The Contractor shall be responsible for implementation, maintenance, and inspection of storm water pollution prevention control measures including, but not limited to, erosion and sediment controls, stormwater management plans, waste collection and disposal, off-site vehicle tracking, and other practices shown on the drawings or specified elsewhere in this or other specifications.

The Contractor shall review implementation of the Storm Water Pollution Prevention Plan (SWPPP) in a meeting with the City Engineer prior to start construction.

D-606.02 UNIT PRICES: Unless indicated in the Unit Price schedule as a pay item, no separate payment will be made for work performed under this section. Include cost of work performed under this section in pay items of which this work is a component.

D-606.03 REFERENCES:

ASTM D3786- Standard Test Method for Hydraulic Bursting Strength for Knitted Goods and Non-woven Fabrics
ASTM D4632- Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

EXECUTION

D-606.04 NOTICE OF INTENT: The Contractor shall fill out, sign, and date the Contractor's Notice of Intent (NOI). The signed copy of the Contractor's NOI shall be returned to the City. The City will complete the Owner's Notice of Intent and will submit both notices to the EPA. Submission of the NOI is required by both the City and the Contractor before construction operations start.

D-606.05 CERTIFICATION REQUIREMENTS: Submit name, address, and telephone number of persons or firms responsible for maintenance and inspection of erosion and sediment control measures and all Subcontractors.

D-606.06 RETENTION OF RECORDS:
(a) The Contractor shall keep a copy of the Storm Water Pollution Prevention plan at the construction site or at the Contractor's office from the date it became effective to the date of project completion.

(b) At the project closeout, the Contractor shall submit to the City all NPDES forms and

certifications, as well as a copy of the SWPPP. Stormwater pollution prevention records and data will be retained by City for a period of three (3) years from the date of project completion.

D-606.07 REQUIRED NOTICES:

(a) The following notices shall be posted from the date that this SWPPP goes into effect until the date of final site stabilization:

1. Copies of the Notices of Intent submitted by the City and Contractor and a brief project description shall be posted at the construction site or at Contractor's office in a prominent place for the public viewing.

2. Notice to drivers of equipment and vehicles, instruction them to stop, check, and clean tires of debris and mud before driving onto traffic lanes. Post such notices at every stabilized construction exit area.

3. In an easily visible location on site, post a notice of waste disposal procedures.

4. Notice of hazardous material handling and emergency procedures shall be posted with the NOI on site. Keep copes of Material Safety Data Sheets at a location on site that is know to all personnel.

5. Keep a copy of each signed certification at the construction site or at Contractor's office.

SECTION 608
HYDRO-MULCH SEEDING

D-608.01 GENERAL

1.01 SUMMARY
This Section includes the preparation, application and protection of operations consisting of hydro-mulch seeding within the lines and limits as shown on PLANS and as further directed by the ENGINEER.

1.02 RELATED REQUIREMENTS (NOT USED)

1.03 REFERENCES
The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

TEXAS DEPARTMENT OF AGRICULTURE (TDA)

TDA Chapter 61	1994 Texas Seed Law-Rules and Regulations (March Issue)

TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES (TxDOT)

TxDOT Item 164	~~1995~~ 2004 Seeding for Erosion Control
TxDOT Item 166	~~1995~~ 2004 Fertilizer
TxDOT Item 168	~~1995~~ 2004 Vegetative Watering

1.04 - 1.06 (NOT USED)

1.07 QUALITY ASSURANCE
A sample of each variety of seed to be furnished for analysis and testing when directed by the ENGINEER.

1.08 DELIVERY, STORAGE, AND HANDLING
Each variety of seed to be furnished and delivered in separate bags or containers and protected from moisture until placed.

1.09 - 1.11 (NOT USED)

D-608.02 PRODUCTS

2.01 MANUFACTURER(S)

The following cellulose fiber mulch manufacturers are approved for providing hydraulic mulches with the exact trade name of mulches accepted. No variation will be accepted unless approved by the ENGINEER.

Trade Name of Approved Product	Name of Manufacturer	Manufacturer Address
American Fiber Mulch	American Fiber Manufacturing, Inc.	1701 Bench Mark Dr., Austin, TX 78728
Conwed Fibers Hydro Mulch	Conwed Fibers	1st Plaza, Suite 350, 1985 Tate Blvd., SE, Hickory, NC 28601
Second Nature Regenerated Wood Fiber	Central Fiber Corporation	4814 Fiber Lane Rd., Wellsville, KS 66092
Pro Mat	Tascon, Inc.	7607 Fairview, Houston, TX 77041

2.02 MATERIALS AND/OR EQUIPMENT

A. Seed

All seed must meet the requirements of the Texas Seed Law FDA Chapter 61 including the labeling requirements for showing pure live seed (PLS = purity x germination), name and type of seed. Seed furnished to be of the previous season's crop and the date of analysis shown on each bag to be within nine months of the time of use on the project. Buffalograss to be treated with a dormancy method approved by the ENGINEER. The species and varieties of seed to be from among the types specified in Tables 1A and 1B of Item 164 of the Texas Department of Transportation Specifications.

B. Planting Season and Seed Mixes

Planting seasons and seed mixes to conform to the requirements of Item 164 of the Texas Department of Transportation Specifications and/or as modified hereinafter.

C. Cellulose Fiber Mulch

Cellulose Fiber Mulch to be of the type and manufacturer as provided in paragraph 2.01.

The mulch to be designed for use in conventional mechanical planting, hydraulic planting of seed or hydraulic mulching of grass seed, either alone or with fertilizers and other additives. The mulch to be such that, when applied, the material is to form

a strong, moisture-retaining mat without the need of an asphalt binder. It shall be kept in a dry condition until applied and shall not be molded or rotted.

D. Fertilizer
Fertilizer to be in accordance with Texas Department of Transportation Specification Item 166.

E. Water
Water to be in accordance with Texas Department of Transportation Specification Section 168.

2.03 - 2.04 (NOT USED)

D-608.03 EXECUTION

3.01 - 3.02 (NOT USED)

3.03 ERECTION/INSTALLATION/APPLICATION AND/OR CONSTRUCTION

A. Construction Methods
After the designated areas have been completed to the lines, grades and cross sections shown on the PLANS, seeding to be performed in accordance with the requirements hereinafter described. Unless otherwise approved by the ENGINEER, all areas to be seeded to be cultivated to a depth of at least four (4) inches, except where seeding is to be done using a seed drill suitable for seeding into untilled soil. The seedbeds to be cultivated sufficiently to reduce the soil to a state of good tilth when the soil particles on the surface are small enough and lie closely enough together to prevent the seed from being covered too deeply for optimum germination. Cultivation of the seedbed will not be required in loose sand where depth of sand is four (4) inches or more.

B. Planting Season and Seed Mixes
Planting season and the required seed mixes to be in accordance with the required table for location of operation as specified in Texas Department of Transportation Specification Item 164 as modified hereinafter.

Seed Type	Application Rate per Pounds/Acre	Planting Date(s)
Hulled Common Bermuda Grass 98/88 Unhulled Common Bermuda Grass 98/88	40	Jan 1 to Mar 31
Hulled Common Bermuda Grass 98/88	40	Apr 1 to Sep 30
Hulled Common Bermuda Grass 98/88 Unhulled Common Bermuda Grass 98/88 Annual Rye Grass (Gulf)	40 40 30	Oct 1 to Dec 31

C. Water Application
Water application to be in accordance with Texas Department of Transportation Item 168.

3.04 - 3.08 (NOT USED)

D-608-04 PROTECTION

A. Maintenance
The hydro-mulch seeding to be adequately watered until established. Any areas damaged by erosion or areas that do not have an acceptable turfing to be reseeded.

B. Final Acceptance
Final acceptance and payment will be dependent upon hydromulch seeded areas demonstrating a healthy well established growth.

3.10 SCHEDULES (NOT USED)

3.11 MEASUREMENT AND PAYMENT
Measurement to be by lump sum or acre, as indicated in the Contract Bid Documents. Payment for work under this Section will be made at contract price for "Hydro-Mulch Seeding," which price to be full compensation for all fertilizer, seed, equipment, materials, and labor necessary for fertilizing and seeding.

SECTION 610
SEEDING

D-610.01 GENERAL

1.01 SUMMARY

Scope: Seeding and fertilizing of areas not covered by structures, sidewalks, or roads within the project area. Project area is indicated on PLANS or by Special Provision. When shown on PLANS, provide soil retention protection.

1.02 – 1.11 (NOT USED)

D-610.02 PRODUCTS

2.01 MANUFACTURER(S) (NOT USED)

2.02 MATERIALS AND/OR EQUIPMENT

A. Seeds: Conform to requirements of U.S. Department of Agriculture Rules and Regulations as set forth in Federal Seed Act and Texas Seed Law. Use seed which has been treated with an approved fungicide. Container labels to show purity and germination and name and type of seed. Planting date, type, and rate of application as follows:

Type	Rate of Application in Pounds per Acre	Planting Date
1. Unhulled Bermuda Grass	20	January 1 - April 1
2. Hulled Bermuda Grass	12	April 1 - October 1
3. Mix Bermuda and Rye in Following Proportions		October 1 - January 1
Unhulled Bermuda Grass	12	
Rye Grass (Gulf)	200	

B. Fertilizer: Use pellet or granular fertilizer with analysis of 16 percent nitrogen, 20 percent phosphoric acid, and zero percent potash (or 10-10-5), unless otherwise required. Determine percent by methods of Association of Official Agricultural Chemists. Container labels to show analysis. Powdered or caked fertilizer not permitted.

C. Straw Mulch: Use straw of oat or rice stems, prairie grass, bermuda grass, or other approved straw. Do not use straw containing Johnson grass or other noxious weeds and foreign materials.

D. Fiber Mat: Fiber mat to consist of machine-produced mat of wood fibers, with consistent thickness throughout blanket. Use blanket with top side of netted twisted kraft paper having high wet strength or biodegradable extruded plastic mesh. Use blanket of weight from 0.7 Pound per square yard to 1.0 Pound per square yard.

E. Paper Mesh: Use paper mesh consisting of knitted construction of yarn with uniform openings interwoven with strips of biodegradable paper, furnished in rolls with suitable protection for outdoor storage. Use paper mesh of weight from 0.2 pound per square yard to approximately 0.5 pound per square yard.

F. Wire staples: As recommended by fiber mat or paper mesh manufacturer.

2.03 – 2.04 (NOT USED)

D-610.03 EXECUTION

3.01 – 3.02 (NOT USED)

3.03 ERECTION/INSTALLATION/APPLICATION AND/OR CONSTRUCTION

A. General

Fertilizing and Seeding: After area(s) to receive fertilizing and seeding has been completed to lines, grades, and sections shown on PLANS, apply fertilizer at uniform average rate of 500 pounds per acre. Thoroughly mix upper 3 inches of topsoil with fertilizer until a uniform mixture of fertilizer and topsoil is obtained. Sprinkle areas to be seeded with water, using fine spray to avoid washing or erosion of soil. Broadcast seed with sowing equipment at rate specified above, using care to obtain uniform distribution. After broadcasting, lightly rake seeds into soil to a depth not to exceed 1/2 inch. Complete seeding by rolling with roller developing 15 to 25 pounds per inch of tread. Keep seeded areas moist for a period of 10 days immediately following placement. When watering seeded areas, use fine spray to prevent erosion of seeds or soil. Reseed any areas damaged by erosion. Do not apply seeds when weather is too windy or other adverse conditions exist.

B. Straw Mulch Soil Retention Blanket

1. Fertilizing and Seeding: After ditch or slope has been completed to lines, grades, and cross-sections shown on PLANS, apply fertilizer and seed as per A. above. When seed and fertilizer are to be distributed as water slurry, mixture to be applied within 30 minutes after all components are placed in equipment.

2. Mulch Application: Immediately upon completion of planting of seed and fertilizing, spray straw mulch uniformly over the area at the rate of 1.5 to 2 tons of hay or 2.5 tons of straw per acre. Equip mulching machine to inject asphaltic material into straw uniformly as it leaves the equipment at the rate of 0.05 To 0.10 Gallon of asphalt per square yard of mulched area. When watering seeded areas, use fine spray to prevent erosion of seeds or soil. Reseed any areas damaged by erosion for any reason. Mulching operation to follow seeding and fertilizing immediately in continuous operation.

C. Fiber Mat or Paper Mesh Soil Retention Blanket

1. Fertilizing and Seeding: See B.1. above.

2. Fiber Mat or Paper Mesh Installation: Place fiber mat or paper mesh within 24 hours after seeding operations have been completed. Prior to placing, clear area to be covered of all rocks or clods over 1.5-inch diameter and all sticks or other foreign material which will prevent close contact of the blanket with the soil. Area to be smooth and free of ruts or other depressions. If, as a result of a rain, prepared seed bed becomes crusted or eroded, or if eroded places, ruts, or depression exist for any reason, rework soil until smooth and reseed such areas. After area has been properly prepared, lay fiber mat or paper mesh flat, smooth, and loosely, without stretching or crimping material. Apply materials with lengths running parallel to the flow of water. Where more than one width is required, butt or overlap edges as required by manufacturer. Hold material in place by means of wire staple driven into soil at 90 degree angle to surface. Staple material along each edge and in grid pattern with minimum 3-foot centers each way as recommended by manufacturer. In ditches and on slopes, provide additional stapling as recommended by manufacturer.

3.04 – 3.10 (NOT USED)

3.11 MEASUREMENT AND PAYMENT

A. Fertilizing and Seeding: Measure by the acre or lump sum as indicated in PROPOSAL. Payment for work under this Item will be made at Contract price for "Seeding," which price to be full compensation for all fertilizer, seed, equipment, materials and labor necessary for fertilizing and seeding.

B. Straw Mulch Seeding: Measure by the square yard as indicated in the PROPOSAL. Payment for work under this Item to be made at the Contract price for "Straw Mulch Seeding," which price to be full compensation for all fertilizer, seed, straw mulch, equipment, materials and labor necessary for fertilizing and seeding.

C. Fiber Mat Seeding: Measure by the square yard as indicated in the PROPOSAL. Payment for work under this Item to be made at the Contract price for "Fiber Mat Seeding," which price to be full compensation for all fertilizer, seed, fiber mat, equipment, materials, and labor necessary for fertilizing and seeding.

D. Paper Mesh Seeding: Measure by the square yard as indicated in the PROPOSAL. Payment for work under this Item to be made at the Contract price for "Paper Mesh Seeding," which price to be full compensation for all fertilizer, seed, paper mesh, equipment, materials, and labor necessary for fertilizing and seeding.

SECTION 702
PERMANENT TRAFFIC BARRICADES

D-702.01 GENERAL DESCRIPTION: This item shall govern for the furnishing, assembling, and installation of permanent traffic barricades

D-702.02 MATERIALS: All barricade materials, erection, and usage shall be in strict accordance with the Texas Manual on Uniform Traffic Control Devices for Streets and Highways and the latest revision of the Texas Department of Transportation Standard Plans WZ (DERD)-03 WORK ZONE DEAD END ROADWAY DETAILS. The barricade supports shall use the Wedge Anchor Steel System.

D-702.03 FOUNDATIONS: The concrete footing shall use the Wedge Anchor Steel System in conformance with the latest revision of the Texas Department of Transportation Standard Plans SMD (TWT) – 08 SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST and the Compliant Work Zone Traffic Control Devices TxDOT Manual on D.2.f. Posts (Fixed-Type-III Barricade)

D-702.04 MEASUREMENT: Permanent traffic barricades shall be measured by each assembly complete in place.

D-702.05 PAYMENT: Permanent barricades ~~signs~~ shall be paid by each assembly complete in place. The price bid shall be considered to include materials, labor, equipment and incidentals necessary to complete the work. Payment will be made when installed barricade is approved and accepted by the Owner .

SECTION 704
STREET SIGNS

D-704.01 GENERAL DESCRIPTION This item shall govern for the furnishing, assembling, and installation of street signs. Street Name Signs see Figure 704 - 1 thru Figure 704 - 4.

D-704.02 MATERIALS The sign supports shall use the Wedge Anchor Steel System and shall be tall enough to provide a minimum of 7 feet ground clearance (7.5 feet maximum) from bottom edge of the sign assembly. Length of the support will vary depending on the type and size of the signs installed on the pole as an assembly.

All traffic signs must comply with the latest edition of the Texas Manual of Uniform Traffic Control Devices. Unless otherwise specified by the Engineer, all signs shall be fabricated from 0.080 gauge aluminum. Sign face materials shall conform to ASTM D 4956-04, reflective beaded sheeting, TYPE II or better except for stop signs and school zone signs. All stop signs shall conform to ASTM D 4956-04, reflective prismatic sheeting, TYPE III or better. All school zone signs shall conform to ASTM D 4956-04, reflective prismatic sheeting, TYPE VII or better.

Street name signs shall have white lettering with a green background. Aluminum sign blades for street signs shall be 9 inch in height with a minimum length of 30 inches and maximum length of 48 inches. Lettering on post-mounted Street Name signs shall use a six (6) inch upper and lower case Clearview Highway font character set (6CV-2W). Street name lettering used for abbreviations, designations and block numbers shall use a three (3) inch upper and lower case Clearview Highway font character set (3CV-2WFollow Figure – 704-4 for Mast Arm Street Name Sign Specification.

D-704.03 PROVISIONS: Sidewalk clearance and sign standards shall comply with the lattest revisionof the TEXAS ACCESSIBILITY STANDARDS

D-704.04 FOUNDATIONS: The concrete footing shall use the Wedge Anchor Steel System in conformance with the latest revision of the Texas Department of Transportation Standard Plans SMD (TWT) – 08 SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST. Signs shall be installed no less than 2 feet from the back of curb and the edge of sign. Maximum sidewalk clearance shall be maintained in identifying location of sign, but it shall not be installed more than 5 feet from back of curb to the edge of the sign. The location of the sign may be modified in special situations where the ROW is limited or obstructions are present based on engineering judgement. See Examples 1 thru 4 When the above requirement cannot be met due to location or width of sidewalk, a minimum of 30 inches sidewalk clearance shall be provided.

D-704.05 MEASUREMENT: Street signs shall be measured by each assembly complete in place.

D-704.06 PAYMENT: Street signs shall be paid by each assembly complete in place. The price bid shall be considered to include materials, labor, equipment and incidentals necessary to complete the work.

SECTION 706
REFLECTORIZED PAVEMENT MARKINGS

D-706.1. GENERAL DESCRIPTION: This item shall govern for furnishing and placing reflectorized pavement markings and raised reflectorized pavement markers of the types, colors, shapes, sizes, widths, and thickness shown on the plans. Unless otherwise approved by the Engineer, Type I or II pavement markings shall be used on all roadways within the City of Dilley that are under the City's jurisdiction. Reflectorized pavement markings supplemented by raised reflectorized pavement markings (traffic buttons) shall be required on all streets with a road classification of major collector or greater.

D-706.2. MATERIALS: The pavement marking installation must abide to the latest edition of the Texas Manual of Uniform Control Devices and must comply with the latest TxDOT Traffic Engineer Standard Detail Sheets.
When Type I or Type II white pavement markings are to be applied on concrete, black pavement marking paint shall be applied under the white paint and shall exceed a minimum of 2 inches and a maximum of 4 inches in all directions from the edge of the white pavement marking to make it more visible. When using preformed pavement markings, it shall have the black edge as part of the preformed pavement marking.

Type I: Marking Materials. Type I markings are thermoplastic type materials that require heating to elevated temperatures for application. Type I marking materials shall conform to TxDOT Departmental Materials Specifications DMS-8220. Each container of Type I marking material shall be clearly marked to indicate the color, weight, type of material, manufacturer's name and the lot/batch number.
Type I pavement markings shall be used for all crosswalks, stop bars and lane designation when required.

Type II: Marking Materials. Type II markings are paint-type materials that are applied at ambient or slightly elevated temperatures. Type II marking materials shall conform to TxDOT Departmental Materials Specifications DMS-8200, YPT-12 and/or WPT-12, and DMS-8200.

Blue Reflectors for Fire Hydrants. Blue raised reflective markers shall be used on all streets to identify location for all fire hydrants. One marker (Type II-B-B) shall be installed in the center of roadway immediately in front of the location of fire hydrant. The pavement marker shall have two (2) reflectorized faces 180° of each other. The body, other than the reflective faces, shall be blue. Reflectorized raised pavement markers shall abide by latest TxDOT Traffic Engineer Standard Plan Sheets.

D- 706.3. EQUIPMENT REQUIREMENTS

The equipment used to place pavement markings shall be capable of accomplishing the required pavement markings. For projects that exceed 2000 linear feet the equipment used to place pavement markings shall:

1. Be maintained in satisfactory operating condition.

2. Be considered in satisfactory operating condition if it has an average placement rate of

5,000 linear feet per hour of acceptable four-inch solid or broken lines over any five (5) consecutive working days. Must comply with the latest edition of the Texas Manual of Uniform Traffic Control Revisions.

3. Meet or exceed the material handling at elevated temperatures requirements of the National Fire Underwriters and the Texas Railroad Commission.

4. Be capable of placing a minimum of 40,000 linear feet of four-inch solid or broken markings per working day.

5. Have production capabilities similar to four-inch marking equipment and shall be capable of placing linear markings up to eight (8) inches in width in a single pass when used for placing markings in widths other than four (4) inches.

6. Have production capabilities considered satisfactory by the Engineer when used to place markings other than solid or broken lines.

7. Be capable of placing a centerline and no-passing barrier-line configuration consisting of one (1) broken line with two (2) solid lines at the same time to the alignment and spacing shown on the plans.

8. Be capable of placing broken and/or continuos white line from both sides.

9. Be capable of placing lines with clean edges and of uniform cross-section. All lines shall have a tolerance of plus or minus 1/8 inch per four (4) inch width.

10. Have an automatic cut-off device with manual operating capabilities to provide clean, reasonably square marking ends to the satisfaction of the Engineer, and to provide a method of applying broken line in an approximate stripe-to-gap ration of 10 to 30.

11. Provide continuous mixing and agitation of the pavement marking material. The use of pans, aprons or similar appliances which the die overruns will not be permitted for longitudinal striping applications.

12. Apply glass beads by an automatic bead dispenser attached to the pavement marking equipment in such a manner that the beads are dispensed uniformly and almost instantly upon the marking as the marking is being applied to the road surface. The bead dispenser shall have an automatic cut-off control, synchronized with the cut-off of the pavement marking equipment.

When Type I markings are to be placed, the contractor shall have a hand-held thermometer on the project. The thermometer shall be capable of measuring the temperature of the pavement marking material to be placed.

D- 706.4 CONSTRUCTION METHODS

General: When required by the Engineer, the Contractor and the Engineer shall review the

sequence of work to be followed and the estimated progress schedule.

Markings may be placed on roadways either free of traffic or open to traffic. On roadways already open to traffic, the markings shall be placed under traffic conditions that exist with a minimum of interference to the operation of the facility. Traffic control shall be as shown on the plans or as approved by the Engineer in writing. All markings placed under open-traffic conditions shall be protected from traffic damage and disfigurement

Guides to mark the lateral location of pavement markings shall be established as shown on the plans or as directed by the Engineer. The Contractor shall establish the pavement marking guides and the Engineer will verify the location of the guides.

Markings shall be placed in proper alignment with the guides. The deviation rate in alignment shall not exceed one (1) inch per 200 feet of roadway. The maximum deviation shall not exceed two (2) inches nor shall any deviation be abrupt.

Markings shall essentially have a uniform cross-section. The density and quality of markings shall be uniform throughout their thickness. The applied markings shall have no more than five (5) percent, by area, of holes or voids and shall be free of blisters.

Markings, in place on the roadway, shall be reflectorized both internally and externally. Glass beads shall be applied to the materials at a uniform rate sufficient to achieve uniform and distinctive retroreflective characteristics when observed in accordance with Test Method Tex-828-B Determining Functional Characteristics of Pavement Markings.

The Contractor's personnel shall be sufficiently skilled in the work of installing pavement markings.

Markings placed that are not in alignment or sequence, as shown on the plans or as stated in this specification, shall be removed by the Contractor at the Contractor's expense. Removal shall be in accordance with Item 667, "Eliminating Existing Pavement Markings and Markers," except for measurement and payment. Guides placed on the roadway for alignment purposes shall not establish a permanent marking on the roadway.

Unless otherwise shown on the plans, pavement markings may be applied by any method that will yield markings meeting the requirements of these specifications.

Surface Preparation: New portland-cement-concrete surfaces shall be cleaned in accordance with Item 678, "Pavement Surface Preparation for Markings" to remove curing membrane, dirt, grease, loose and/or flaking existing construction markings and other forms of contamination.

Older portland-cement-concrete surfaces and asphaltic surfaces that exhibit loose and/or flaking existing markings shall be cleaned in accordance with Item 678, "Pavement Surface Preparation for Markings" to remove all loose and flaking markings.

Pavement to which material is to be applied shall be completely dry. Pavements shall be considered dry if, on a sunny day after observation for 15 minutes, no condensation occurs on the

underside of a one (1) foot square piece of clear plastic that has been place on the pavement and weighted on the edges.

Eliminating Existing Pavement Markings and Markers: Existing Pavement markings and Markers shall be eliminated in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers" from the latest version of the TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES.

Application of Type I Markings: New portland-cement-concrete surfaces shall be further prepared for Type I markings, after cleaning, by placing a Type II markings as a sealer in accordance with this Item. When placing Type I markings in new locations on asphaltic surfaces three (3) years old or older or any portland-cement-concrete surfaces, a Type II marking shall be used as a sealer. Unless otherwise shown on the plans, existing portland-cement-concrete and asphaltic surfaces to be re-striped will not require Type II markings as a sealer; existing markings may be used as a sealer in lieu of Type II markings. Type II markings shall be placed a minimum of two (2) and a maximum of 30 calendar days in advance of placing Type I markings. Type II markings that become dirty due to inclement weather or road conditions shall be cleaned by washing, brushing, compressed air or other means approved by the Engineer, prior to application of Type I markings. If washing is used, the surface of Type II markings shall become thoroughly dry before placing Type I markings. Color, location and configuration of Type II markings shall be the same as that of Type I markings.

Type I pavement marking material shall be applied within temperature limits recommended by the material manufacturer. Application of Type I pavement markings shall be done only on clean, dry pavement having a surface temperature above 50°F. Pavement temperature shall be measured in accordance with Test Method Tex-829-B Measuring Pavement Temperature.

When Type I pavement marking application is by spray, and operations cease for five (5) minutes or more, the spray head shall be flushed by spraying pavement marking material into a pan or similar container until the pavement marking material being sprayed is at the proper temperature for application.

Unless otherwise directed by the Engineer in writing, Type I pavement marking materials shall not be placed on roadways between during cold inclement weather subject to temperature and moisture limitations specified herein.

Unless otherwise shown on the plans, Type I marking minimum thickness shall be 0.060 inches (60 mil) for edgeline markings and 0.090 inches (90 mil) for stop-bars, legends, symbols, gore and center-line/no-passing barrier-line markings. The maximum thickness of all Type I markings shall be 0.180 inches (180 mil).

The thickness of Type I markings at the time of placement will be measured above the plane formed by the pavement surface. The Engineer will supply a device to measure the thickness of the applied markings. The markings shall be of uniform thickness of the applied markings. The markings shall be of uniform thickness throughout their lengths and widths.

Application of Type II Markings: The application of Type II marking materials shall be done

only on surfaces with a minimum surface temperature of 50°F.

The application rate for Type II marking material shall be: between 15 and 20 gallons per mile of solid four (4) inch line and between 30 and 40 gallons per mile for solid eight (8) inch line except that, for new surface treatment projects the application rate shall be between 25 and 30 gallons per mile of solid four (4) inch line and between 40 and 50 gallons per mile for solid eight (8) inch line. Pavement markings for new surface treatment projects shall be applied in two (2) applications each approximately one-half the application rate. The first application shall not contain glass beads. The interval between the first and second applications shall be a minimum of one (1) hour.

When, in the case of impending inclement weather, and the Engineer directs the Contractor to apply water-base traffic paint, the markings are damaged by subsequent rain, sleet, hail, etc., the Contractor will be paid for the initial placement and the replacement markings. However, if the Contractor places the markings at his option, the Contractor is responsible for all costs associated with the replacement markings.

When existing pavement marking are removed, temporary flexible roadway marker tabs will be required to supplement pavement markings and shall abide by Traffic Engineering Standards Plan Sheets (TxDOT). Temporary flexible reflective roadway marker tabs may also be used to mark or delineate roadway prior to applying pavement markings and shall conform to Departmental Materials Specifications DMS 8242 (TxDOT).

D-706.5. PERFORMANCE PERIOD FOR TYPE I MARKINGS

Type I pavement markings shall meet all requirements of this specification for a minimum of 15 calendar days after installation. Pavement markings that fail to meet all requirements of this specification shall be removed and replaced by the Contractor at the Contractor's expense. The Contractor shall replace all pavement markings failing the requirements of this specification within 30 calendar days following notification by the Engineer of such failing. All replacement markings shall also meet all requirements of this specification for a minimum of 15 calendar days after installation.

D-706.6. MEASUREMENT

This item will be measured by the linear foot, by each of the various words, symbols or shapes, or by any other unit as shown on the plans.

Where double stripes are place, each stripe will be measured separately.

This is a plans quantity measurement Item and the quantity to be paid for will be that quantity shown in the proposal and on the "Estimate and Quantity" sheet of the contract plans except as may be modified by approval of Engineer. If no adjustment of quantities is required, additional measurement or calculations will not be required.

Type II pavement markings requiring two (2) applications on new surface treatments will be measured as one (1) marking.

Type II pavement marking materials, when used as a sealer for Type I markings will be measured

as Type II markings.

D-706.7. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Reflectorized Pavement Markings" of the various types, colors, shapes, sizes, widths, and thickness (Type I markings only) specified. This price shall be full compensation for furnishing all materials; for application of pavement and raised pavement markings and for all other labor, tools, equipment and incidentals necessary to complete the work, except as shown below.

Surface Preparation, when shown on the plans, will be paid for under Item 678 "Pavement Surface Preparation for Markings."
Final work zone pavement markings (paint and beads), which will be, used as a sealer for Type I pavement markings will be paid for under this Item.

When replacement Type II markings are required due to damage to the original markings from rain, sleet, hail, etc., and the original markings were placed at the direction of the Engineer, the plan quantity requirements under "Measurement" do not apply to the original and replacement markings. The Contractor will be paid for the actual quantity of original and replacement markings at the unit price bid for that item.

SECTION 708
METAL BEAM GUARD FENCE

D-708.1. GENERAL DESCRIPTION: This item shall govern for furnishing, installing and removing a single line of metal beam rail element supported on timber or steel posts as shown on the plans.

D-708.2. MATERIALS: Metal beam guard fence shall be installed in accordance with Item 540 and be removed in accordance with Item 542 from the latest version of the TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES.

D-708.3. MEASUREMENT: Metal Beam Guard Fence will be measured by the linear foot of fence, complete in place, measurement being made upon the face of the rail in place, from center to center of end posts, from terminal anchor section or in the case of structure to railing connection, from the points shown on the plans, except as follows: Where bids are requested for "Terminal Anchor Sections," measurement will be as each section, complete in place, each section consisting of a terminal anchor post and one 25 foot rail element, as shown on the plans.

D-708.4 PAYMENT: The work performed and material furnished in accordance with this item and measured as provided under "Measurement," will be paid for at the unit price bid for "Metal Beam Guard Fence," "Metal Beam Guard Fence (Barrier)," Metal Guard Fence (Barrier) (Blockout)" or "Metal Beam Guard Fence (Blockout)," of the gauge specified. This price shall be full compensation for furnishing all materials, except timber posts furnished by the Department, including necessary boring for preparation, for hauling and erection; for setting posts in concrete when required; for spacers where required and for all labor, tools, equipment and incidentals necessary to complete the work, including driving posts, excavating, backfilling and disposing of surplus material.

When bids are requested for "Terminal Anchor Section" measured as provided under "Measurement," payment will be made at the unit price bid for "Terminal Anchor Section" of the gauge specified. This price shall be full compensation for furnishing the turn-down rail element, anchor assembly, terminal anchor post and foundations; and for all labor, tools, equipment and incidentals necessary to complete the work including excavation, backfilling and disposal of surplus materials.

SECTION 710
RELOCATION OR REMOVAL OF PERMANENT SIGNS

D-710.01 GENERAL DESCRIPTION: This item shall govern for removing or relocating existing permanent signs shown on the plans.

All regulatory signs shall be displayed at all times when plans call for relocating of an existing permanent traffic sign during construction. Temporary signs supports shall be in strict accordance with the latest revision of Texas Department of Transportation standard BC(5) – 07 BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT STANDARD.
Any relocated signs shall be new and in accordance with Section 704 STREET SIGNS.

D-710.02 MATERIALS:

A. All materials and construction methods shall conform to the details shown on the plans and the requirements of this Section.
B. Unless otherwise shown on the plans, the Contractor shall furnish all materials. All materials furnished by the Contractor shall be new.

D-710.03 CONSTRUCTION METHODS:

A. Removal: Unless otherwise shown on the plans, existing concrete foundations that are to be abandoned shall be removed to a minimum two (2) feet below finish grade. The remaining hole shall be backfilled with material equal in composition and density to the surrounding area, and by replacing any surfacing, such as asphalt pavement or concrete riprap, with like material to equivalent condition.

B. Relocation: Relocation shall include new foundations in accordance with Section 704 STREET SIGNS. The removed signs, poles, and wedge anchor system shall be returned to the Traffic Safety Department. The contractor will be responsible for disposing the removed concrete foundation and any remaining material. If the removed foundation does not include the wedge anchor system, the contractor will be responsible for properly disposing of the concrete foundation and the sign pole in concrete.

C. Handling and Storage: Existing signs and supports to be salvaged shall be handled and stored in such a manner that they are not damaged. Care shall be taken to prevent any damage to the various sign assembly components. Any portion of the sign assembly designated for relocation or salvage, including messages, damaged by the Contractor shall be replaced by the Contractor at the Contractor's expense in accordance with the applicable specification.

D. Any sign components that are removed and are shown on the plans to be reused or salvaged shall become the property of the City and shall be stockpiled at a designated location. All other parts shall become the property of the Contractor and shall be removed from the right-of-way to a site approved by the engineer.

D-710.04 MEASUREMENT: This item will be measured as each permanent sign removed or relocated or by any other unit as shown on the plans, complete in place.

D-710.05 PAYMENT: The work performed and materials furnished in accordance with this Section and measured as provided under "Measurement" will be paid for at the unit price bid for "Relocation of Permanent Signs". This price shall be full compensation for furnishing and installing new foundations as per latest standards, and/or new sign supports (when required), removing existing signs and related materials; for modifying existing sign supports; for salvaging; for hauling, excavating, backfilling and surface placement; and for all other materials, labor, tools, equipment and incidentals necessary to complete the work.

SECTION 712
TRAFFIC CONTROL AND REGULATION

D-712.01 GENERAL DESCRIPTION: Section includes requirements for signs, signals, control devices, flares, lights, and traffic signals, as well as construction parking control, designated haul routes and bridging of trenches and excavation. Temporary Traffic Control plans shall be in strict accordance with the latest revision of TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

D-712.02 INSPECTIONS:

a) Yard Inspection: Before the Traffic control Plan (TCP) is implemented and devices or hardware are installed in the field the devices must be inspected to insure that they are accepted devices in acceptable condition. There must also be sufficient devices to meet the needs of the approved traffic control plan.

b) Drive-Through Inspection: To decrease hazards to motorists and workers, traffic control shall be inspected and evaluated immediately after the traffic control plan is implemented. This kind of inspection shall be done in all lanes, in both directions or crossroads, during the day and the night, and from all entry or exist points within the zone. Any other routes such as detours that have work zone traffic on them shall be inspected also. Unacceptable devices or situations that are found on the jobsite shall be replaced or the situation corrected. Imminent danger situation require immediate correction.

D-712.03 MATERIALS : All materials shall comply with the latest version of the Texas State Manual on Uniform Traffic Control Devices

D-712.04 PUBLIC ROADS:

(a) Abide by laws and regulations of governing authorities when using public roads. If the Contractor's work requires that public roads be temporarily impeded or closed, approvals shall be obtained from governing authorities and permits paid for before starting any work.

(b) Contractor shall maintain at all times a 10-foot-wide all-weather lane adjacent to work areas which shall be kept free of construction equipment and debris and shall be for the use of emergency vehicles, or as otherwise provided in traffic control plan.

(c) Contractor shall not obstruct the normal flow of traffic from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. on designated major arterials or as directed by the City Engineer.

(d) Contractor shall maintain local driveway access to residential and commercial properties adjacent to work areas at all times.

(e) Surrounding streets used for entering or leaving the job area must be keep free of excavated

material, debris, and any foreign material resulting from construction operations.

D-712.05 CONSTRUCTION PARKING CONTROL:

(a) Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles and City's Operations.

(b) Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.

(c) Prevent parking on or adjacent to access roads or in non-designated areas.

D-712.06 FLARES AND LIGHTS:

(a) Provide flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

D-712.07 HAUL ROUTES:

(a) Utilize haul routes designed by authorities or shown on the drawings for construction traffic.

(b) Confine construction traffic to designated haul routes.

(c) Provide traffic control at critical areas of haul routes to regulate traffic minimize interference with public traffic.

D-712.08 TRAFFIC SIGNS AND SIGNALS:

(a) Install traffic control devices at approaches to the site and on site, at cross roads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.

(b) Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.

1. Relocate traffic signs and signals as work progresses to maintain effective traffic control.

D-712.09 BRIDGING TRENCHES AND EXCAVATIONS

(a) Whenever necessary, bridge trenches and excavation to permit an unobstructed flow of traffic.

(b) Secure bridging against displacement by using adjustable cleats, angles, bolts or other devices whenever bridge is installed:

1. On a existing bus route;
2. When more than five percent of daily traffic is comprised of commercial or truck traffic;

3. When more than two separate plates are used for the bridge; or
4. When bridge is to be used for more than five consecutive days.

(c) Install bridging to operate with minimum noise.

(d) Adequately shore the trench or excavation to support bridge and traffic.

(e) Extend steel plates used for bridging a minimum one foot beyond edges of trench or excavation. Use temporary paving materials (premix) to featheredges of plates to minimize wheel impact on secured bridging.

(f) Use steel plates (refer to SECTION 808) of sufficient thickness to support H-20 loading, truck or lane that produces maximum stress.

D-712.10 REMOVAL

(a) Remove equipment and devices when no longer required.

(b) Repair damage caused by installation

(c) Remove post settings to a depth of 2 feet.

D-712.11 MEASUREMENT: Measurement is a lump sum basis for traffic control and regulation, including submittal of a traffic control plan if different from the plan shown on the Drawings, provision of traffic control devices and provision of equipment and personnel as necessary to protect the work and the public.

D-712.12 PAYMENT: The amount invoiced shall be paid by percent completed or as approved by the Engineer based on the schedule of values submitted for traffic control and regulation. Refer to Division C, General Provisions, Section 9 - Measurement and Payment for unit prices procedures.

SECTION 714
LIGHTING AND TRAFFIC SIGNALS

D-715.01 GENERAL DESCRIPTION: This item shall govern for the furnishing, assembling, and installation of street lighting, electrical services, traffic signals, and flashers and shall be in strict accordance with DIVISION VI, Lighting and Signing from the Texas Department of Transportation STANDARDS SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES.

D-702.02 MATERIALS: All materials, erection, and usage shall be in strict accordance with DIVISION VI, Lighting and Signing from the Texas Department of Transportation STANDARDS SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES.

D-704.04 MEASUREMENT: Measurement will depend on t he item and shall be in strict accordance with DIVISION VI, Lighting and Signing from the Texas Department of Transportation STANDARDS SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES.

D-702.05 PAYMENT: The amount invoiced shall be paid as approved by the Engineer based on the schedule of values submitted. The price bid shall be considered to include materials, labor, equipment and incidentals necessary to complete the work.

SECTION 802
SHEETING AND BRACING

GENERAL

D-802.01 DESCRIPTION: Unstable soil encountered in trench or foundation excavation which tends to cave in or otherwise, shall be properly sheeted and braced as per OSHA requirements. Sufficient bracing material shall be left in place to guarantee safety to workmen and material where removal of such sheeting and bracing after it has served its purpose would be dangerous to workmen during backfilling or harmful to materials in place.

MATERIALS

D-802.02 MATERIALS: The sheeting material to be placed in contact with the dirt shall be either rough lumber with a minimum thickness of 2" appropriately designed steel sheet piling. Braces shall consist of lumber with a minimum thickness of 4" or metal screw jacks or other mechanical devices approved by the Engineer. All lumber shall be No. 3 common or better.

D-802.03 WHEN TO INSTALL SHEETING AND BRACING: Whenever, in the opinion of the Engineer or the Contractor, the soil at the edge of any excavation is sufficiently unstable as to endanger the safety of life, limb, or property, sheeting and bracing material shall be installed. Such material shall also be installed in all trenches whose sides are steeper than the natural angle of repose of the soil material if it were in loose uncompacted condition and the trenches are in excess of 8 feet deep, but only such portions of the total height of the trench shall be sheeted as appears necessary. Should a layer or pocket of material be encountered anywhere in the trench or other excavation which is of such type as to make possible the failure of adjacent soils, such layer or pocket shall be sheeted and braced in such a manner as to insure its permanency. Whenever a doubt exists as to the necessity of the installation of sheeting and bracing, it shall be installed.

CONSTRUCTION METHODS

D-802.04 GENERAL: Upon discovery of unstable material in any excavation, such sheeting and bracing as may be deemed adequate by the Engineer shall be installed. Stay bracing, piling boards, and box or vertical sheeting methods shall be used depending on the nature of the unstable material encountered. Metal sheeting and steel sheet piling may be used at the option of the Engineer.

D-802.05 MEASUREMENT: This item will be measured by the foot along the long axis of the trench.

D-802.06PAYMENT: Contractor shall investigate the conditions as they exist in the field and include in the unit price bid per linear foot. This price is full compensation for the excavation and backfill required for excavation protection; furnishing, placing and removing shoring, sheeting, or bracing; dewatering or diversion of water; jacking and jack removal; and equipment, labor, materials, tools and incidentals.

SECTION 804
WORK PERFORMED ON NON-WORKING DAYS

D-804.01 WORKING DAY: A working day is Monday thru Friday, 8:00 a.m. to 5:00 p.m. excluding holidays.

D-804.02 WORK PERFORMED ON A NON-WORKING DAY: Any work which is to be performed on a non-working day must be inspected. The Engineer will decide which work will be requiring the presence of an inspector.

D-804.03 COST OF INSPECTION: The cost for having an inspector present shall be incurred by the Contractor performing the work. Such arrangements will be made in writing and submitted to the Engineer for his approval. Any testing requested by the contractor out of service hours or any overtime charged by the testing laboratory for delaying, shall be paid by the contractor.

D-804.04 STOP WORK: Any work stoppage by the contractor must be reported in writing to the engineer and owner 24 hours prior to work stoppage.

SECTION 812
DEFINITIONS

Whenever used in these GENERAL CONDITIONS or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda-Written or graphic instruments issued by ENGINEER prior to the receipt of bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.

Agreement-The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment-A request from CONTRACTOR for a progress or final payment on the form accepted by ENGINEER and which is accompanied by such supporting documentation as is required by the Contract Documents.

Asbestos-Any material that contains more than one percent (1%) asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

BID-The offer or proposal of the BIDDER submitted on the prescribed form setting forth the required information, including prices for the Work to be performed.

Bidder- An individual, partnership, limited liability company, corporation, or joint venture submitting a bid for a proposed Contract.

Bidding Documents-The advertisement or Invitation to Bid, Instructions to Bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

Bidding Requirements-The information requested by and conditions for bidding set forth in the advertisement or Invitation to Bid, Instructions to Bidders, and the Bid form.

Bonds-Performance and Payment bonds and other instruments of security.

Change Order-A document prepared by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

Contract Documents-The Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid (including documentation accompanying the BID and any post-bid documentation accompanying the BID and any post-bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these GENERAL CONDITIONS, the Supplementary Conditions, the Specifications, and the PLANS, as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and

ENGINEERS's written interpretations and clarifications, issued pursuant to Paragraph 3.3, on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to Paragraphs 6.17.4 and 6.17.5 and the reports and drawings referred to in Paragraphs 4.2.1 and 4.2.2 are not Contract Documents.

Contract Price-The amount agreed to by OWNER and CONTRACTOR for completion of the Work, in accordance with the Contract Documents, as stated in Article 4 of the Agreement (subject to the provisions of Paragraph 11.3.1 in the case of Unit Price Work), and as adjusted by any Change Orders.

Contract Times-The numbers of days or the dates stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with Paragraph 14.9.1.

CONTRACTOR-The person, firm, or corporation with whom OWNER has entered into the Agreement.

Defective-An adjective which, when modifying the word Work, refers to Work that is unsatisfactory, faulty, or deficient, in that it does not conform to, or has not been performed in accordance with, the Contract Documents, or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with Paragraph 14.5.1 or 14.6).

Effective Date of the Agreement-The date indicated in the Agreement on which it becomes effective; but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER-The licensed person, firm, or corporation authorized by the City or the owner to act on their behalf.

ENGINEER's Subconsultant-A licensed person, firm, or corporation having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

Field Order-A written order issued by ENGINEER which orders minor changes in the Work in accordance with Paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Times.

General Requirements-Sections of Division A, B, and C of the Specifications.

Hazardous Waste-The term Hazardous Waste shall mean (i) any hazardous materials, hazardous wastes, hazardous substances, and toxic substances as those or similar terms are defined under any Environmental Laws; (ii) any Asbestos or any material which contains any hydrated mineral silicate, including chrysolite, amosite, crociodolite, tremolite, anthophylite, and/or actinolite, whether friable or non-friable;(iii) any PCBs or PCB-containing materials, or fluids; (iv) radon;

(v) any other hazardous, radioactive, toxic, or noxious substance, material, pollutant, or solid, liquid, or gaseous waste; (vi) any pollutant or contaminant (including petroleum, petroleum hydrocarbon, petroleum products, crude oil, and any factions thereof; any oil or gas exploration or production waste, and natural gas, synthetic gas, and any mixtures thereof) that in its condition, concentration, or area of release could have a significant effect on human health, the environment, or natural resources; (vii) any substance that, whether by its nature or its use, is subject to regulation under any Environmental Law or, with respect to which any Environmental Law or Governmental Authority, requires environmental investigation, monitoring, or remediation; (viii) any Radioactive Material; and (ix) any underground storage tanks, as defined in 42 U .S.C. Section 699(1)(A)(I) (including those defined by Section 9001[1] of the 1984 Hazardous and Solid Waste Amendments to the Resource Conservation Act, 42 U.S.C. Section 6901 et seq.; the Texas Water Code Annotated Section 26.344; and Title 30 of the Texas Administrative Code Sections 334.3 and 334.4), whether empty, filled, or partially filled with any substance.

Laws and Regulations; Laws or Regulations-Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction over the Work, the Project, and/or the CONTRACTOR's performance of the Work.

Liens-Liens, charges, security interests, or encumbrances upon real property or personal property.

Milestone-A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

Notice of Award-The written notice by OWNER to the apparent Successful Bidder stating that, upon compliance by the apparent Successful Bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed-A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on w hich the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligation under the Contract Documents.

OR EQUAL CLAUSE- Whenever a m aterial or article required is specified or shown on t he plans by using the name of the proprietary product, or of a particular manufacturer or vendor, any material or article which will perform adequately the duties imposed by the general design will be considered equal and satisfactory, provided the material or article so proposed is of equal substance and function, and only after written approval by the City Engineer.

OWNER-The public body or authority, corporation, association, firm, or person which is a party to the Agreement and for whom the Work is to be provided.

Partial Utilization-Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work in accordance with Paragraph 14.6.

PCBs-Polychlorinated biphenyls.

***Petroleum*-**Petroleum, including crude oil or any fraction thereof, which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

***PLANS*-**The PLANS which show the scope, extent, and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.

***Project*-**The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

***Radioactive Material*-**Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

***Resident Project Representative*-**The authorized representative of the OWNER who may be assigned to the site or any part thereof.

***Right of Way*-** A general term denoting land or property devoted to transportation purposes.

***Samples*-**Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

***Shop Drawings*-**All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

***Specifications*-**Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

***Subcontractor*-**An individual, firm, or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site. Excluding a material supplier, truck owner-operator, wholly owned subsidiary, specialty-type businesses such as security companies and rental companies.

***Subsidiary*-** Materials, labor, or other elements that because of their nature or quantity have not been identified as a separate item and are included within the items on which they necessarily depend.

***Substantial Completion*-**The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended or, if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with Paragraph 14.9. The terms "substantially complete" and "substantially completed" as applied to

all or part of the Work refer to Substantial Completion thereof.

Supplementary Conditions-The part of the Contract Documents which amends or supplements these GENERAL CONDITIONS.

Supplier-A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated into the Work by CONTRACTOR or any Subcontractor.

Traffic Lane- The strip of roadway intended to accommodate the forward movement of a single line of vehicles.

Underground Facilities-All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities which have been installed underground.

Unit Price Work-Work to be paid for on the basis of unit prices.

Work-The entire completed construction or the various separately identifiable parts thereof required to be furnished by the CONTRACTOR under the Contract Documents. Work includes and is the result of the CONTRACTOR performing or furnishing all labor, furnishing and incorporating all materials and equipment into the construction, performing or furnishing all services, and furnishing all documents, all as required by the Contract Documents.

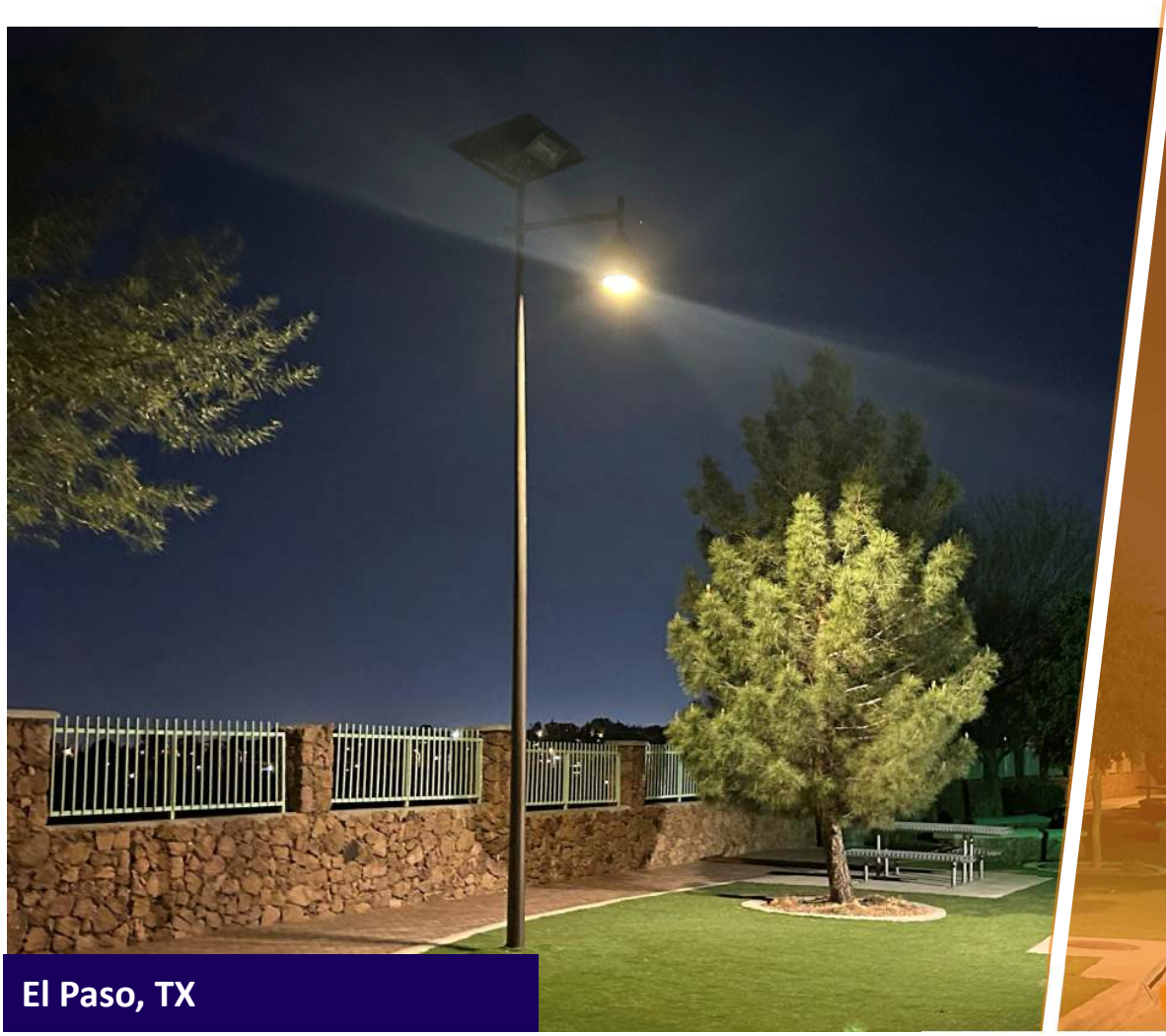
Work Change Directive-A written directive to CONTRACTOR, issued on or after the Effective date of the Agreement and signed by OWNER and prepared by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed, as provided in Paragraph 4.2 or 4.3, or to emergencies under Paragraph 6.15. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in Paragraph 10.1.2.

Written Amendment-A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical, rather than strictly construction-related aspects of the Contract Documents.

FONROCHE lighting AMERICA

APPLICATION DESIGN

City Park Walking Trail
Dilley - TX



El Paso, TX

Project Number:	G9056
Date:	3/6/2025
Written by:	Cuong VU
Version :	A

The global leader in solar lighting

FONROCHE lighting AMERICA

Fonroche Lighting America is proud to be part of Fonroche Lighting, the global leader in off-grid solar street lighting. The deep resources and broader scope of an established market leader lets us take solar lighting even further, from the State Treasury in Salem, Oregon to the West African Republic of Senegal. Over 150,000 Fonroche SmartLight systems have been deployed worldwide.

With five offices in the USA and installations across the country, Fonroche is never far away. Some solution providers enter the solar lighting market—then move on. We're a reliable partner that sticks around. You get the responsive support and smart answers that you need now—and the confidence that we'll be here for you far in the future. And we can take on projects of any size, from local to national. That's why so many municipalities, military and federal facilities, tribes, commercial properties, and developers trust us to deliver the full promise of solar lighting.

Linear Park, TX

The 3 key benefits for your project

- OFF-GRID
100% solar, not connected to the utility grid. No outages.
365 nights of light a year – guaranteed.

- POWERFUL
Powerful illumination, on a par with grid-connected systems.

- COST-EFFICIENT
No maintenance for the first 10 years. Rapid installation. No operating costs.

Feasibility of your solar lighting project

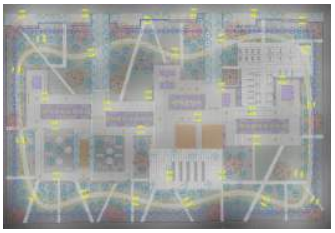
To guarantee powerful, cost-effective off-grid lighting, Fonroche operates its own **design offices**.
We assess the feasibility of each project in four stages:

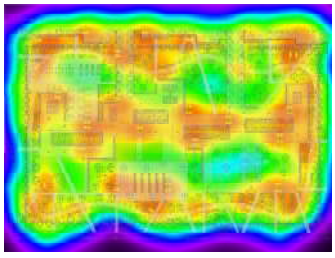
1. First, we define your **lighting requirements**.

2. Next, we analyze the last 10 years of **local weather data** to determine how much energy our PV panels will generate.

3. On this basis, we **calculate** what size and how many products we need to install.

4. Finally, our sales team draws up a **cost estimate**.





Fonroche Lighting America - Design Office

Rightsized to your specific needs

FONROCHE lighting AMERICA

1 Project = 1 Study

10-Year Analysis of local weather data

We use the **PVsyst** software suite and **Meteonorm** historical time series irradiation data to calculate the real-world operating conditions — orientation and tilt angle of the panel, shadow, etc. — and external parameters, such as direct and diffuse irradiation, temperature and the solar calendar.

Simulation of product(s) over a typical year

Our teams have developed a solar sizing software application, which we use to determine which products will best meet your needs. We then simulate how these products operate over a typical year, based on the average conditions for **the last decade**.

Sizing the project to your needs

We use a set of key criteria to optimally specify your project:

- Average battery charge level over the year
- Minimum charge level
- Comparative analysis of energy generated by the panel vs. energy used by the system
- Worst-case scenario (lowest irradiation, longest night)

Results

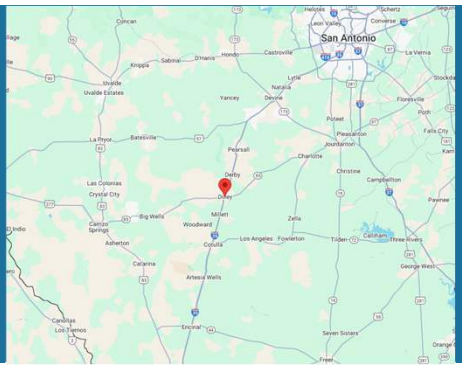
Based on our experience, we propose the **optimal solution** in terms of lighting **performance** and **cost effectiveness**.

Autonomy of 365 nights of lighting /year

Fonroche Lighting America - Design Office

Analyzing your lighting project

Your Project location



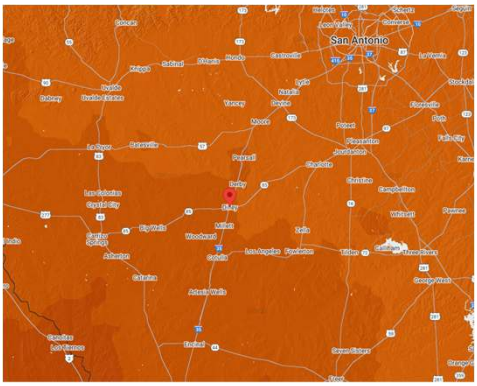
Dilley, TX

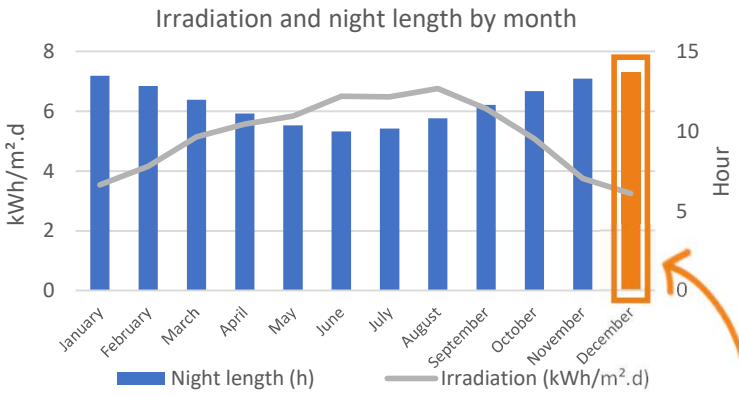
USA

GPS COORDINATES
Latitude: 28.6675
Longitude: -99.1706

Your Solar Potential

We have analyzed the weather data for the last 10 years at your project location so that we can guarantee constant lighting every night of the year.





Average annual irradiation : 5.18kWh/m².d

Sizing takes account of the month with the lowest irradiation and the longest night.

Your Lighting Application

Trail

Compliance with public lighting standards

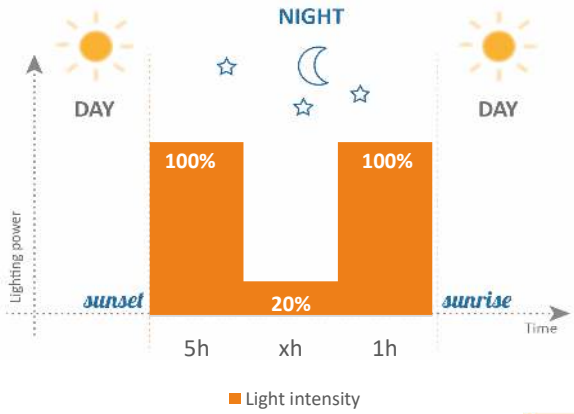
Your project has been designed in compliance with:
- AASHTO standard

Opera

Bronze Roman

A harmonious contrast of purple and golden brown for a very contemporary fixture. The bronze that dresses the fixture and the reddish-brown that covers the pole, both deep and timeless, harmonize with all mineral environments, allowing for beautiful integration into landscapes and an unexpected composition. The dark, softly textured pole enhances the aesthetic quality of the whole, while the anodized bronze fixture plays with ambient light and provides a very high-end varying golden effect.

SmartLight System Configuration



Photovoltaic Module (30 years service life)	
PV Panel Power Rating	190 Wp
PV Panel Tilt Angle	10º
Power 365: Smart Storage and Management (10 years service life)	
Battery Capacity	624 Wh
LED Luminaire (20 years service life)	
Lighting Power	30 W nominal
Fixture Specification	4000K - 190 Lm/w
Pole and Arm Assembly	
Pole Height/Base Type	20'/Direct Burial
Finish	Powder Coated

Photometric survey results

Zone	Average lighting level (Fc)	Spacing (Ft)	Quantity Opera T2
Trail	*1.12	200	19

Design Target: 190Ft spacing.
*** 0.0Fc spots removed.**

Eco-friendly lighting

Choose Fonroche — and we will reduce your environmental footprint.

A standard streetlight consumes in average 80 W during 4200 h per year which represents 0.08x4200 x number of solar streetlight = X kWh of energy saving.

Once installed, solar lighting reduces

CO_2 emissions by **1kWh = 0.99 lbs** CO_2

compared to a grid-connected installation. (https://www.eia.gov/)

Recycling our components

Long product service life and component recyclability are key aspects of Fonroche Lighting's environmental commitments. Our solar streetlights are over 90% recyclable.

Unlike lead-acid batteries, **NiMH batteries** do not contain any toxic chemicals. They are 98% recyclable — the nickel is extracted and used to make various materials, mostly stainless steel.

The **solar panels** have an extremely long service life. Even after 25 years, they will still be producing at least 80% of their initial peak power. So they can continue to be used. Alternatively, about 96% of their component materials can be recycled to make new panels.

PHOTOMETRIC STUDY

**Note: these results are only valid if the Smartlight PV panel is at an azimuth angle of zero degrees and is completely free of shadow.*

***These results are subject to change due to technological or regulatory advances. This technical report is valid for 60 days from the date you receive it.*

Fonroche Lighting America Design Office

City Park Walking Trail

Lighting Plan Rev A
Project Number: G9056

By: Cuong Vu
cuong.vu@fonroche.us
Date:3/6/2025

FONROCHE lighting AMERICA
2224 SE Loop 820 Building C
Fort Worth TX 76140
Phone Number: (339) 225 4530
www.fonrochesolarlighting.com

Luminaire Schedule					
Symbol	Label	Arrangement	Total Lamp Lumens	LLF	Qty
	T2-Opera-4K-28W	Single	5320	0.900	19

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Trail	Illuminance	Fc	1.12	2.3	0.1	11.20	23.00

City Park Walking Trail

Lighting Plan Rev A
Project Number: G9056

By: Cuong Vu
cuong.vu@fonroche.us
Date:3/6/2025

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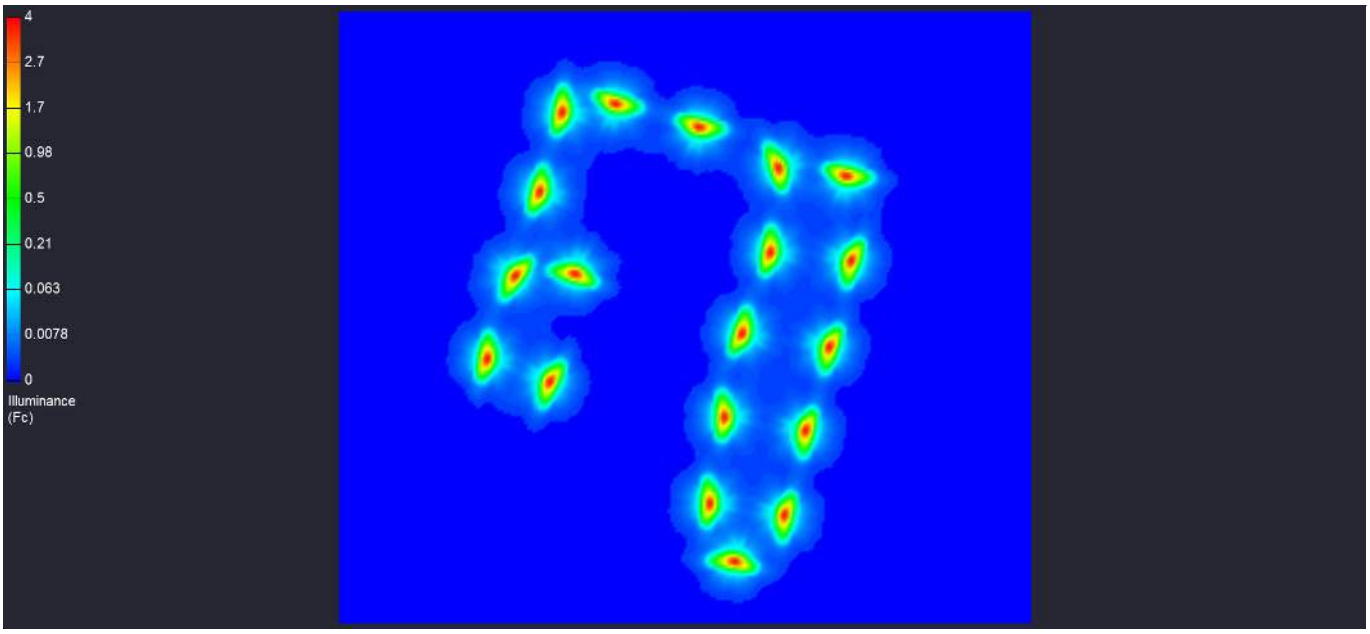


A few examples


Agen, FR


Dallas- TX


Brushy Creek - Cedar Park TX


Marana, AZ

Solar lighting

Your commitment to sustainability

Contact us

Lori Embrey
Sales Support Representative
P: (339) 225-4530 x226
E: Lori.embrey@fonroche.us

FIND OUT MORE AT

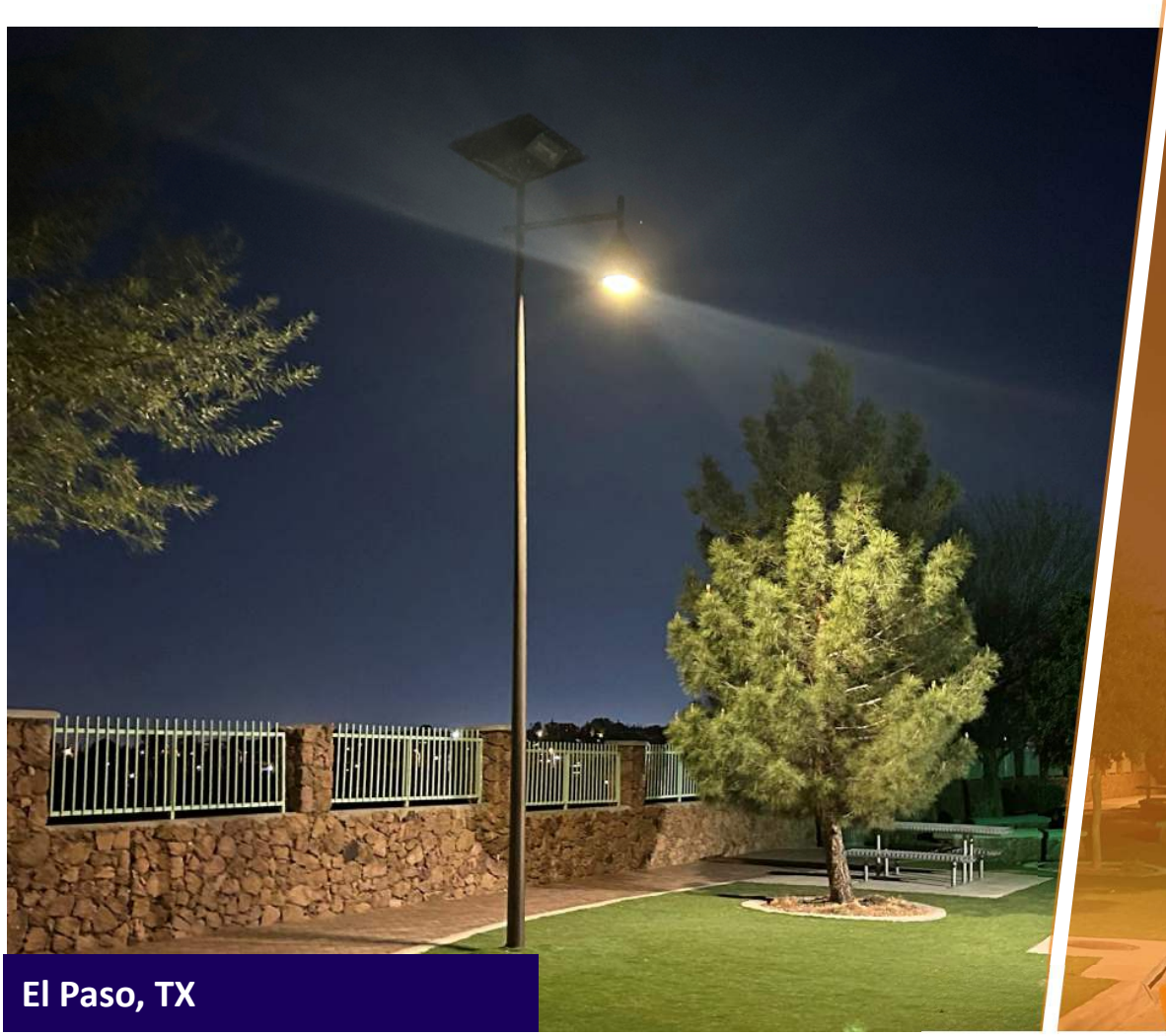
www.FonrocheSolarLighting.com

FONROCHE LIGHTING AMERICA | 2224 SE Loop 820 Building C
Fort Worth TX 76140
Telephone : 339-225-4530

FONROCHE lighting AMERICA

APPLICATION DESIGN

Main St. Park
Dilley - TX



El Paso, TX

Project Number:	G8761
Date:	1/15/2025
Written by:	Cuong VU
Version :	A

The global leader in solar lighting

FONROCHE lighting AMERICA

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With five offices in the USA and installations across the country, Fonroche is never far away. Some solution providers enter the solar lighting market—then move on. We're a reliable partner that sticks around. You get the responsive support and smart answers that you need now—and the confidence that we'll be here for you far in the future. And we can take on projects of any size, from local to national. That's why so many municipalities, military and federal facilities, tribes, commercial properties, and developers trust us to deliver the full promise of solar lighting.

Linear Park, TX

The 3 key benefits for your project

- OFF-GRID
100% solar, not connected to the utility grid. No outages.
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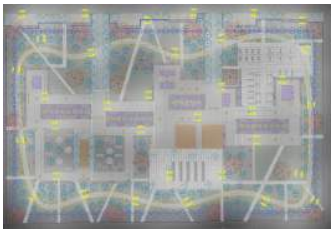

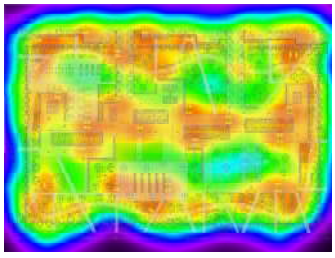

Fonroche Lighting America - Design Office

Rightsized to your specific needs

FONROCHE lighting AMERICA

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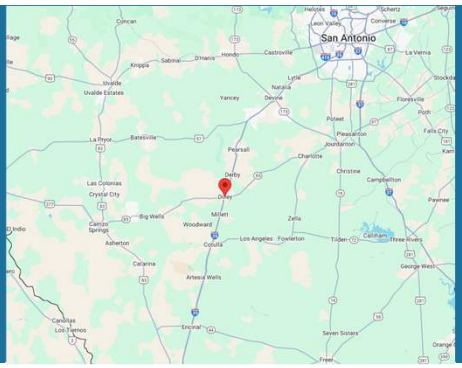
Autonomy of
365
nights of lighting /year

Fonroche Lighting America - Design Office

Analyzing your lighting project

FONROCHE lighting AMERICA

Your Project location



Dilley, TX

USA

GPS COORDINATES
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Longitude: -99.1706

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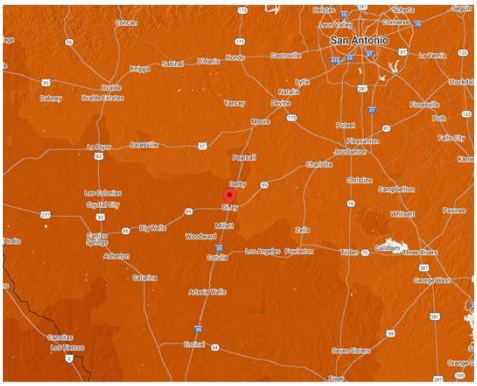

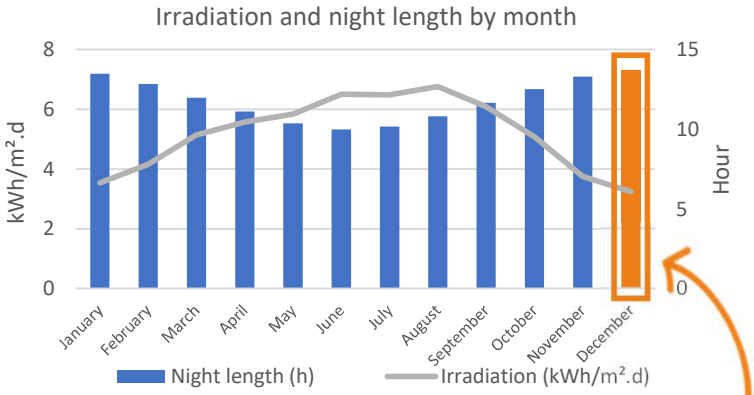

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Park

Compliance with public lighting standards

Your project has been designed in compliance with:
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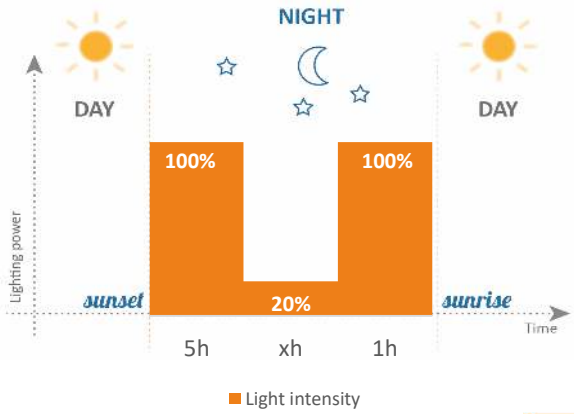
SmartLight System Configuration



Photovoltaic Module (30 years Service Life)	
PV Panel Power Rating	190 Wp
PV Panel Tilt Angle	10º
Power 365: Smart Storage and Management (10 years Service Life)	
Battery Capacity	624 Wh
LED Luminaire (20 years Service Life)	
Lighting Power	40 W nominal
Fixture Specification	4000K - 180 Lm/w
Pole and Arm Assembly	
Pole Height	20’
Finish	Powder Coated

Photometric survey results

Zone	Average lighting level (Fc)	Minimum (Fc)	Quantity Opera T4
Park	0.37	0.0	8

Eco-friendly lighting

Choose Fonroche — and we will reduce your environmental footprint.

A standard streetlight consumes in average 80 W during 4200 h per year which represents 0.08x4200 x number of solar streetlight = X kWh of energy saving.

Once installed, solar lighting reduces

CO_2 emissions by **1kWh = 0.99 lbs** CO_2

compared to a grid-connected installation. (https://www.eia.gov/)

Recycling our components

Long product service life and component recyclability are key aspects of Fonroche Lighting's environmental commitments. Our solar streetlights are over 90% recyclable.

Unlike lead-acid batteries, **NiMH batteries** do not contain any toxic chemicals. They are 98% recyclable — the nickel is extracted and used to make various materials, mostly stainless steel.

The **solar panels** have an extremely long service life. Even after 25 years, they will still be producing at least 80% of their initial peak power. So they can continue to be used. Alternatively, about 96% of their component materials can be recycled to make new panels.

PHOTOMETRIC STUDY

**Note: these results are only valid if the Smartlight PV panel is at an azimuth angle of zero degrees and is completely free of shadow.*

***These results are subject to change due to technological or regulatory advances. This technical report is valid for 60 days from the date you receive it.*

Fonroche Lighting America Design Office

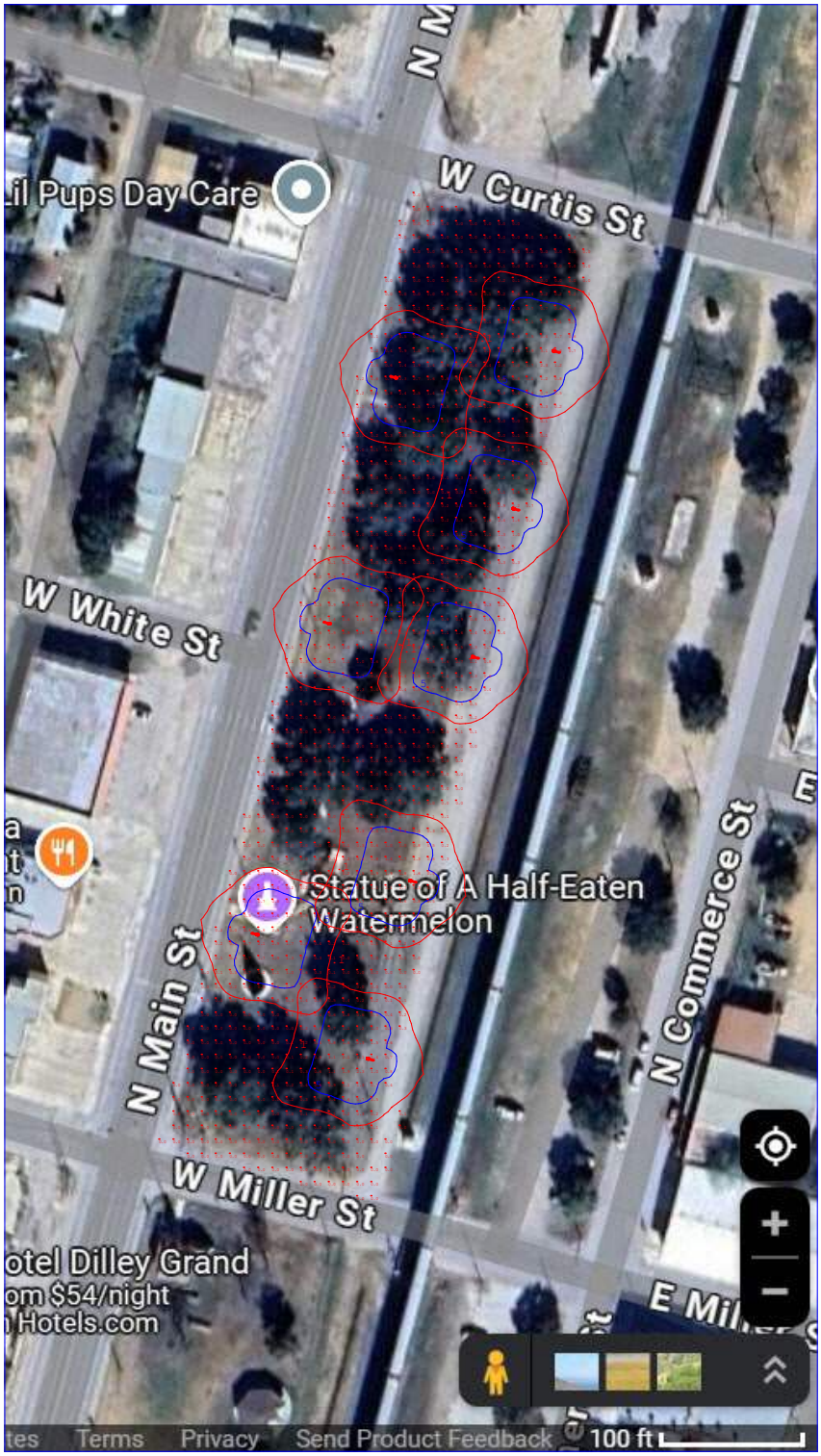
Main St. Park

Lighting Plan Rev A

Project Number: G8761

By: Cuong Vu
cuong.vu@fonroche.us
Date:1/15/2025

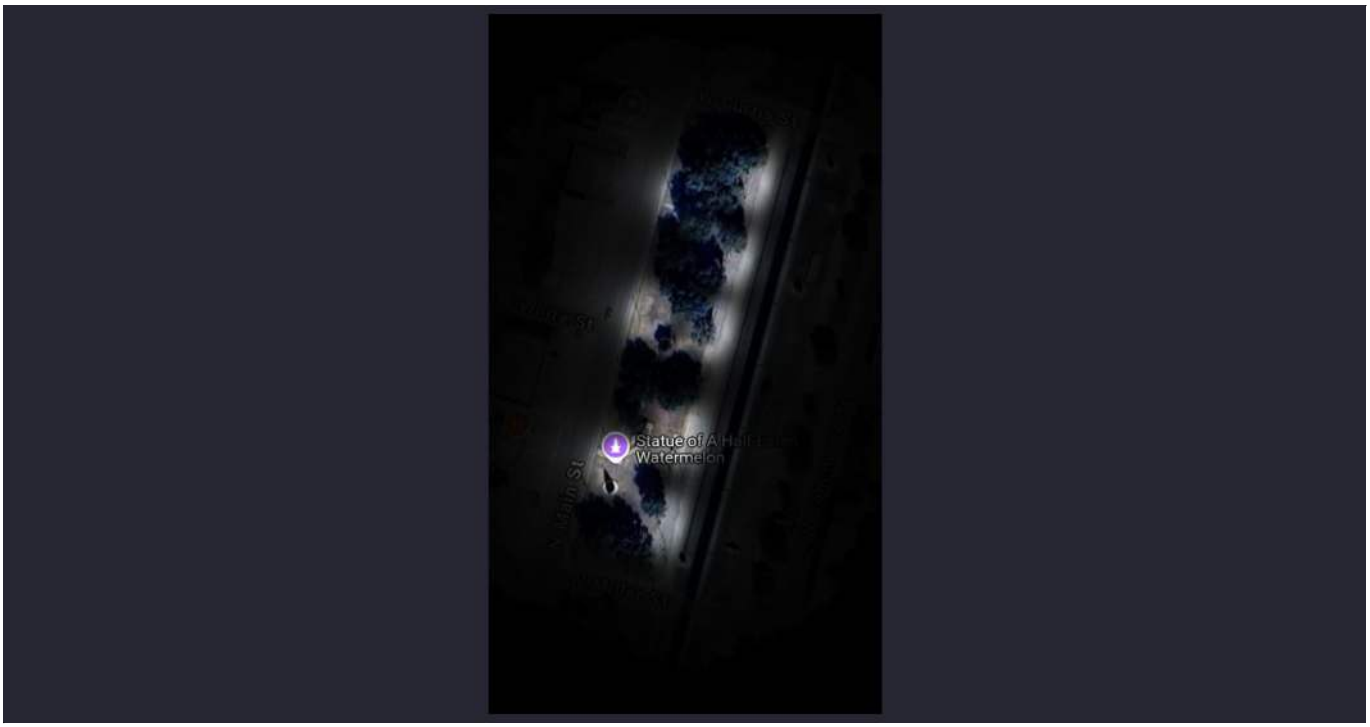
FONROCHE lighting AMERICA
2224 SE Loop 820 Building C
Fort Worth TX 76140
Phone Number: (339) 225 4530
www.fonrochesolarlighting.com



Luminaire Schedule					
Symbol	Label	Arrangement	Total Lamp Lumens	LLF	Qty
	T4-Opera-4K-32W	Single	5760	0.900	8

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Park	Illuminance	Fc	0.37	3.1	0.0	N.A.	N.A.

Main St. Park		
Lighting Plan Rev A Project Number: G8761	By: Cuong Vu cuong.vu@fonroche.us Date:1/15/2025	FONROCHE lighting AMERICA 2224 SE Loop 820 Building C Fort Worth TX 76140 Phone Number: (339) 225 4530 www.fonrochesolarlighting.com



Main St. Park

Lighting Plan Rev A
Project Number: G8761

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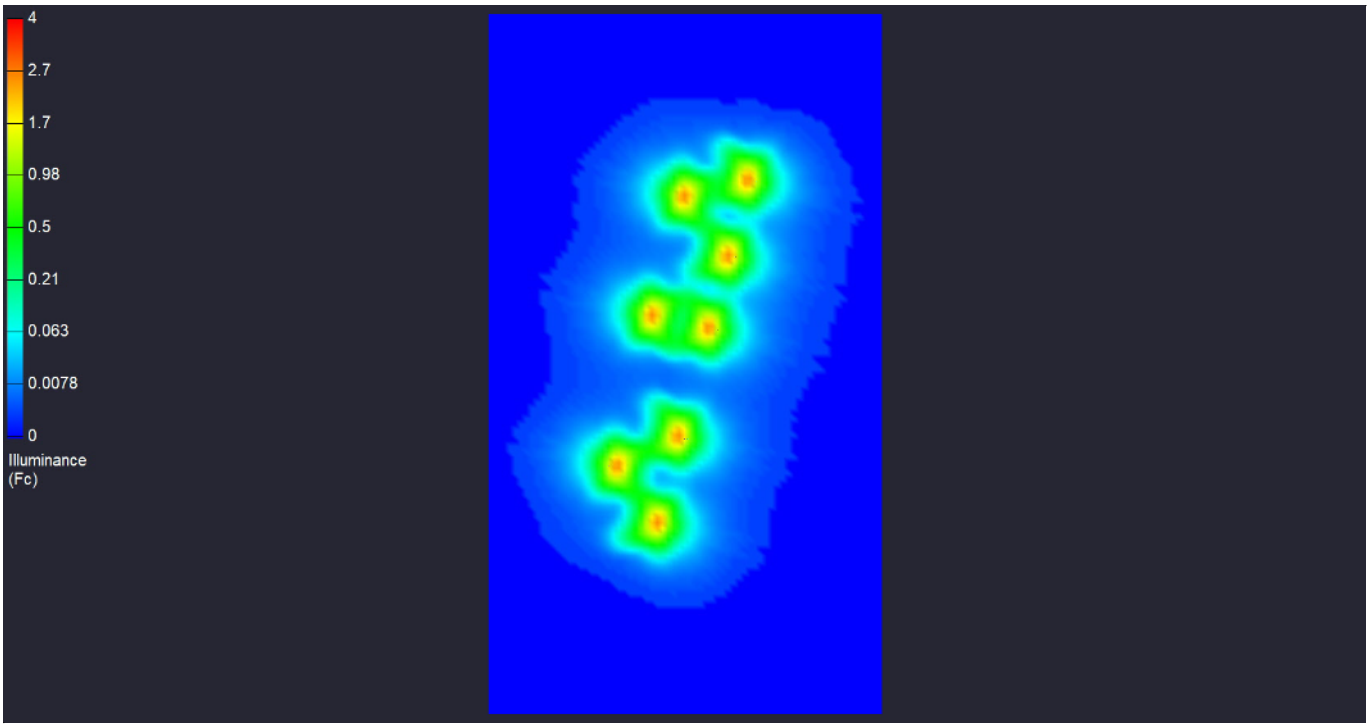


A few examples


Agen, FR


Dallas- TX


Brushy Creek - Cedar Park TX


Marana, AZ

Solar lighting

Your commitment to sustainability

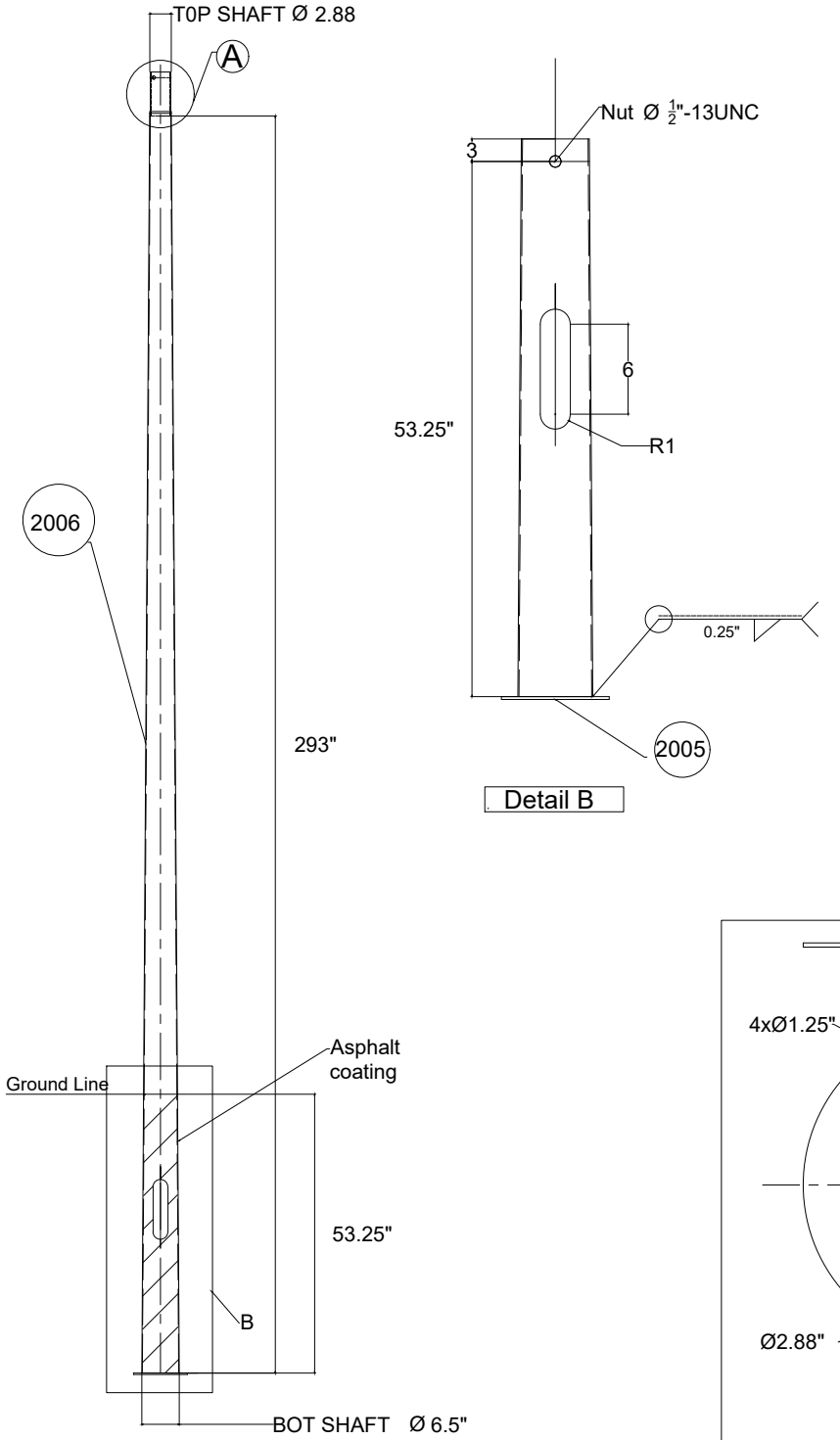
Contact us

Lori Embrey
Sales Support Representative
P: (339) 225-4530 x226
E: Lori.embrey@fonroche.us

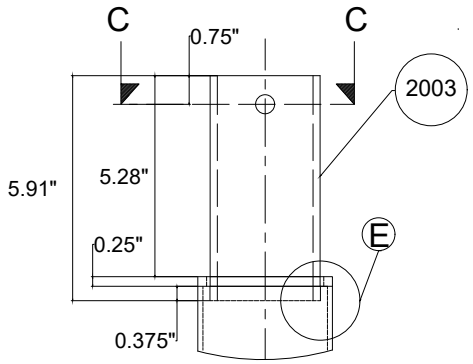
FIND OUT MORE AT

www.FonrocheSolarLighting.com

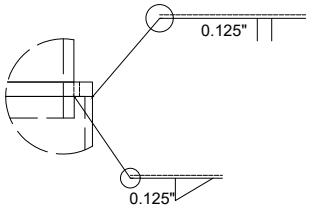
FONROCHE LIGHTING AMERICA | 2224 SE Loop 820 Building C
Fort Worth TX 76140
Telephone : 339-225-4530



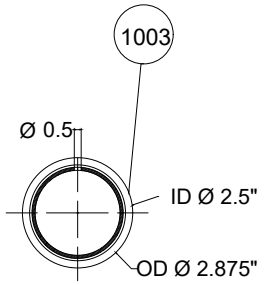
Detail B



Detail A



Detail E



Cut-C-C

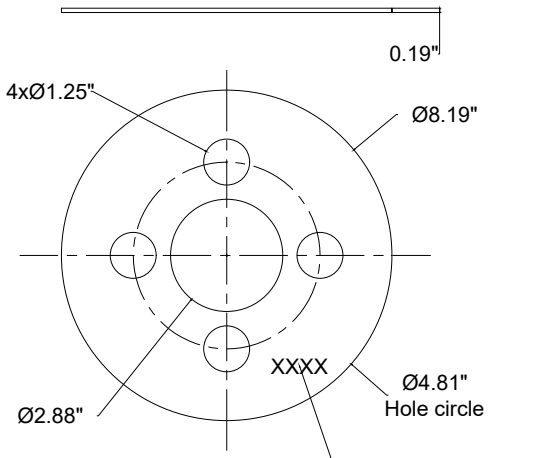
NOTE:
- DIMENSION IN INCHES OTHERWISE SPECIFIED
- FINISH:HOT DIP GALVANISED IN ACCORDANCE WITH ASTM A-123
- WELDS ACCORDING TO AWS D1.1 CURRENT
- DEBURR ALL THREADED HOLES
- THE CORNER AND EDGES ARE TO BE DEBURRED AT 0.0078".
- PARTS MUST BE FREE OF DEBRIS, SHAVING, OIL RESIDUES, SCRATCH OR SOLVENT(INCLUING". BLIND HOLES.
- LABEL THE OUTER PACKAGE XXX-2306081-A.

GENERAL NOTES
BUCKLING:
- FROM 120" TO 240" LG=0.125" MAX SHAFT LENGTH:+1"-0.5"

ROUNDNESS:
- DIAMETER:+-0.0625"(24"FROM BOTTOM AND 48"FROM TOP
- OVAL:
+- 0.0625"MEASURED ON 0 AND 180

BASE PLATE:
- OUTSIDE DIMENSIONS:+-0.125
- BOLT CIRCLE: +-0.125"
- CNC-MADE HOLE DIAMETER:-0"+0.625"
- DRILL MADE HOLE DIAMETER:-0.0625"

ACCESSORIES:
- POSITION:+-0.125"
- GENERAL DIMENSION:+-0.125"
- DRILL MADE HOLE DIAMETER:-0"+0.0625"
- DISTANCE BETWEEN DRILL MADE HOLES:+-0.062
- BENDING MARKS ON PIECES BENT AT 90 DEGRE SHALL NOT BE ACCEPTED



PART 2005

XXXX-2306081-A
LABEL ON THE WRAPING

MARK	QTY	DESCRIPTION	MATERIAL
2005	1	Bearing Plate	A36
2006	1	Round tapered shaft 0.1196 in thick	ASTMA572 Gr 65
2003	1	Ø 2" Pipe SCH.40	A500 Gr. B
1003	1	Tenon Ring	A36

Tolerance: SEE NOTES

Designation:
20 FT EMBEDDED POLE

Part Number: 2306081

Drawn: TA

Part Revision: A

Validated by: CG

Drawing Revision: A

Approved by: CG

Material:

Weight (as per information): 152.18lbs

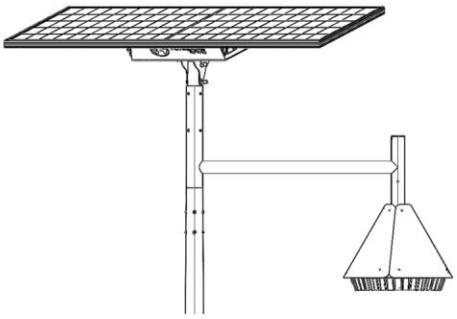
FONROCHE lighting AMERICA

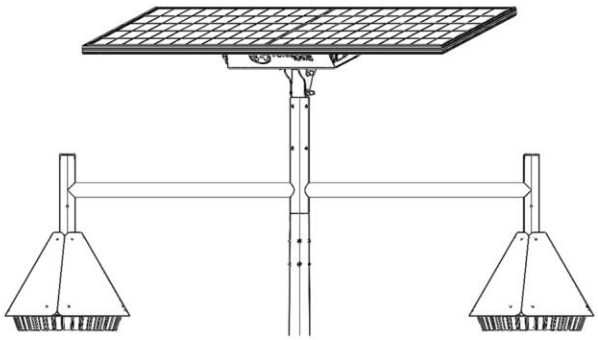
Sheet:	Date:	Scale:	Sheet Format: DRAFT VERSION

Opera

Notice de montage
Assembly Instruction
Instrucción de ensamblaje

FONROCHE lighting AMERICA





WATCH OUR
VIDEO DEMONSTRATION

To watch our demonstration video, scan the QR code or visit
https://tinyurl.com/FLAOpera

Use Password: FLA101

Version V1

Fonroche Lighting America | 2224 SE Loop, Bldg C | Fort Worth, TX 76140
339-225-4530
Support@Fonroche.US
www.FonrocheSolarLighting.com

SOMMAIRE / CONTENTS / INDICE

SOMMAIRE / CONTENTS / INDICE

SECURITE / SECURITY / SEGUIRIDAD

FR: Travail à proximité de réseau haute tension et basse tension.
EN: Work near high and low voltage networks
ES: Trabajo cerca de redes de alta y baja tensión

FR: Chute de matériel
EN: Falling of equipment
ES: Caida de material

FR: Chute de personne
EN: Falling of person
ES: Caida de personal

FR: Chaussures de sécurité
EN: Safety shoes
ES: Zapatos de seguiridad

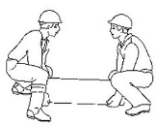
FR: Casque
EN: Helmet
ES: Casco de seguiridad

FR: Gilet haute visibilité
EN: High-visibility vest
ES: Chaleco fluorescente de seguiridad

FR: Gants
EN: Gloves
ES: Guantes de trabajo

FR: Harnais
EN: Harness
ES: Arnés

FR: Balisage du chantier
EN: Site marking
ES: Señalizacion de trabajo



FR: Port de charge à 2 personnes
EN: 2 person load carrying capacity
ES: Transporte de carga por dos personas

OBLIGATIONS ET RECOMMENDATIONS/ OBLIGATIONS AND RECOMMENDATIONS OBLIGACIONES Y RECOMMENDACIONES

FR

1. Réception des produits

La conformité à la commande (type, quantités) et le bon état des produits livrés doivent être vérifiés à leur livraison. Les défauts apparents, les avaries ou les produits manquants ou erronés par rapport à la commande doivent être reportés sur la lettre de voiture du transporteur et doivent être notifiés à Fonroche Lighting par écrit dans les 48 heures de la réception des produits à l'adresse suivante : savfl@fonroche-lighting.com

2. Stockage des produits

Les boitiers d'alimentation « Power 365 », luminaires LED et modules photovoltaïques doivent être stockés dans leur emballage d'origine dans un local à l'abri des intempéries et respectant les préconisations suivantes :

Un niveau d'humidité ambiante compris entre 65% et 20% HR.

Une température minimale de – 20 °C.

Une température maximale de 40 °C.

Les boitiers d'alimentation « Power 365 » ne doivent pas être empilés hors de leur emballage.

Aucun objet autre que d'autres modules photovoltaïques ne doit être posé sur les modules photovoltaïques, même si ceux-ci demeurent dans leur emballage.

Les éléments mécaniques doivent être stockés avec une ventilation adéquate afin d'éviter toute dégradation, mais ne doivent pas être stockés directement sur le sol ni à proximité d'une zone de stockage de matériaux pulvérulents.

3. Transport

Durant le transport, les produits ne doivent pas être déballés (par exemple: dépalettisation) sauf autorisation de Fonroche Lighting.

4. Installation des produits

L'installation des produits doit être effectuée dans les 6 mois suivant leur date de fabrication indiquée sur l'emballage et conformément aux instructions de cette notice.

5. Service après-vente

Toute réclamation doit être adressée au service après-vente de Fonroche Lighting par courrier électronique à l'adresse suivante : SAVFL@fonroche-lighting.com ou par téléphone au numéro suivant : +33 5 40 40 90 04.

Fonroche Lighting procèdera à un diagnostic technique préliminaire à distance et, si nécessaire, à un diagnostic technique approfondi du produit en défaut sur site et/ou à son usine. A l'issue de ce diagnostic technique, Fonroche Lighting déterminera si le dysfonctionnement ou le défaut est couvert par l'une des garanties ou non selon les conditions générales de ventes de Fonroche Lighting.

6. Entretien et maintenance des produits

Fonroche Lighting préconise de vérifier occasionnellement l'état général des produits. Si ceux-ci semblent présenter un encrassement anormalement important tel que l'accumulation de sable, de poussière, de boue, de neige, de glace ou de déjections animales susceptible d'altérer les performances ou d'affecter la robustesse des produits, il est conseillé de procéder à un nettoyage des modules photovoltaïques et des luminaires LED en respectant les préconisations suivantes :

Nettoyer avec une éponge douce ou chiffon doux propre mouillé à l'eau douce claire à température ambiante ;

Ne pas utiliser de solvant, produit de nettoyage ou autre détergent ;

Ne pas s'appuyer contre/sur le produit ;

Ne pas sécher le produit.

EN

1. Receipt of Products

The conformity with the order (type, quantities) and the good condition of the delivered products must be verified upon delivery. Apparent defects, damages, or missing or incorrect products compared to the order must be reported on the carrier's delivery note and notified to Fonroche Lighting in writing within 48 hours of receipt at the following address: savfl@fonroche-lighting.com.

2. Storage of Products

The "Power 365" power units, LED luminaires, and photovoltaic modules must be stored in their original packaging in a weatherproof location adhering to the following recommendations:

Ambient humidity level between 65% and 20% RH.

Minimum temperature of -20 °C.

Maximum temperature of 40 °C.

The "Power 365" power units must not be stacked outside their packaging.

No objects other than additional photovoltaic modules must be placed on the photovoltaic modules, even if they remain in their packaging.

Mechanical components must be stored with adequate ventilation to prevent degradation but must not be stored directly on the ground or near a storage area for granular materials.

3. Transport

During transport, products must not be unpacked (e.g., depalletization) unless authorized by Fonroche Lighting.

4. Product Installation

Products must be installed within 6 months following their manufacturing date indicated on the packaging and in accordance with the instructions in this manual.

5. After-Sales Service

Any claims should be sent to Fonroche Lighting's after-sales service via email at: SAVFL@fonroche-lighting.com or by phone at: +33 5 40 40 90 04.

Fonroche Lighting will conduct a preliminary technical diagnosis remotely and, if necessary, a thorough on-site technical diagnosis of the defective product and/or at its factory. After this technical diagnosis, Fonroche Lighting will determine if the malfunction or defect is covered by one of its warranties according to the general sales conditions of Fonroche Lighting.

6. Product Maintenance and Care

Fonroche Lighting recommends occasionally checking the general condition of the products. If they appear to have abnormal levels of clogging such as the accumulation of sand, dust, mud, snow, ice, or animal droppings that could impair performance or affect the robustness of the products, it is advisable to clean the photovoltaic modules and LED luminaires following these recommendations:

Clean with a soft sponge or clean, damp cloth with clear, ambient temperature water.

Do not use solvents, cleaning products, or other detergents.

Do not lean against/on the product.

Do not dry the product.

OBLIGATIONS ET RECOMMENDATIONS/ OBLIGATIONS AND RECOMMENDATIONS OBLIGACIONES Y RECOMMENDACIONES

ES

1. Recepción de los productos

La conformidad con el pedido (tipo, cantidades) y el buen estado de los productos entregados deben ser verificados a su entrega. Los defectos aparentes, los daños o los productos faltantes o erróneos en comparación con el pedido deben ser reportados en la guía de despacho y notificados a Fonroche Lighting por escrito dentro de las 48 horas posteriores a la recepción de los productos a la siguiente dirección: savfl@fonroche-lighting.com.

2. Almacenamiento de los productos

Las cajas de alimentación "Power 365", luminarias LED y módulos fotovoltaicos deben almacenarse en su embalaje original en un lugar protegido de las inclemencias del tiempo y respetando las siguientes recomendaciones:

Un nivel de humedad ambiental entre 65% y 20% HR.

Una temperatura mínima de -20 °C.

Una temperatura máxima de 40 °C.

Las cajas de alimentación "Power 365" no deben apilarse fuera de su embalaje.

Ningún objeto que no sean otros módulos fotovoltaicos debe colocarse sobre los módulos fotovoltaicos, incluso si estos permanecen en su embalaje.

Los elementos mecánicos deben almacenarse con una ventilación adecuada para evitar cualquier degradación, pero no deben almacenarse directamente en el suelo ni cerca de una zona de almacenamiento de materiales pulverulentos.

3. Transporte

Durante el transporte, los productos no deben ser desempaquetados (por ejemplo: despaletización) salvo autorización de Fonroche Lighting.

4.Instalación de los productos

La instalación de los productos debe realizarse dentro de los 6 meses siguientes a su fecha de fabricación indicada en el embalaje y de acuerdo con las instrucciones de este manual.

5. Servicio postventa

Cualquier reclamación debe dirigirse al servicio postventa de Fonroche Lighting por correo electrónico a la siguiente dirección: SAVFL@fonroche-lighting.com o por teléfono al siguiente número: +33 5 40 40 90 04.

Fonroche Lighting realizará un diagnóstico técnico preliminar a distancia y, si es necesario, un diagnóstico técnico exhaustivo del producto defectuoso en el sitio y/o en su fábrica. Al final de este diagnóstico técnico, Fonroche Lighting determinará si el mal funcionamiento o el defecto está cubierto por una de las garantías o no según las condiciones generales de venta de Fonroche Lighting.

6. Mantenimiento de los productos

Fonroche Lighting recomienda verificar ocasionalmente el estado general de los productos. Si estos parecen presentar una suciedad anormalmente importante, como la acumulación de arena, polvo, barro, nieve, hielo o excrementos animales que puedan alterar el rendimiento o afectar la robustez de los productos, se aconseja proceder a la limpieza de los módulos fotovoltaicos y las luminarias LED respetando las siguientes recomendaciones:

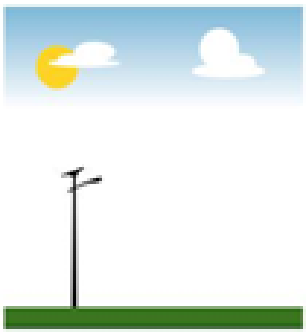
Limpiar con una esponja suave o un paño suave limpio humedecido con agua dulce clara a temperatura ambiente;

No utilizar solventes, productos de limpieza u otros detergentes;

No apoyarse contra/sobre el producto;

No secar el producto.

FONCTIONNEMENT GENERAL / GENERAL OPERATIONS / OPERACION GENERAL

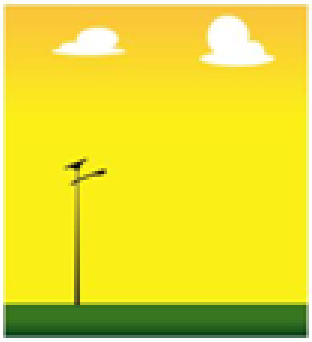


FR: La batterie se charge durant la journée grâce à l'électricité produite par le panneau photovoltaïque (PV).

EN: The battery gets loaded during daytime with the electricity produced by the solar panel (PV).

ES: La batería se carga durante el día gracias a la electricidad producida por el módulo fotovoltaico (PV).

Dqcdc



FR: Le coucher et le lever du soleil sont détectés avec la mesure de la tension aux bornes du PV:

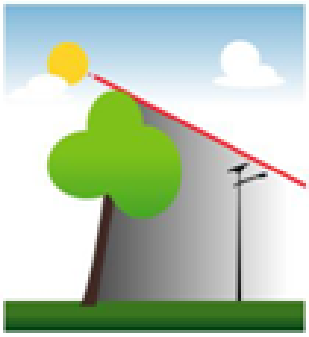
- en journée → tension PV>33V
- la nuit → tension PV=0V

EN: Nighttime is detected by measuring the voltage of the solar panel :

- daytime → voltage PV> 33V
- nighttime → voltage PV= 0V

ES: La salida y la puesta del sol son detectadas con la medida del voltaje del PV :

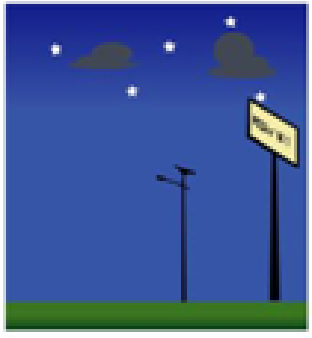
- de día → voltaje PV > 33V
- de noche → voltaje PV = 0V



FR: Le PV ne tolère aucune ombre à sa surface (arbres, maisons…) qui pourrait impacter considérablement la production d'électricité du panneau, et de fait nuire à la charge de la batterie.

EN: Avoid any shadow on the solar panel (trees, houses, traffic signs…). Shadows will considerably impact electricity production of the panel and hence reduce recharging of the battery.

ES: El PV no tolera ninguna sombra en su superficie (árboles, casas…) que podría afectar significativamente la generación de electricidad del módulo, y por lo tanto dañar a la carga de la bate



FR: Le PV ne doit pas être soumis à un éclairage artificiel pendant la nuit. La pollution lumineuse pourrait engendrer une tension aux bornes du PV (tension PV>0V) et donc éteindre la lumière.

EN: Avoid artificial light on the solar panel during nighttime. This could hinder correct detection of sun fall by the panel and can, worst case, completely disable switching on of the light.

ES: El PV no debe estar sujeto a una iluminación artificial durante la noche. La contaminación lumínica podría producir un voltaje al PV (> 0V) y entonces apagar l

PLAN D'IMPLANTATION / SITE / PLANO DE IMPLANTACION

FR

Le plan d'implantation **est fourni** par FONROCHE LIGHTING et **doit être respecté** par l'installateur.
En cas de source d'ombrage (arbre, bâtiment ou autres…), l'installateur **doit prévenir** FONROCHE LIGHTING.

EN

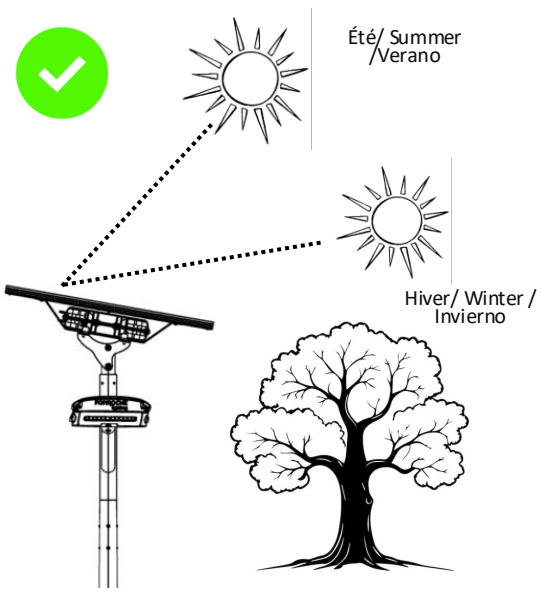
The installation plan **is provided** by FOROCHE LIGHTING and **must be followed** by the installer.

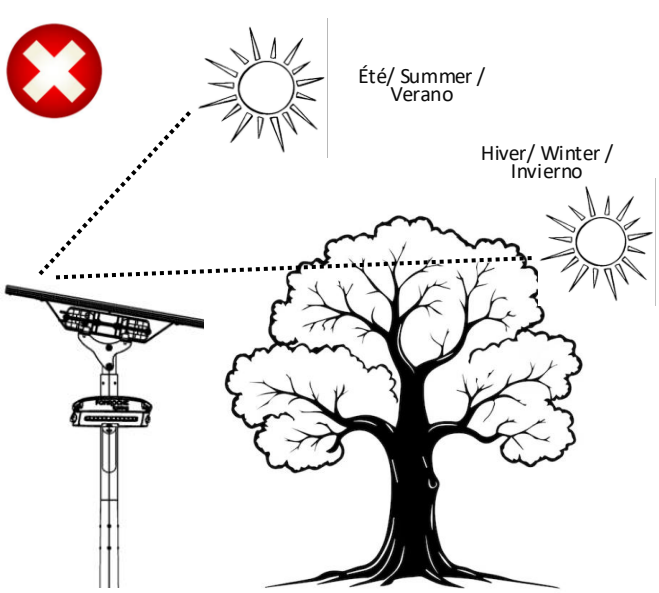
In the case of any shading sources (trees, building, etc.), the installer **must notify** FONROCHE LIGHTING.

ES

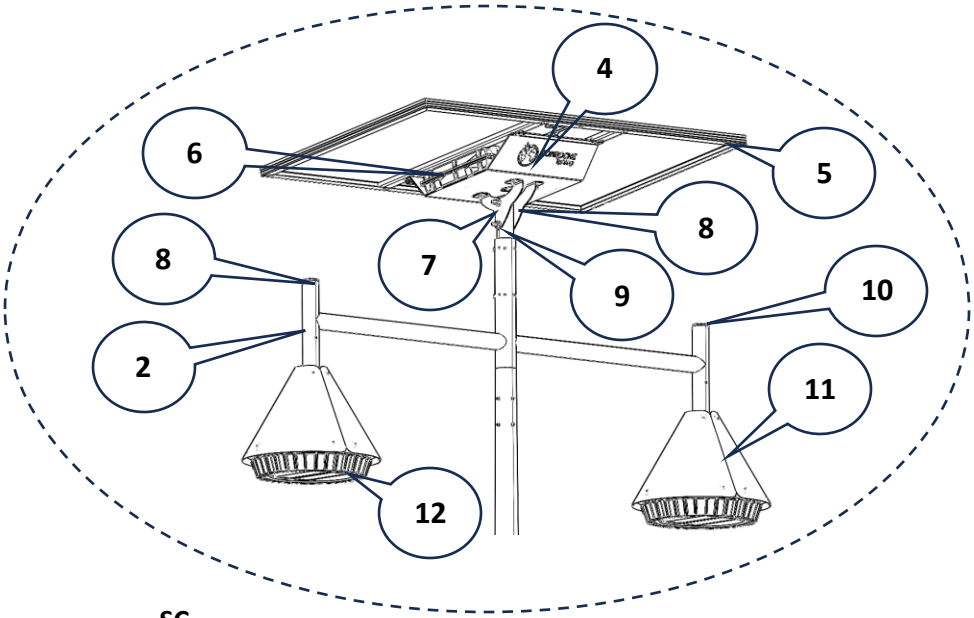
El plano de implantación **es proporcionado** por FONROCHE LIGHTING y **debe ser respetado** por el instalador.

En caso de fuente de sombra (árbol, edificio u otros…), el instalador **debe informar** a FONROCHE LIGHTING

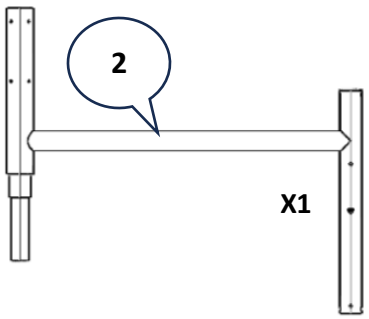




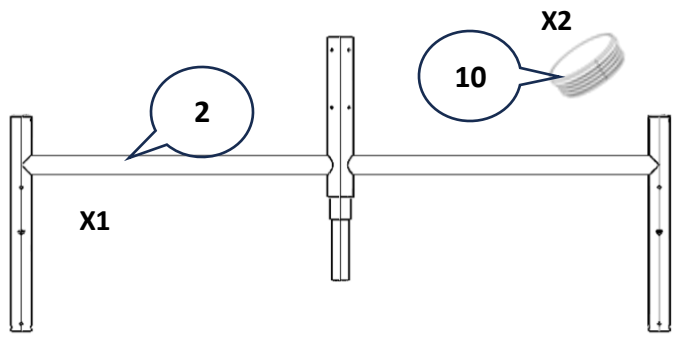
INVENTAIRE DES PIECES / PARTS INVENTORY / INVENTARIO DE PIEZAS

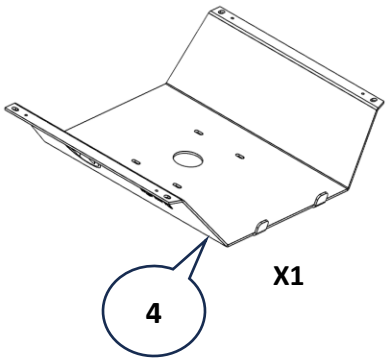


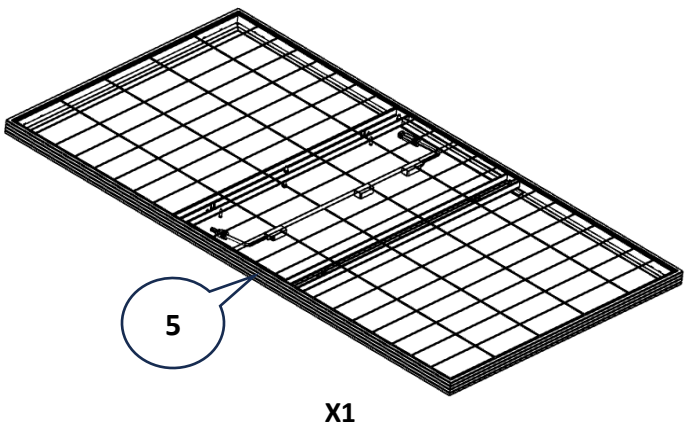
SC

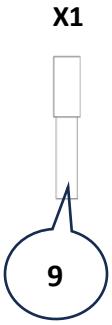


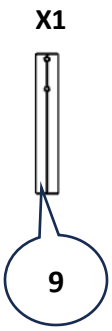
TWIN LED

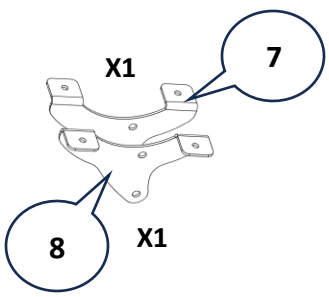






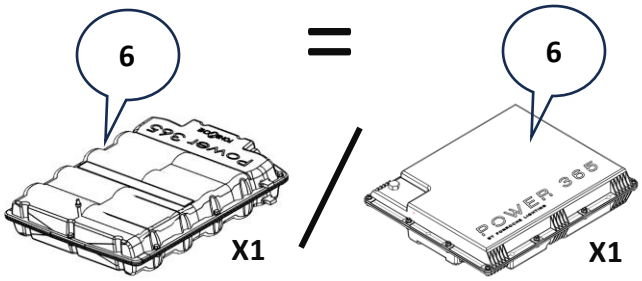


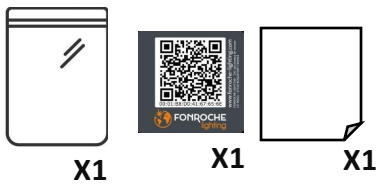


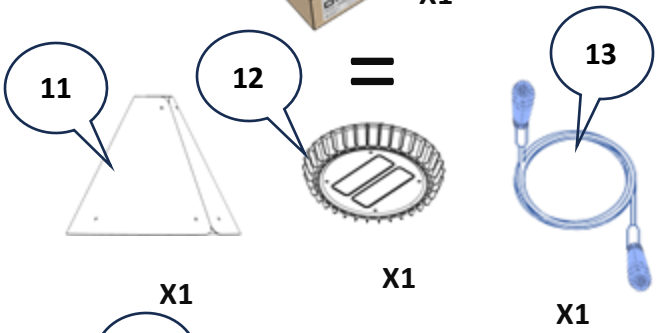


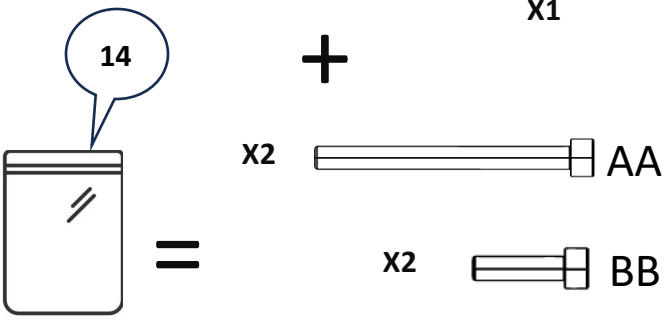
INVENTAIRE DES PIECES / PARTS INVENTORY / INVENTARIO DE PIEZAS

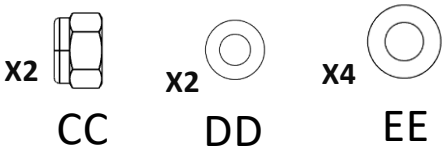
SC



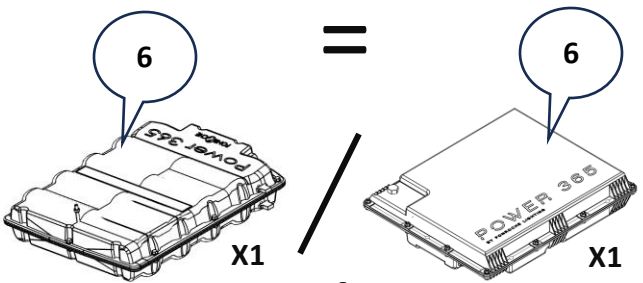


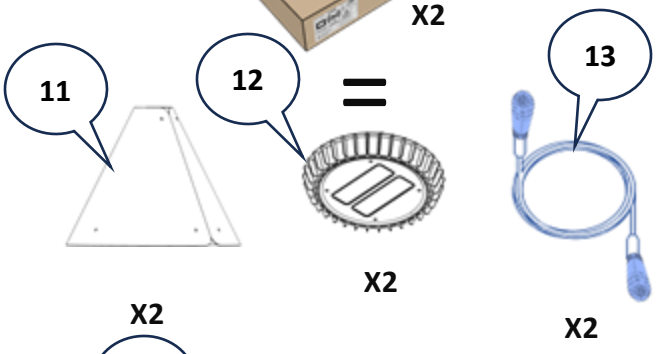


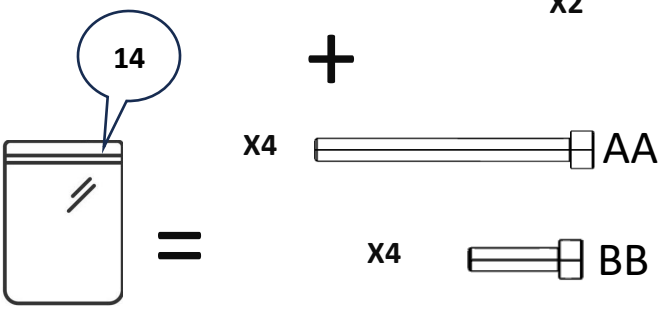


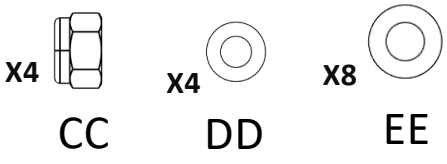


TWIN LED

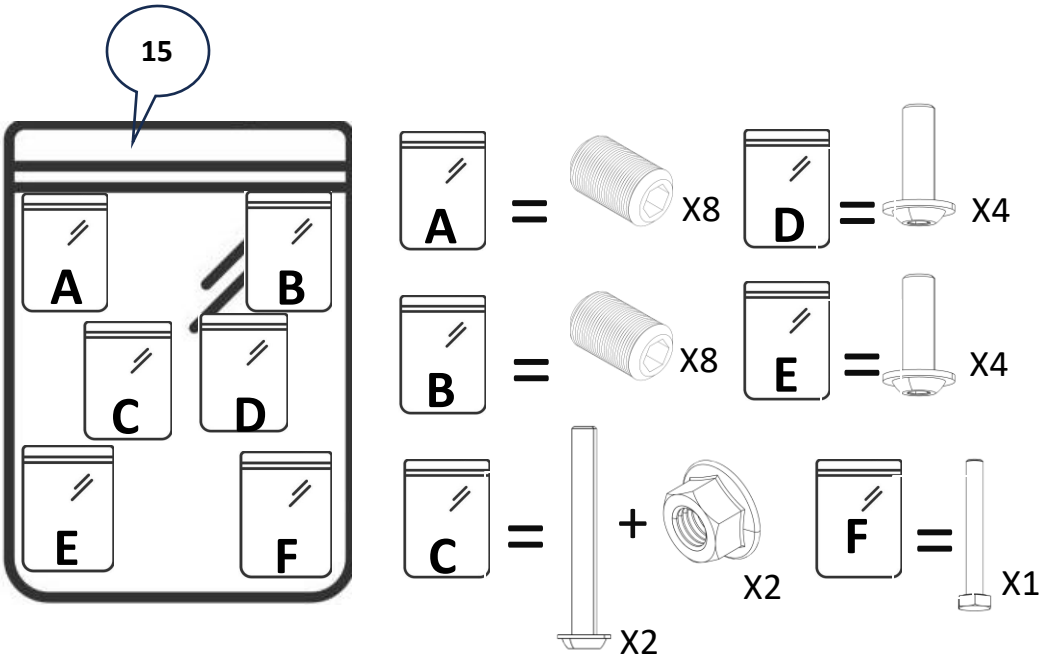








INVENTAIRE DES PIECES / PARTS INVENTORY / INVENTARIO DE PIEZAS

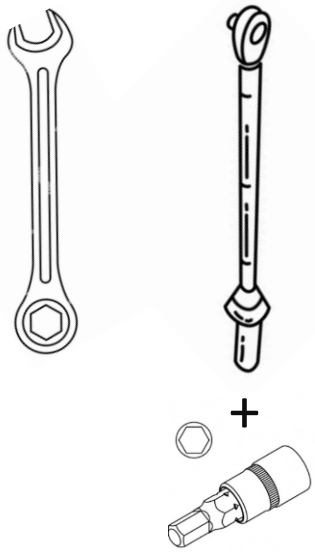


Fixations fournies par FONROCHE LIGHTING seulement
Visserie Frein Filet à usage unique = Retouche Interdite. Utiliser les kits complémentaires à disposition si besoin

Fasteners supplied by FONROCHE LIGHTING only
Single-use thread brake screws = Forbidden retouching. Use the additional kits available if necessary

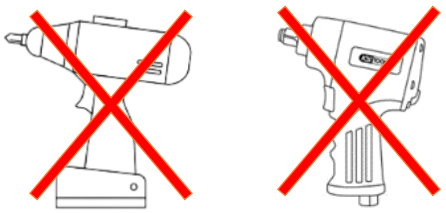
Elementos de fijación suministrados únicamente por FONROCHE LIGHTING
Tornillos de freno de rosca de un solo uso = Retoque prohibido. Utilice los kits adicionales disponibles si es necesario

OUTILS CONSEILLES / RECOMMENDED TOOLS / HERRMIENTAS

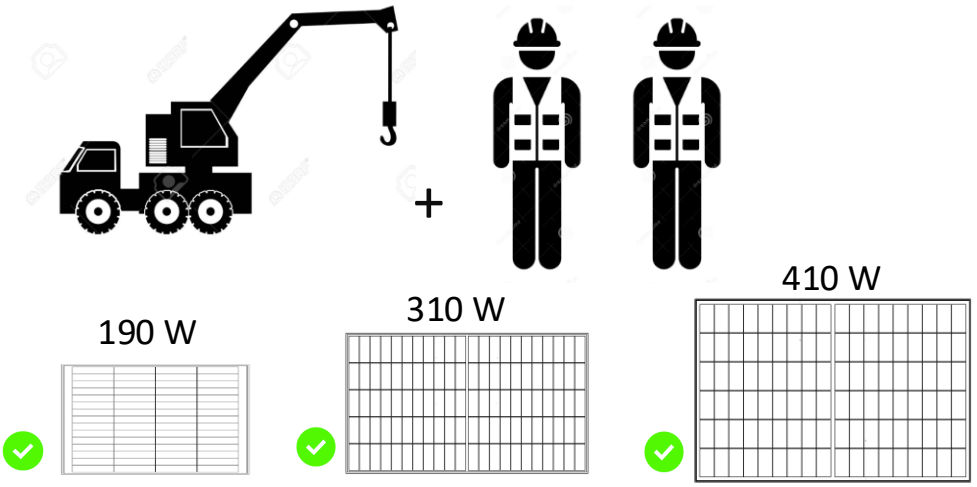


Outil fourni
Tool provided
Herramienta suministrada

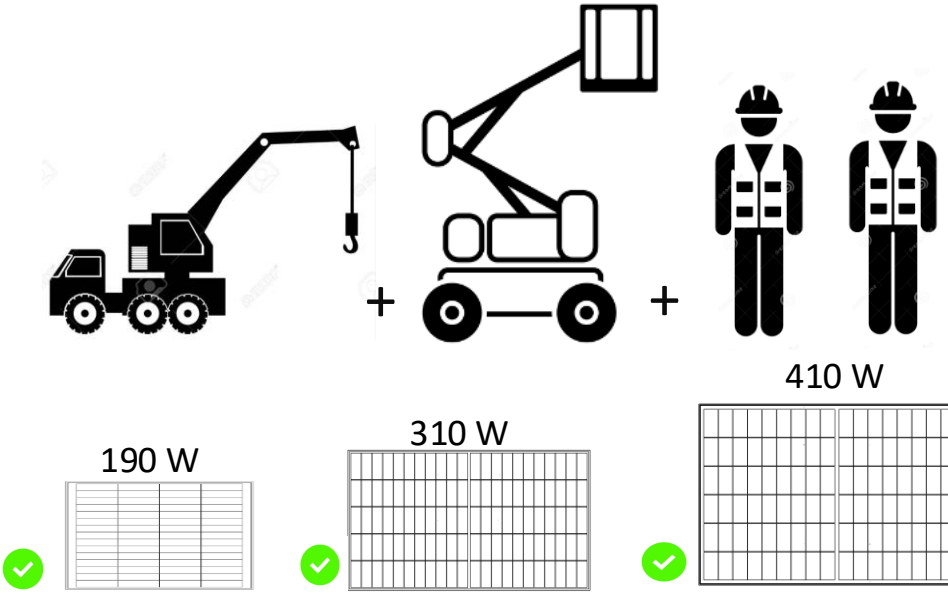
Outillages électroportatifs interdits
Power tools prohibited
Herramientas eléctricas prohibidas



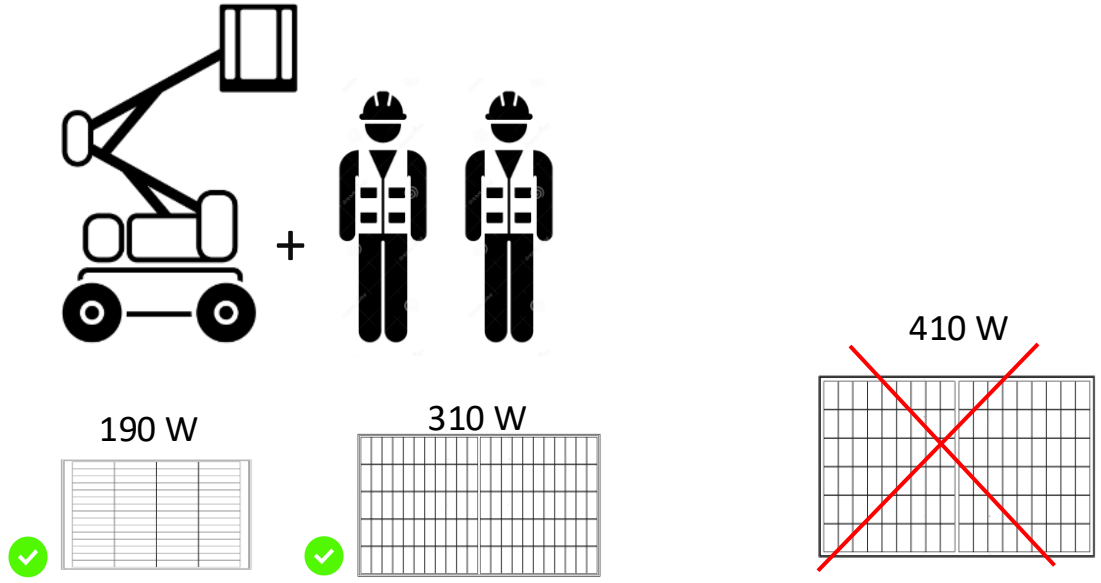
PRINCIPES ET CONSEILS DE MONTAGE / INSTALLATION PRINCIPLES AND ADVICE
PRINCIPIOS Y CONSEJOS DE MONTAJE



Scannez-moi

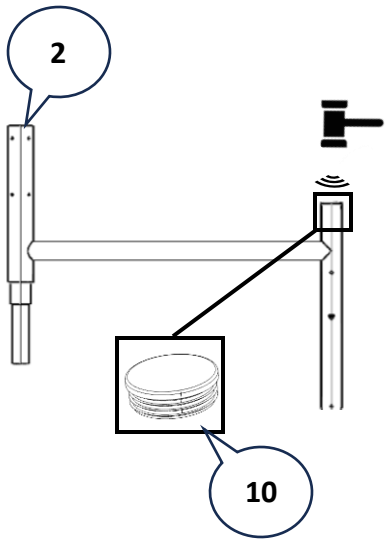


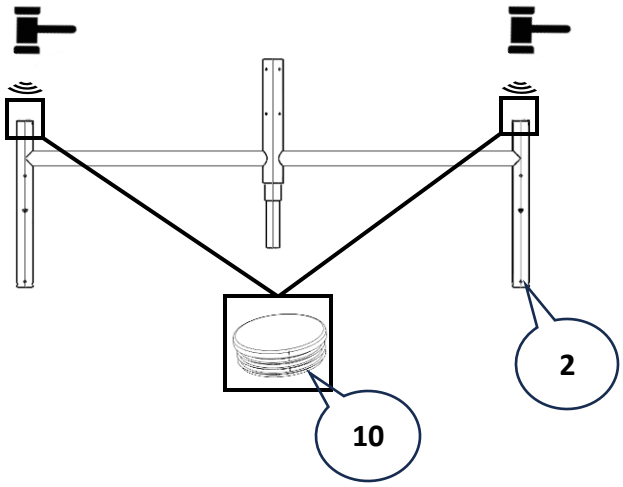
Scannez-moi



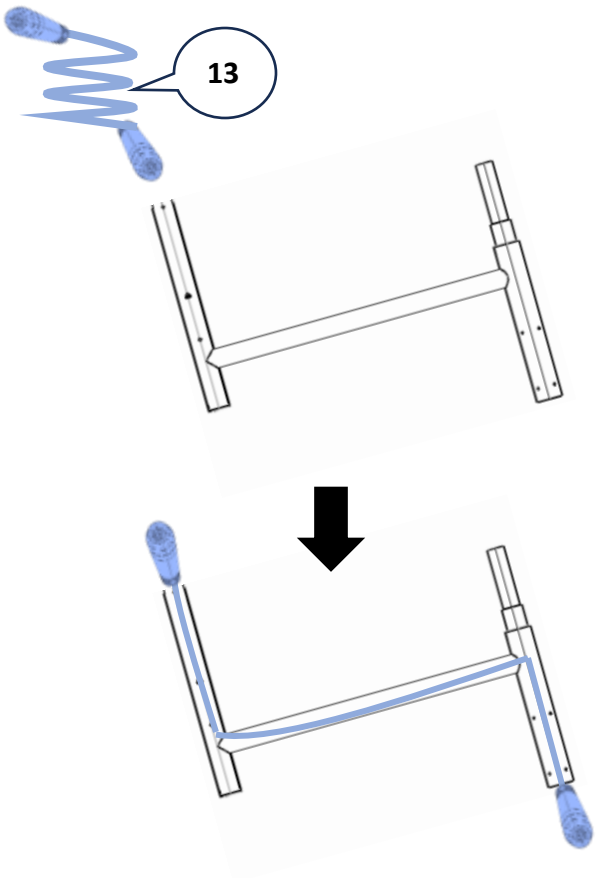
Scannez-moi

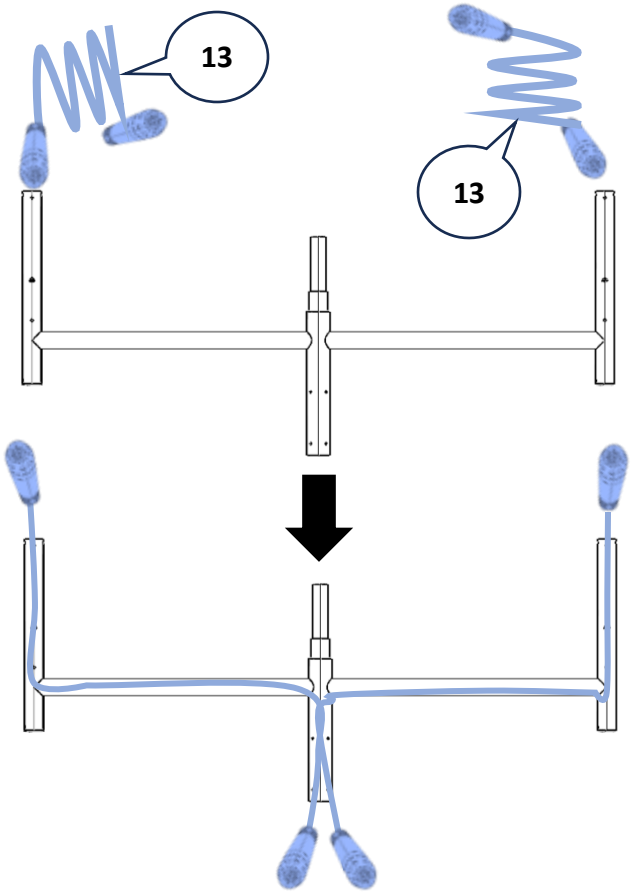
POSITIONNER BOUCHONS DANS LA CROSSE / PLACE THE CAPS ON THE ENDS OF THE ARM / COLOCAR LOS TAPONES EN LOS EXTREMOS





PASSAGE CÂBLES LANTERNES DANS CROSSE / ROUTING OF LANTERN CABLES THROUGH THE ARM / RUTEADO DE CABLES DE LA FAROLA POR DENTRO DEL BRAZO

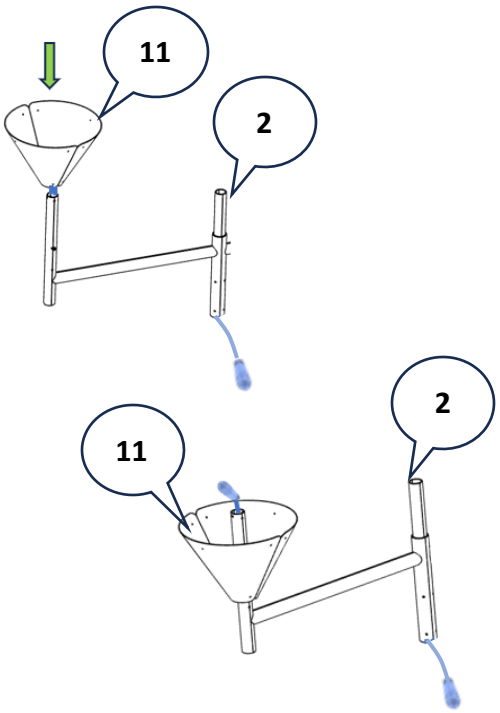


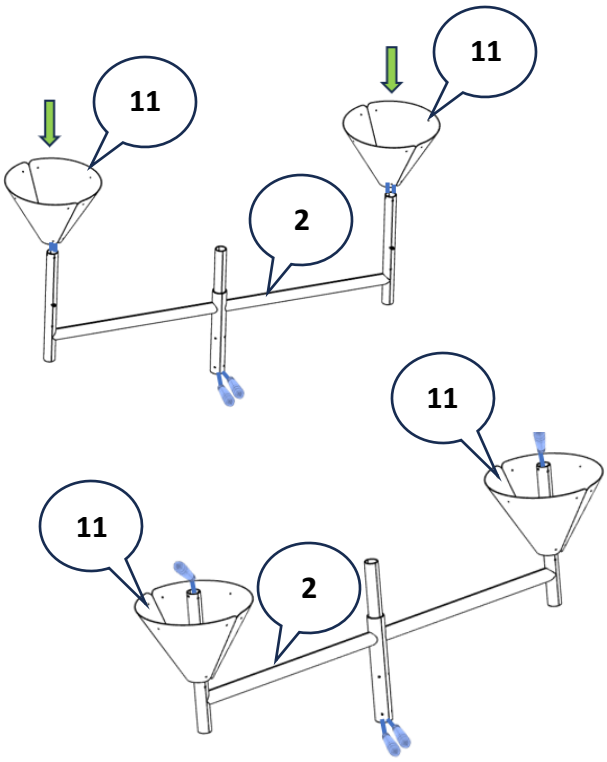


DETECTEUR / DETECTOR / DETECTOR

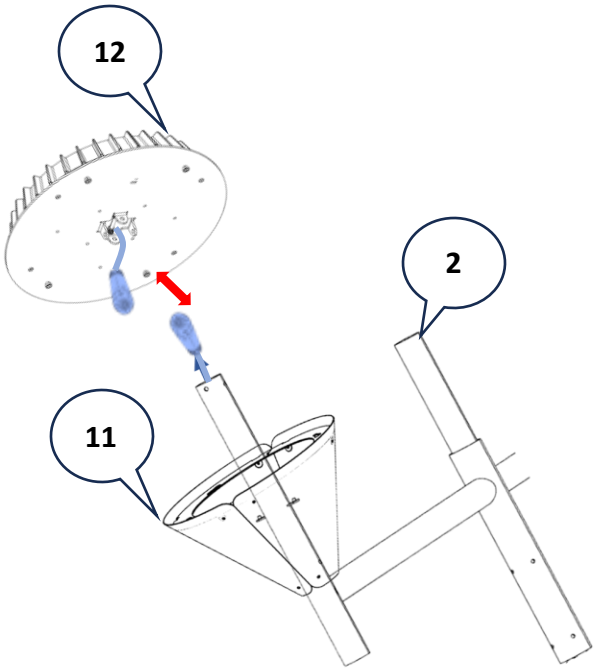
VOIR NOTICE DETECTEUR ETAPE « Perçage du mât»
SEE STEP DETECTOR MANUAL "Drilling the pole"
VER MANUAL DEL DETECTOR DE PASOS "Perforando el mástil"

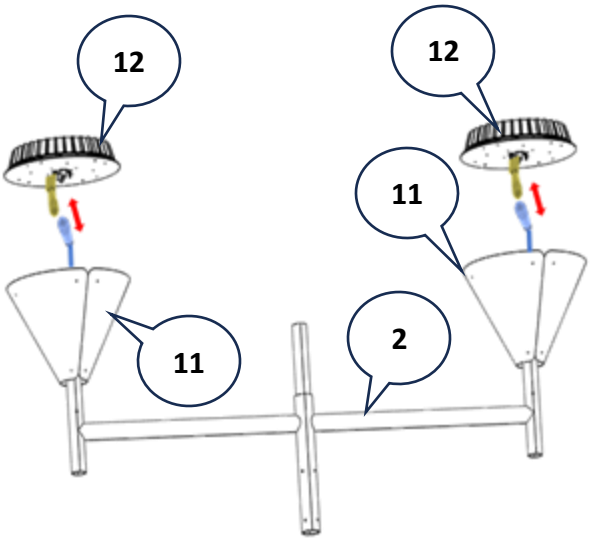
ENFILER LES PARTIES HAUTES DES LANTERNES / SLIDE THE TOP OF THE LANTERNS
COLOCAR LAS PARTES SUPERIORES DE LAS FAROLAS



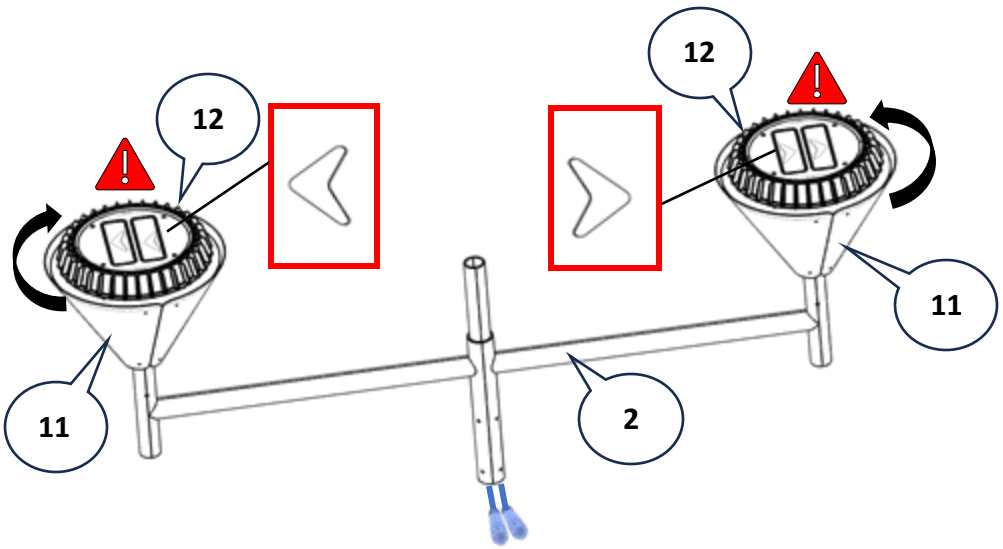


BRANCHER LES CÂBLES DE LA PARTIE BASSE DE LA LANTERNE / CONNECT THE CABLES TO THE LOWER PART OF THE LANTERN / CONECTAR LOS CABLES DE LA PARTE INFERIOR DE LA FAROLA

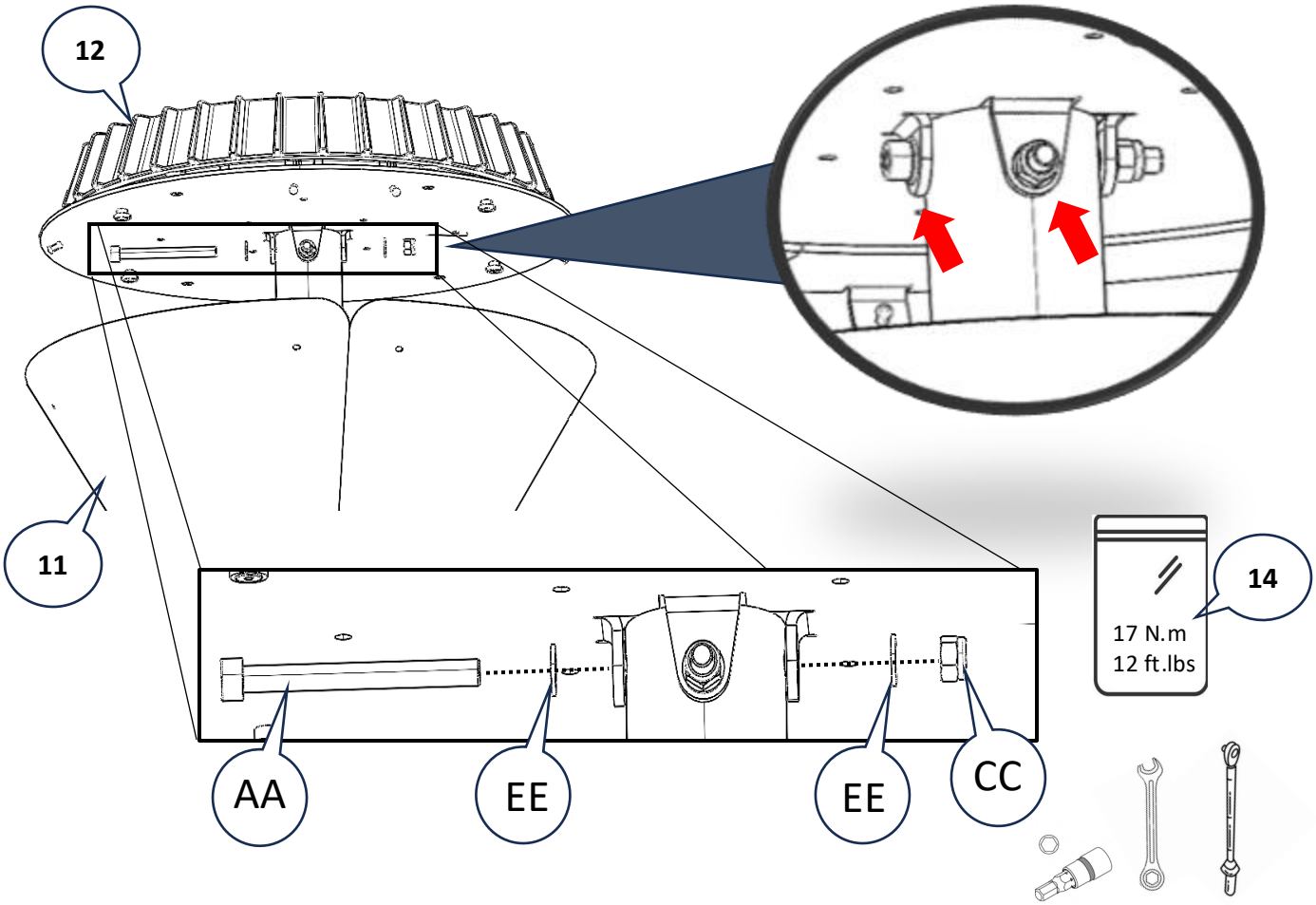




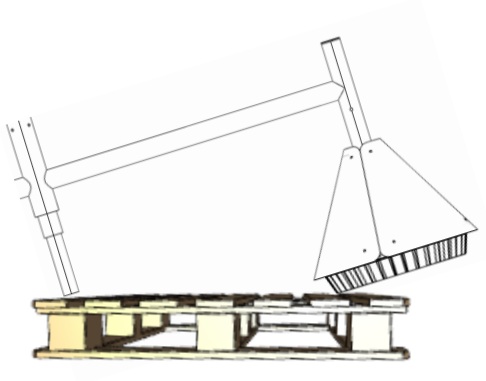
ORIENTATION DU BLOC LED LANTERNE / ORIENTATION LED LANTERN
ORIENTACION DE LED DE LA FAROLA

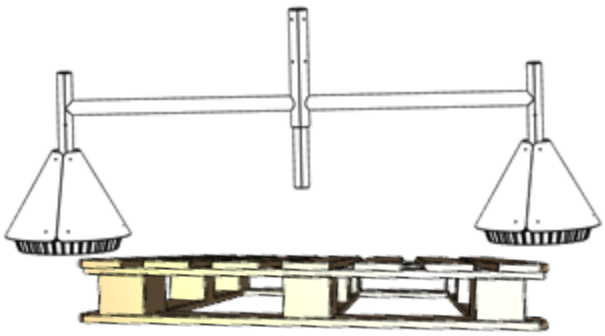


VISSER LA PARTIE BASSE DE LA LANTERNE / SCREW THE BOTTOM PART OF THE LANTERN
ATORNILLAR LA PARTE BAJA DE LA FAROLA

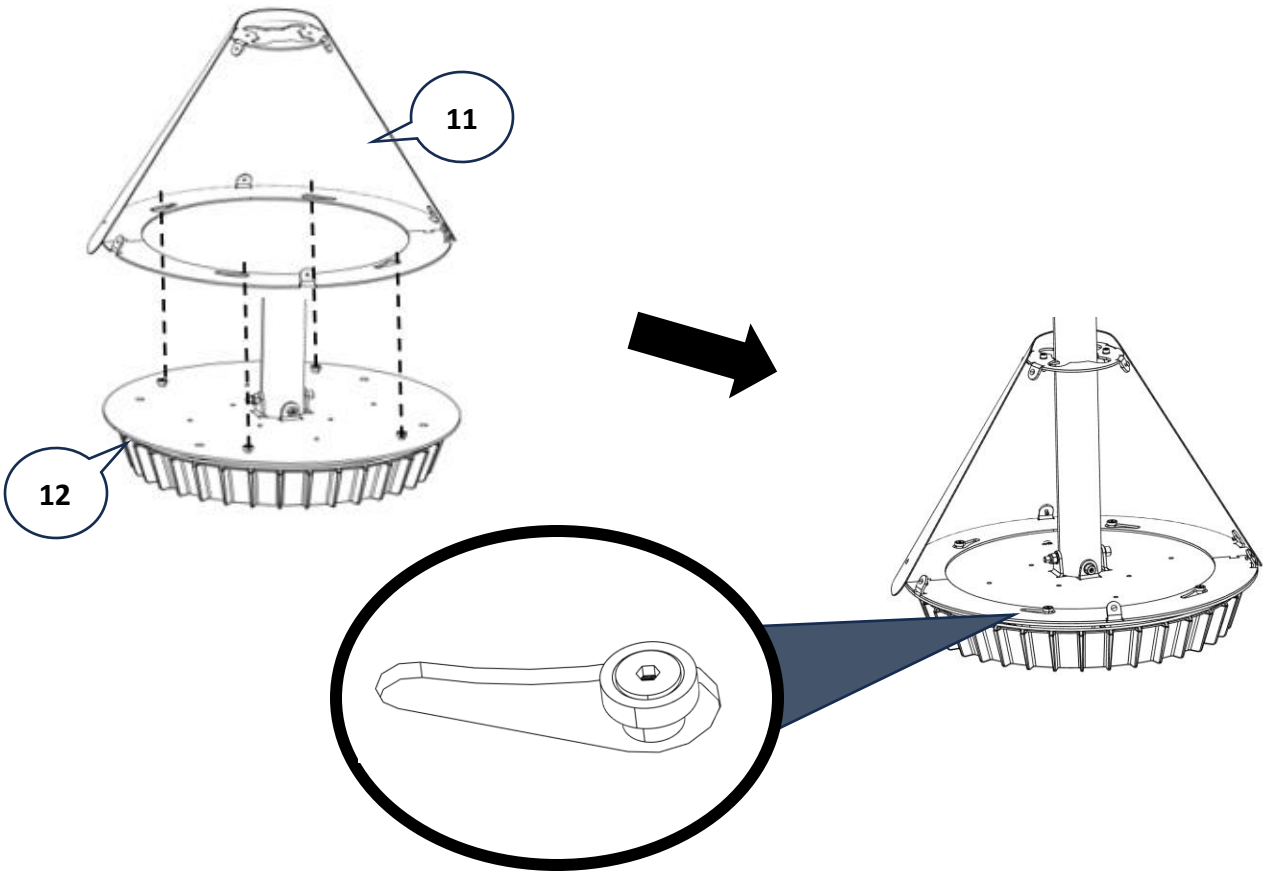


RETOURNER LA CROSSE / TURNING THE GRIP
GIRAR EL BRAZO

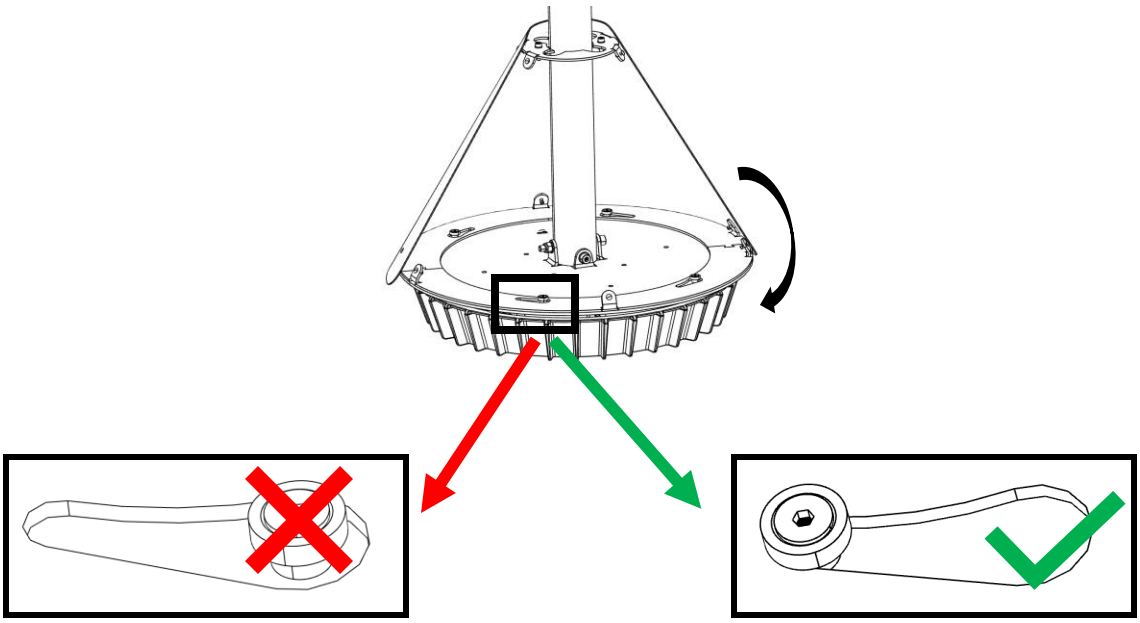




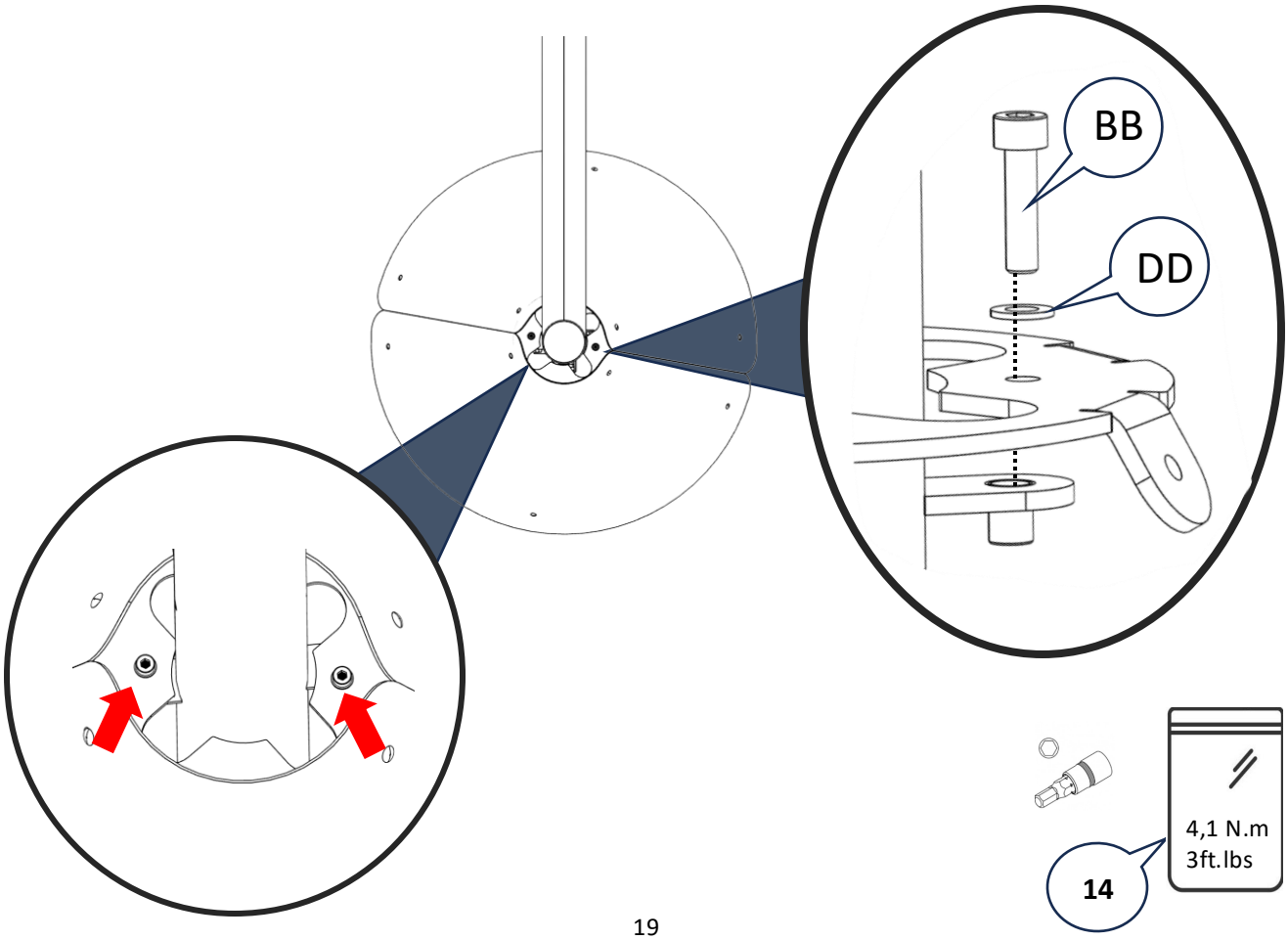
POSITIONNER LA PARTIE BASSE / POSITION THE LOWER PART
COLOCAR LA PARTE INFERIOR



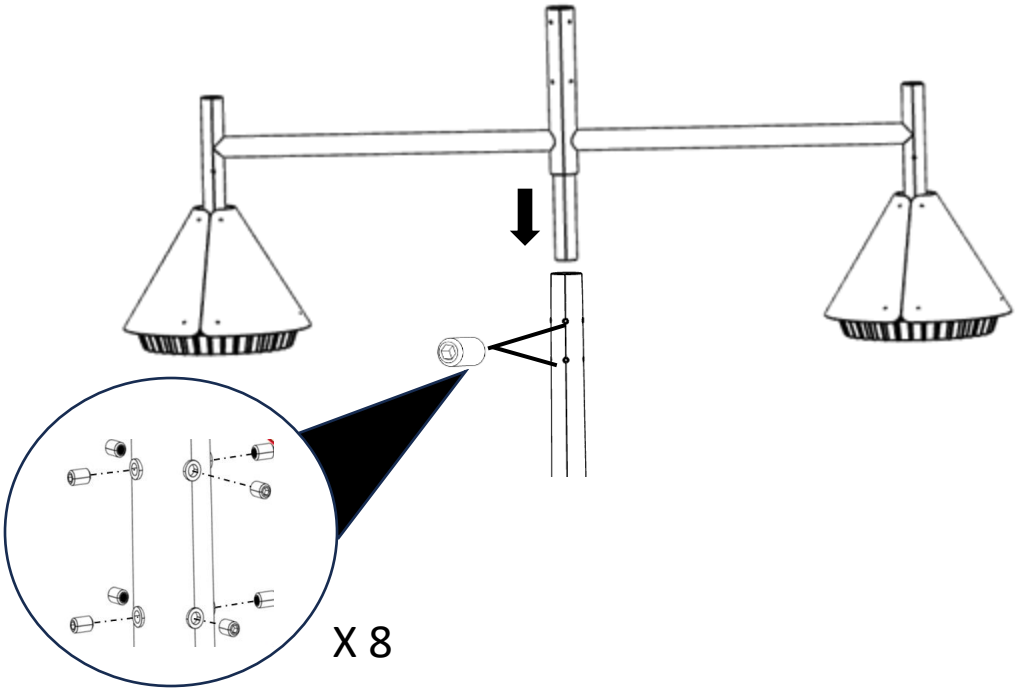
VERROUILLAGE LES LANTERNES / LOCK LANTERNS
FIJACIÓN DE LAS FAROLES



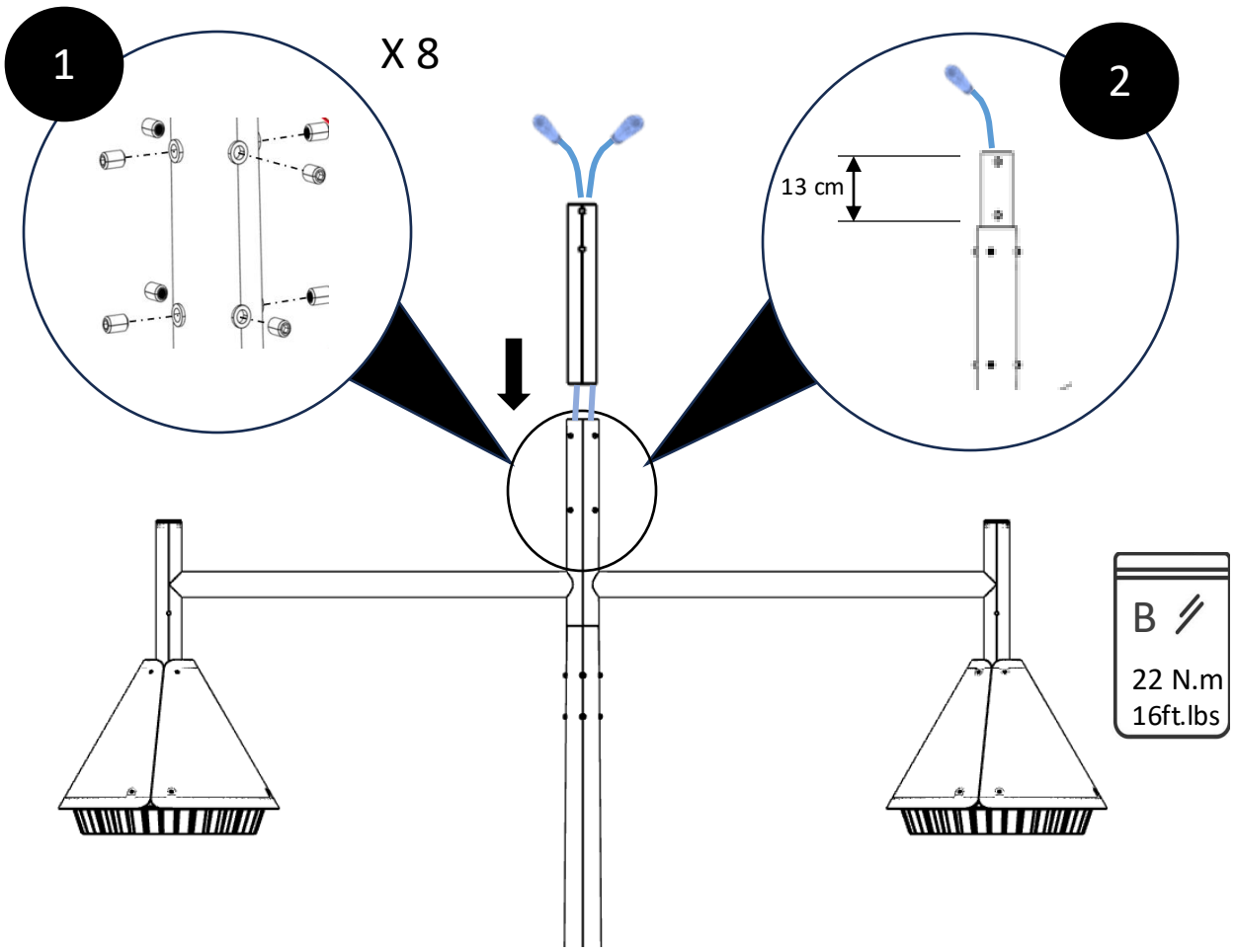
FIXATION DES LANTERNES / SCREW LANTERNS
ATORNILLAR LAS FAROLAS



MONTAGE DE LA CROSSE / CROSS ASSEMBLY / MONTAJE DE BRAZO

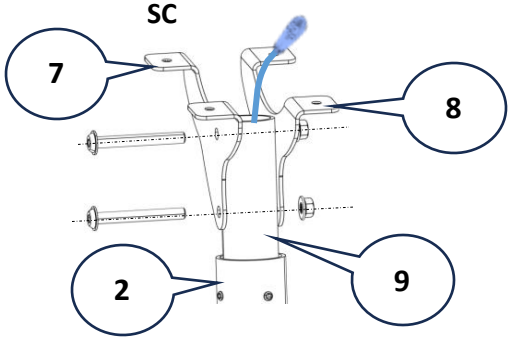


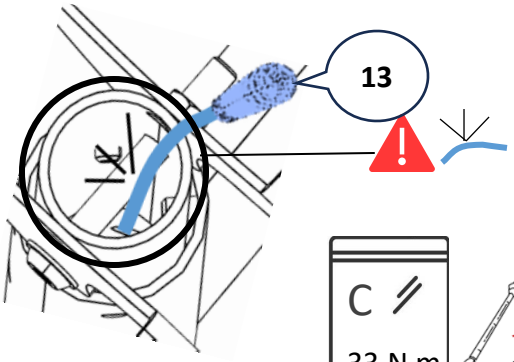
MONTAGE DU TUBE / TUBE ASSEMBLY / MONTAJE DEL TUBO



MONTAGE DES FLASQUES/ FLANGE ASSEMBLY / MONTAJE DE BRIDAS

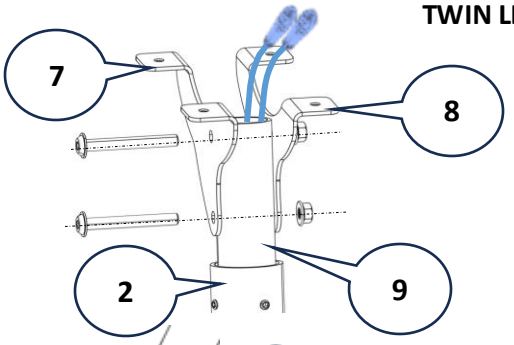
SC

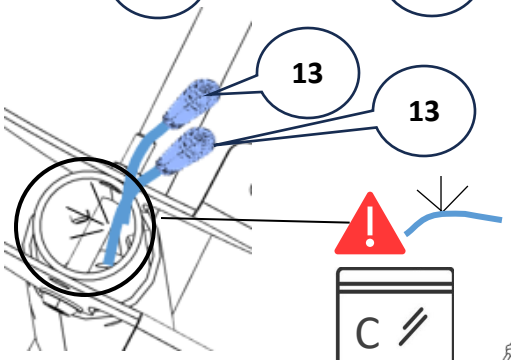




C
33 N.m
25 ft.lbs

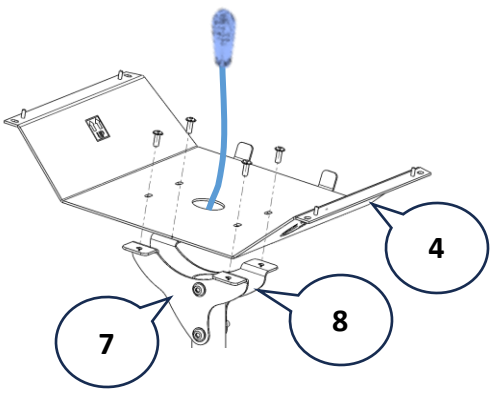
TWIN LED

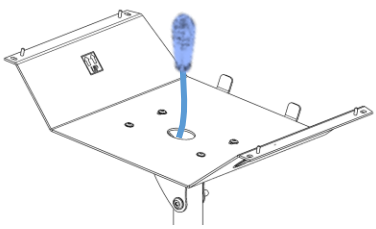




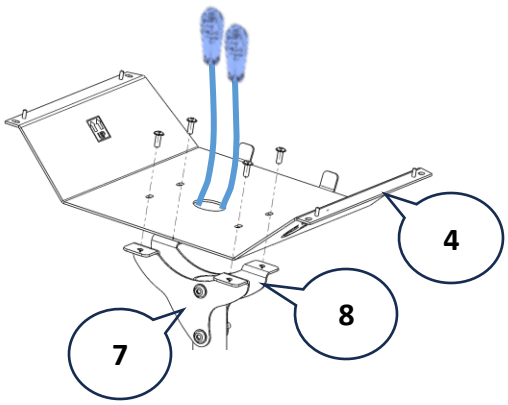
C
33 N.m
25 ft.lbs

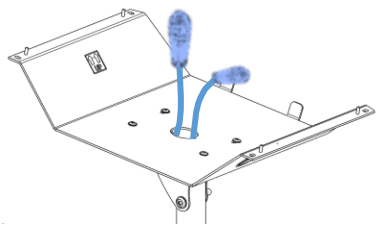
MONTAGE DU SUPPORT BATTERIE POWER 365 / INSTALLATION OF THE POWER 365 BATTERY SUPPORT / MONTAJE DE SOPORTE DE LA BATERIA POWER 365





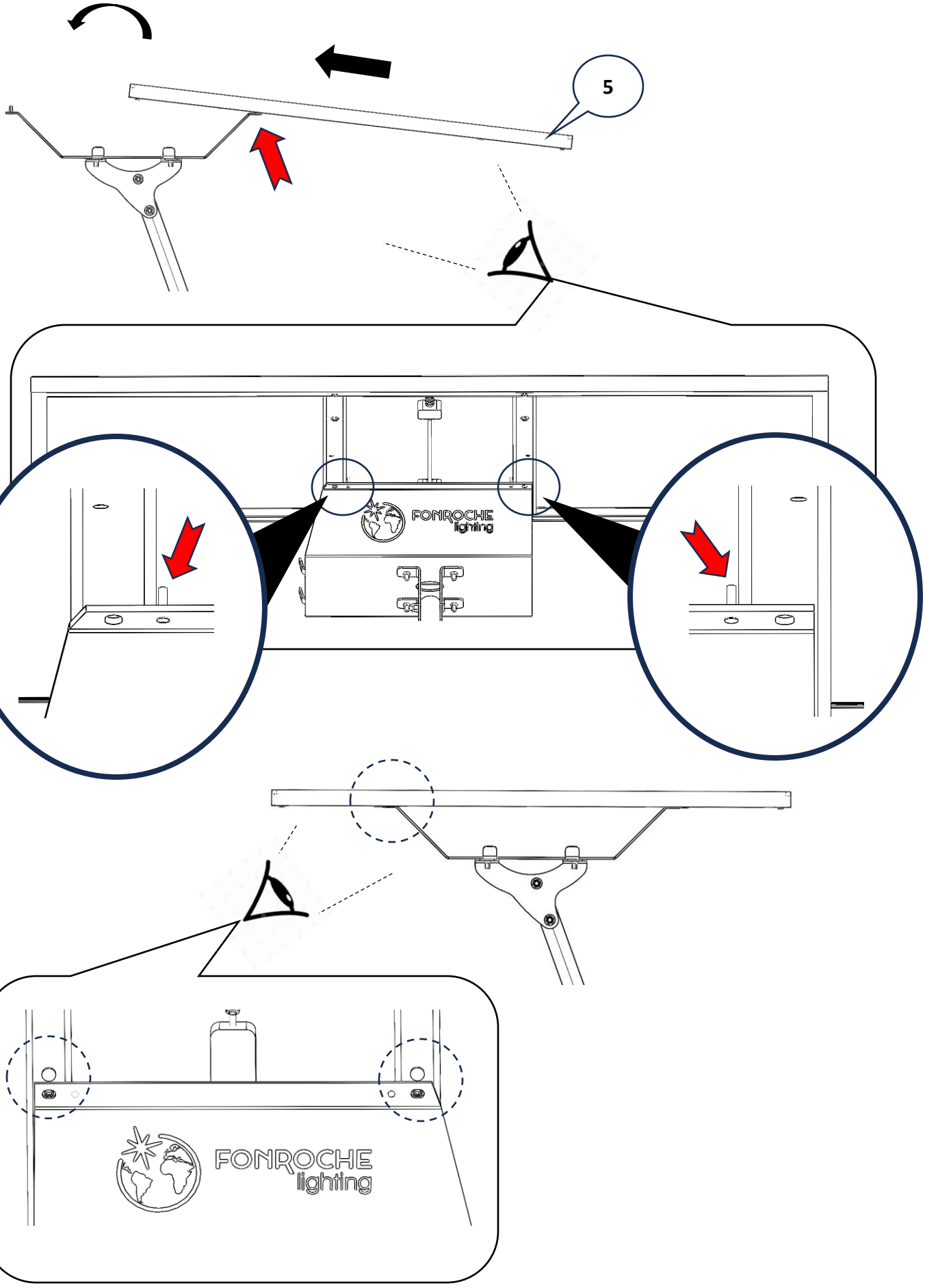
D
17 N.m
12 ft.lbs



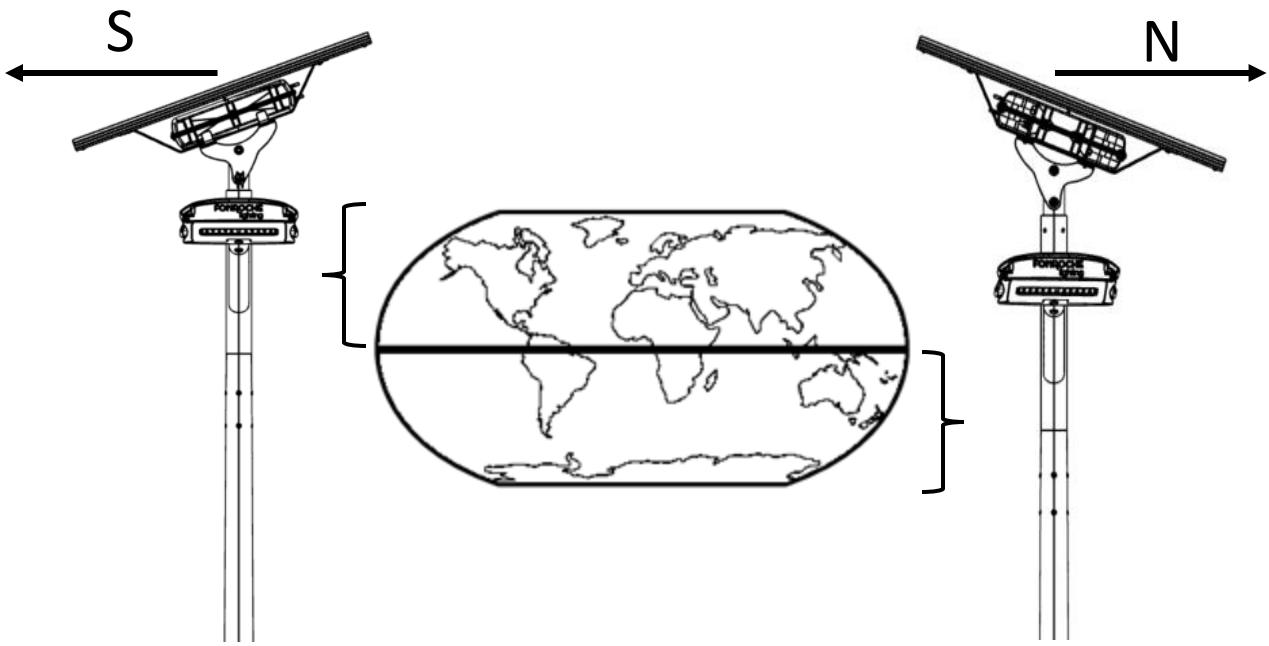


D
17 N.m
12 ft.lbs

FIXATION PANNEAU SOLAIRE / SOLAR PANEL MOUNTING / FIJACIÓN DEL PANEL SOLAR

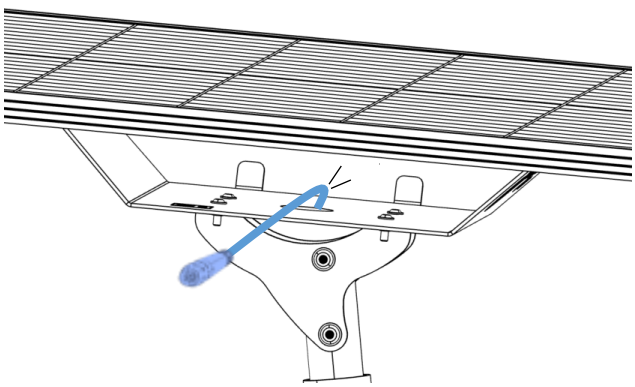


ORIENTATION PANNEAU SOLAIRE / SOLAR PANEL ORIENTATION / ORIENTACIÓN DEL PANEL SOLAR

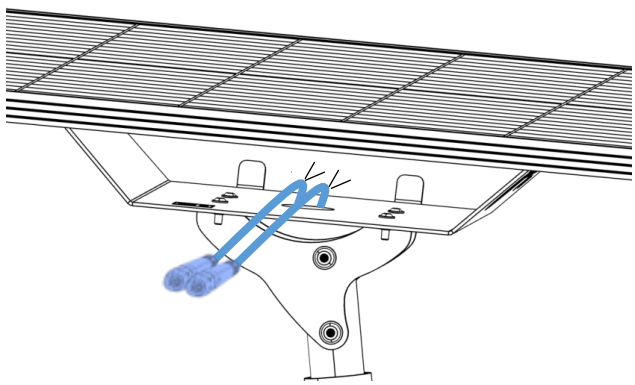


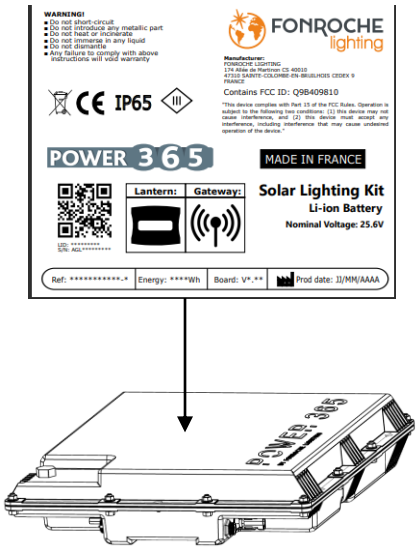
INSTALLATION DE LA BATTERIE POWER 365 / INSTALLATION OF THE POWER 365 BATTERY / INSTALACIÓN DE LA BATERIA POWER 365

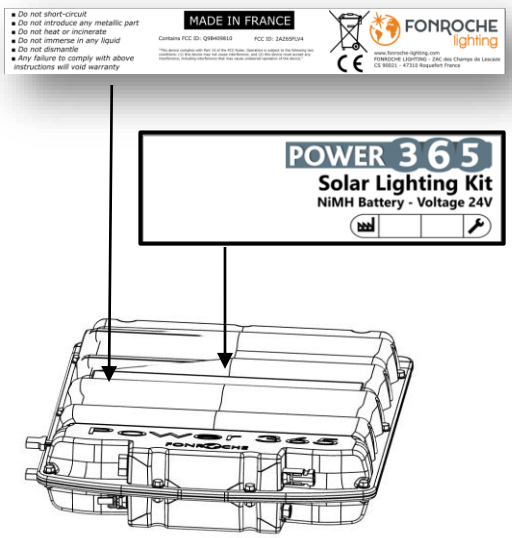
SC



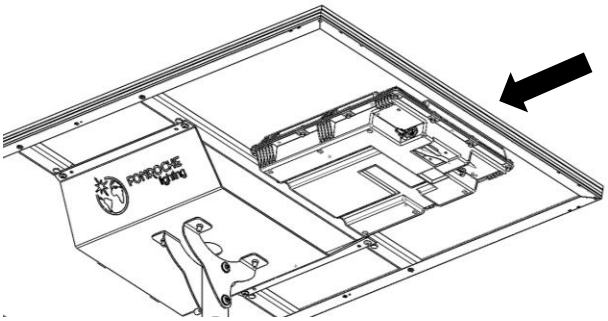
TWIN LED

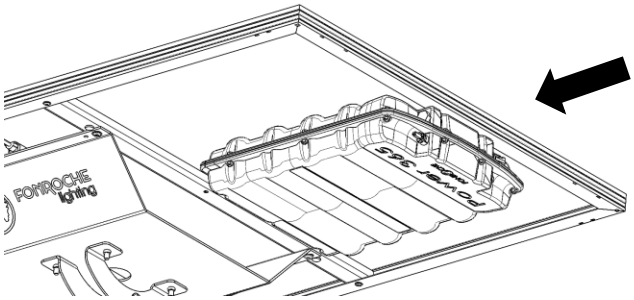


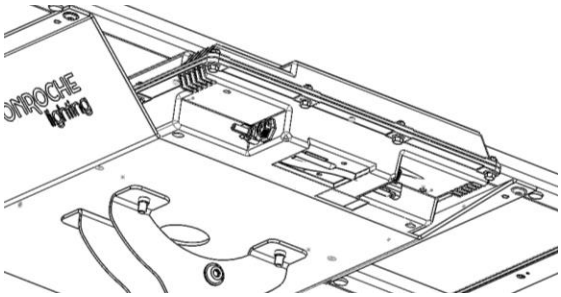


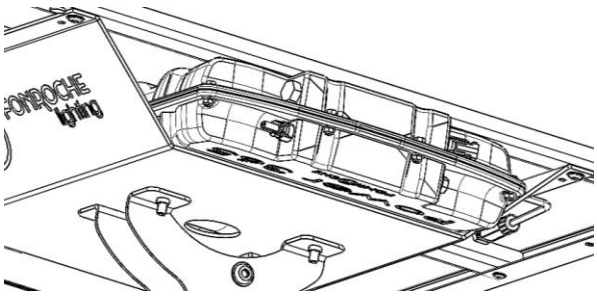


Etiquettes toujours au dessus / Labels always on top / Etiquetas siempre en la parte superior

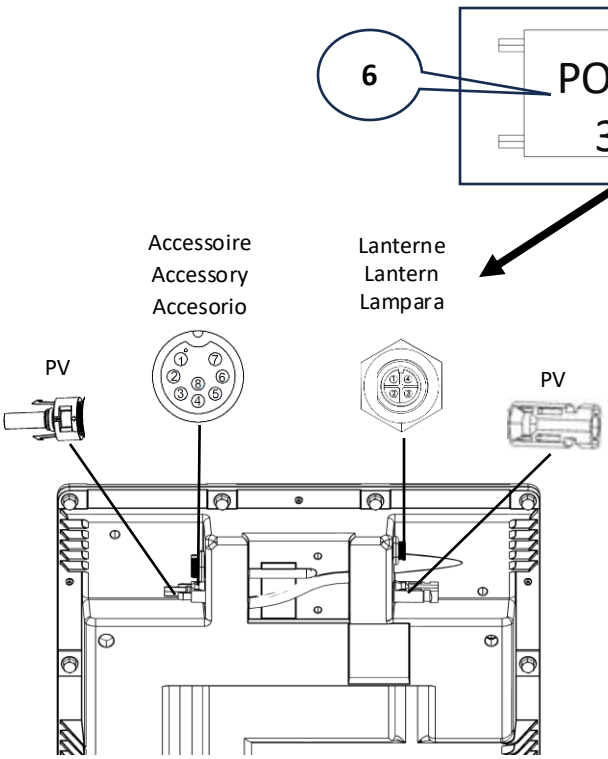


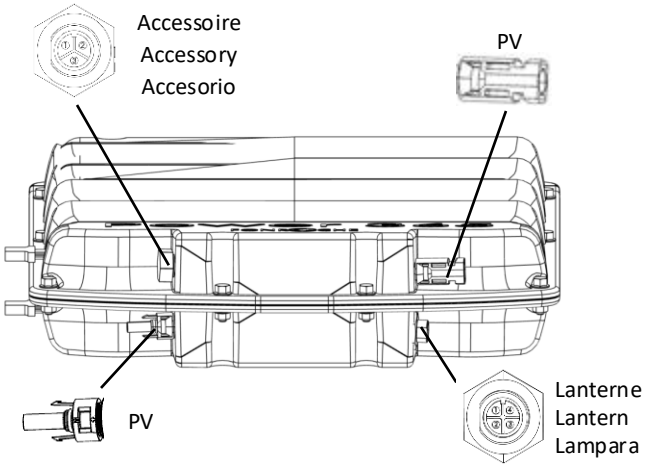




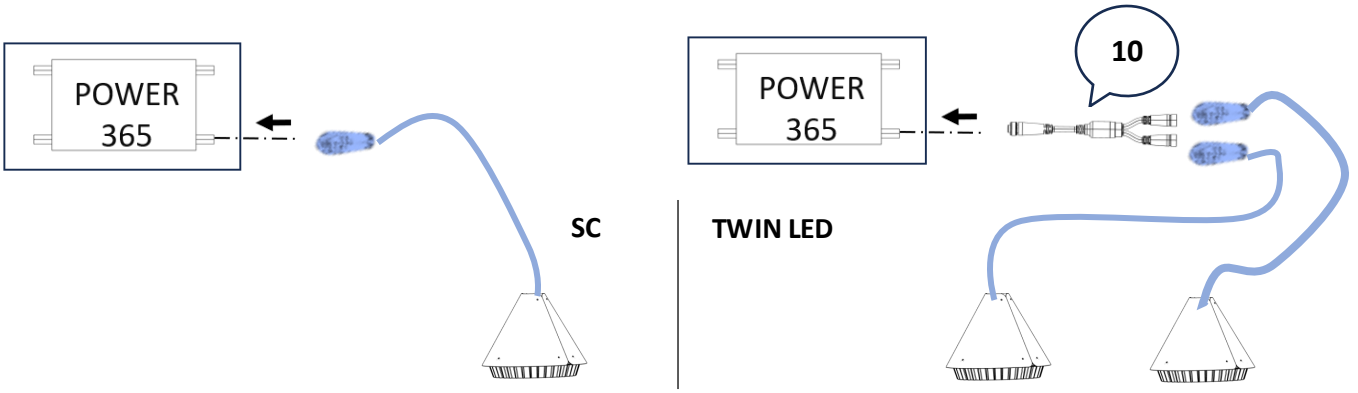


CONNECTION À LA BATTERIE POWER 365 / CONNECTION TO THE POWER 365 BATTERY / CONEXIÓN A LA BATERIA POWER 365

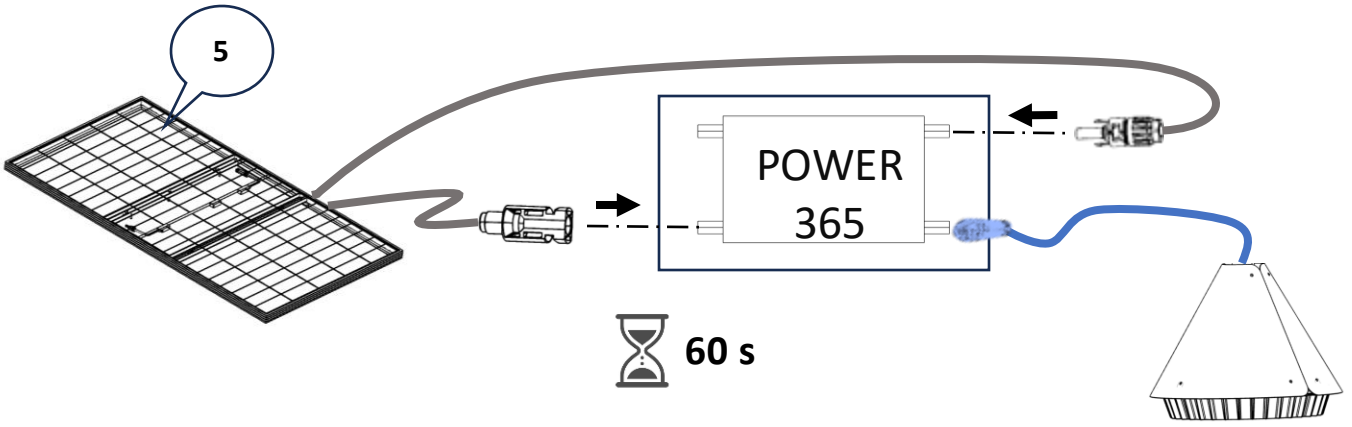




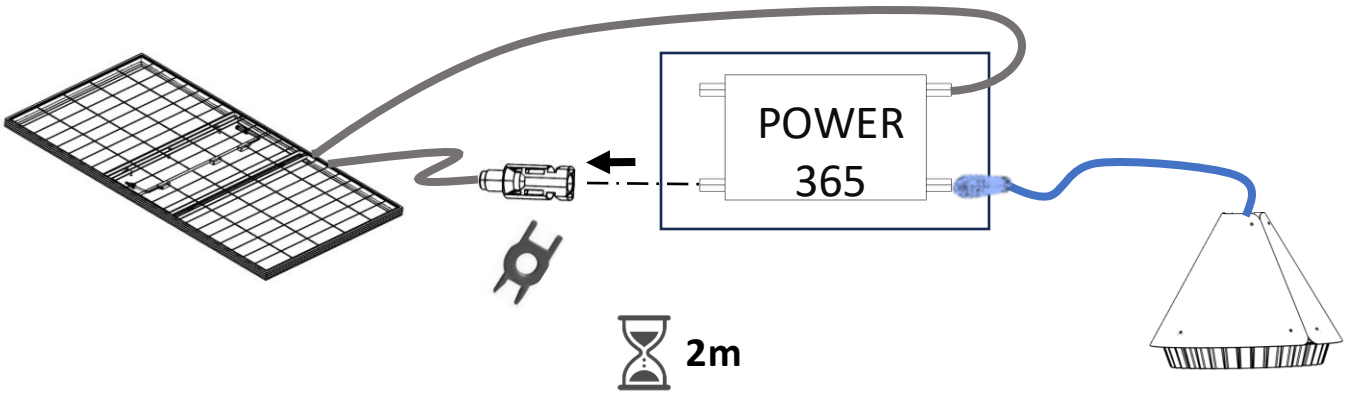
CONNECTION LANTERNE / LANTERN CONNECTION / CONEXION DE LA LAMPARA



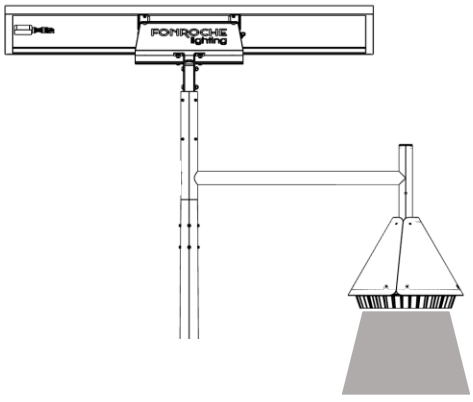
CONNECTION PANNEAU SOLAIRE / CONNECTION SOLAR PANEL / CONEXIÓN DEL PANEL SOLAR



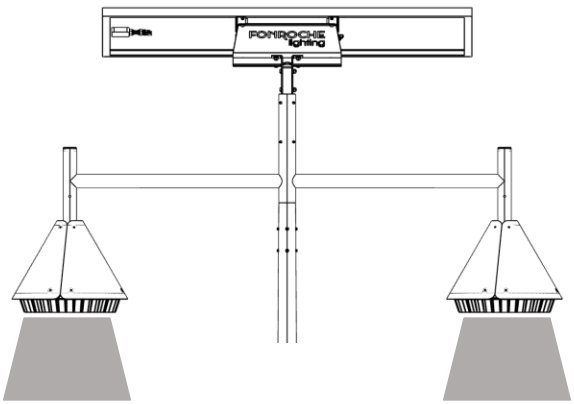
TEST DE L'INSTALLATION / TESTING THE INSTALLATION / PRUEBA DE LA INSTALACIÓN

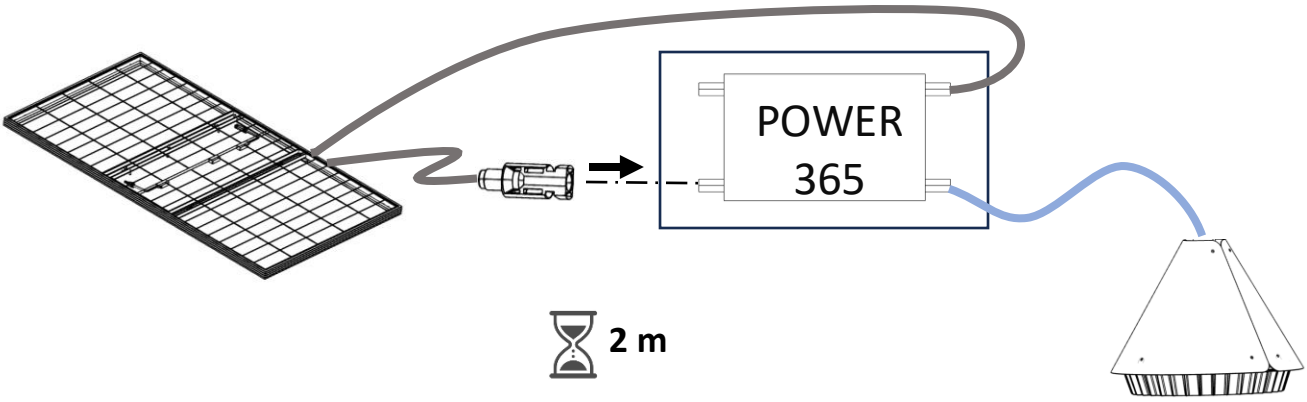


SC



TWIN LED





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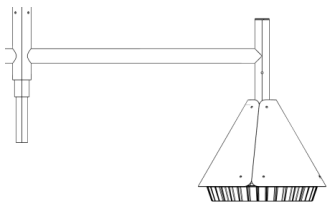
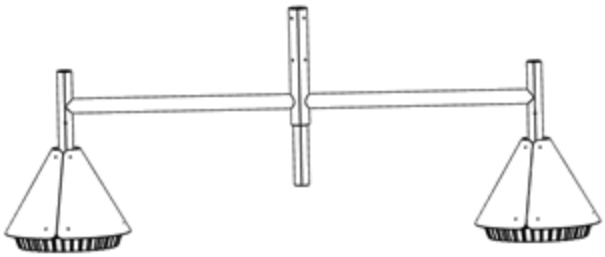
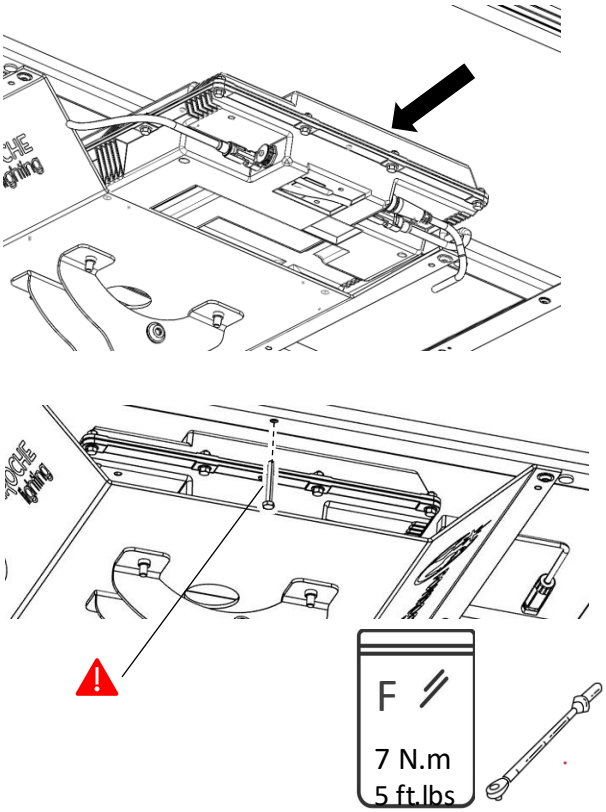
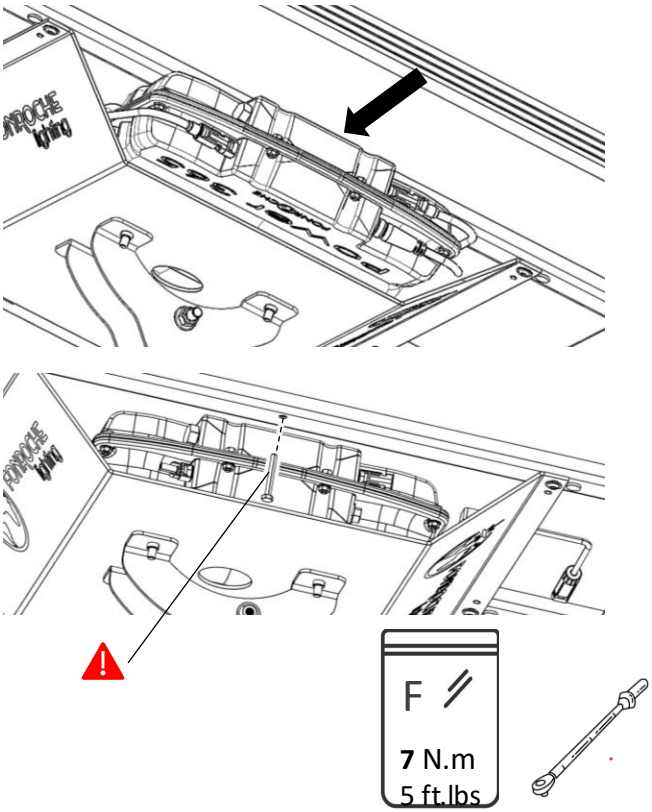


TWIN LED

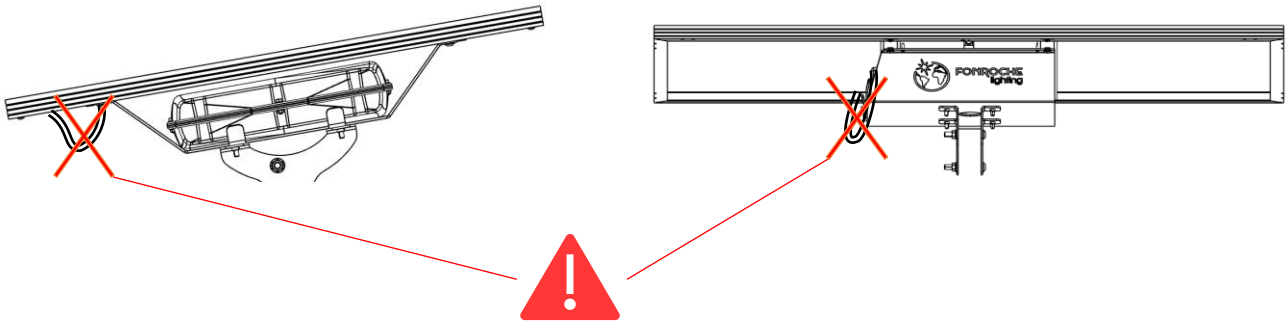


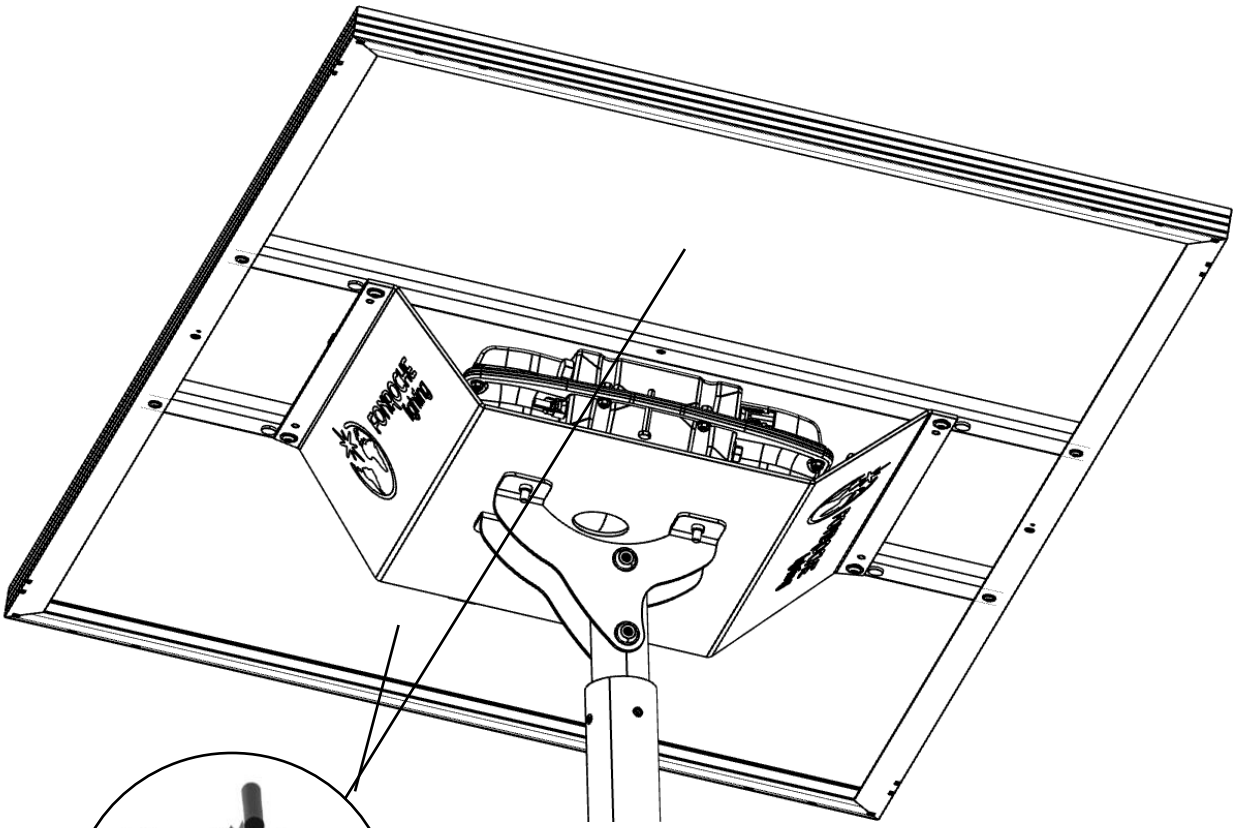
INSTALLATION VIS DE SÉCURITÉ / SECURITY SCREW INSTALLATION / INSTALACIÓN DE TORNILLOS DE SEGURIDAD



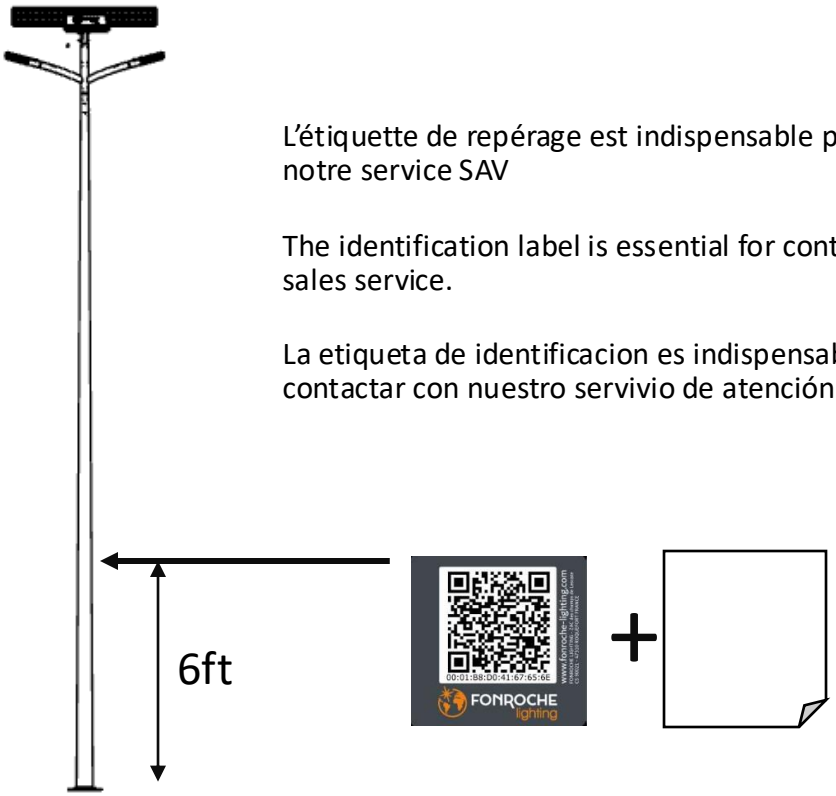


GESTION DES CÂBLES / CABLE MANAGEMENT / GESTIÓN DE CABLES





IDENTIFICATION DE L'INSTALLATION/ INSTALLATION IDENTIFICATION / IDENTIFICACIÓN E INSTALACIÓN



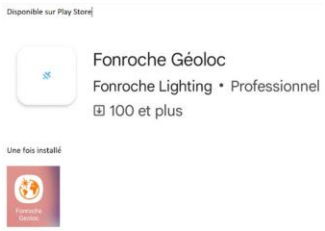
L'étiquette de repérage est indispensable pour contacter notre service SAV

The identification label is essential for contacting our after sales service.

La etiqueta de identificacion es indispensable para contactar con nuestro servivio de atención al cliente.

Géolocalisation du produit/ Product geolocation / Geolocalizacion del producto

Google Play



NOTICE FONROCHE GEOLOC / MANUAL DE UTILIZACION GEOLOC / FONROCHE GEOLOCATION MANUAL

Scannez-moi

FR

Scannez-moi

EN

Scannez-moi

ES

VERIFICATION

VERIFICATION	OUI	NON
La lanterne est-elle installée droite pour optimiser l'éclairage ?		
Les 16 vis pression sont-elles montées et correctement serrées ?		
Le PV est-il orienté vers l'équateur ?		
Si vous Installez plusieurs candélabres, les PV sont-ils tous orientés dans la même direction ?		
Les serre-câbles sont-ils bien tous installés pour que les câbles ne pendent pas ?		
Tout le matériel a-t-il été installé sur le candélabre ?		
S'il reste du matériel, vérifier sur la présente notice ce qui a été oublié et veillez à tout installer.		
La photos avec boussole et position du panneau vers l'équateur a-t-elle été bien réalisée ?		
La Géolocalisation a-t-elle été bien réalisée sur chaque candélabres a l'aide de l'étiquette Qr code sur le mât?		
- Les systèmes vis-écrou ont-ils bien été serrés aux couples recommandés ?		
Le mât a-t-il bien été fixer correctement avec le massif ?		
Le test d'initialisation a-t-il bien été réalisée ?		
L'installation est-elle soumis a l'ombrage ou l'éclairage artificiel ?		

CHECK

VERIFICATION	YES	NO
Is the lantern installed upright to optimise lighting ?		
Are the 16 pressure screws fitted and correctly tightened ?		
Does the PV face the equator ?		
If you install several lampposts, do all the PVs face the same direction?		
Are all the cable ties properly installed so that the cables don't hang down ?		
Has all the equipment been installed on the lamppost ?		
If any equipment remains, check these instructions to see what has been omitted and make sure everything is installed.		
Were the photos with the compass and the position of the panel towards the equator taken correctly?		
Has geolocation been carried out correctly on each lamppost using the Qr code label on the mast?		
Have the nuts and bolts been tightened to the recommended torque?		
Has the mast been correctly fixed to the base plate?		
Was the initialisation test carried out correctly?		
Is the installation subject to shading or artificial lighting?		

VERIFICACION

VERIFICACION	SI	NO
¿Está instalada la linterna de manera recta para optimizar la iluminación ?		
¿Está instalado correctamente el tornillo de bloqueo de la batería POWER 365 (Bag F)?		
¿Están montados y apretados correctamente los 16 tornillos de presión ?		
¿Está orientado el PV hacia el ecuador ?		
Si instala varios candelabros, ¿están todos los PV orientados en la misma dirección ?		
¿Están todos los sujeta cables bien instalados para que los cables no cuelguen ?		
¿Se han instalado todos los equipos en la farola ?		
Si queda algún equipo, compruebe estas instrucciones para ver qué se ha omitido y asegúrese de que todo está instalado.		
¿Se tomaron correctamente las fotos con la brújula y la posición del panel hacia el ecuador?		
¿Se ha realizado correctamente la geolocalización en cada farola mediante la etiqueta de código Qr del mástil?		
¿Se han apretado las tuercas y los tornillos con el par de apriete recomendado?		
¿Se ha fijado correctamente el mástil a la placa base?		
¿Se ha realizado correctamente la prueba de inicialización?		
¿La instalación está sometida a sombreado o iluminación artificial?		

TROUBLESHOOTING / ASSISTANCE ET SAV

Problèmes	Causes	Solutions
Le candélabre est allumé en plein jour	Mauvaise connexion du PV	• Vérifier que le PV soit correctement branché à la batterie Power 365
	PV défaillant	• Vérifier la tension aux bornes du PV à l'aide d'un multimètre. La tension mesurée doit être supérieure à 33V. Si ce n'est pas le cas, alors le PV est endommagé.
La lanterne ne s'allume pas	La tension aux bornes du PV est supérieure à la valeur caractéristique de la nuit	• Vérifier que le PV n'est pas éclairé par une source lumineuse
Le candélabre ne s'allume pas au moment du test	Mauvaise connexion des câbles	• Vérifier que tous les câbles sont connectés et verrouillés correctement sur la batterie Power 365
	Si installation à la tombée de la nuit, la tension n'est pas assez élevée pour réveiller le système	• Attendre le lendemain pour que la tension aux bornes du PV soit suffisante pour réveiller le système
	Le test d'initialisation ne fonctionne pas	• Prendre la tension à la sortie des connecteurs PV de la batterie. Le résultat doit être d'environ 1,5V. • Si résultat tension PV et Batteries OK, recommencer le test d'initialisation.
Le candélabre s'éteint au bout de quelques jours	Les batteries sont déchargées	• Vérifier la connexion du PV • Vérifier qu'il n'y a pas d'ombre sur le PV • Vérifier l'inclinaison et l'orientation du PV • Attendre quelques jours si c'est l'hiver, sinon contacter FONROCHE Lighting pour des investigations plus poussées

En cas de problème ou de question lors de la pose, contacter le SAV.

Tous les pays excepté les USA : savfl@fonroche-lighting.com ou Telephone +33 (0)5 40 40 90 04

USA: Support@Fonroche.US ou Telephone: (339)-225-4530

TROUBLESHOOTING / ASSISTANCE AND AFTER SALES

Problems	Causes	Solutions
The light remains switched on during the day	Wrong connection of the PV	• Check that the solar module is correctly connected to the Power 365 battery system unit.
	Defect of the solar module	• Verify open circuit voltage on the cable towards the module. You should measure a voltage higher than 33V. If not, the module is damaged.
The light doesn't work	Open circuit voltage during the night is higher than detection threshold for day/night detection	• Check that the solar module doesn't catch stray light from the surrounding.
The light doesn't work during installation test	Bad cables connection	• Check that all connectors are connected and correctly locked onto the Power 365 battery system unit.
	If the installation happens too late in the evening, the system unit doesn't detect the solar module and the system stays in low-power transport mode.	• Wait until next day so that the output voltage of the solar module is high enough.
	Initialization test not working	• Measure the voltage at the output of the battery's PV connector. The result should be around 1.5V. • If PV voltage and battery result is OK, restart initialization test.
The light doesn't work after it has been working for several days	Batteries are discharged	• Check the connections of the solar module. • Check that there is no shadow on the solar module. • Check tilt angle and orientation of the solar module. • Wait some days if it is winter, if not call FONROCHE Lighting for further actions.

If you have any problems or questions during installation, please contact our after-sales service.

''all countries except the USA''.: savfl@fonroche-lighting.com or Telephone +33 (0)5 40 40 90 04

USA: Support@Fonroche.US or phone: (339)-225-4530

SOLUCIÓN DE PROBLEMAS / ASISTENCIA Y SERVICIO

Problemas	Causas	Soluciones
La farola está encendida de día	Mala conexión del PV	• Comprobar que el PV sea correctamente conectado a la batería Power 365.
	PV defectuoso	• Comprobar el voltaje del PV con un multímetro. El voltaje medido debe estar superior a 33V. Si no, quiere decir que el PV está estropeado.
La farola no funciona	El voltaje del PV es superior al valor característico de la noche	• Comprobar que el PV no sea iluminado por una fuente luminosa.
La farola no se enciende durante el test	Mala conexión de cables	• Comprobar que todos los cables sean correctamente conectados y bloqueados sobre la batería Power 365.
	Si la instalación ocurre durante la salida del sol, no hay bastante voltaje para arrancar el sistema	• Esperar por la mañana para que el voltaje del PV sea suficiente para arrancar el sistema.
	El test de inicialización no funciona	• Mida la tensión en la salida de los conectores PV de la batería. El resultado debe ser de aproximadamente 1,5 V. • Si los resultados de la tensión PV y de la batería son correctos, repita la prueba de inicialización.
La farola se apaga después algunos días	Las baterías están descargadas	• Comprobar la conexión del PV • Comprobar que no hay sombra sobre el PV • Comprobar la inclinación y la orientación del PV • Esperar algunos días si es el invierno, sino llama a FONROCHE Lighting para investigaciones más detalladas.

Si tiene algún problema o duda durante la instalación, póngase en contacto con nuestro Servicio Posventa

''todos los países excepto EE.UU.'': savfl@fonroche-lighting.com or Telephone +33 (0)5 40 40 90 04

USA: Support@Fonroche.US or phone: (339)-225-4530

POLE SETTING COMPOUND SPEC SHEET

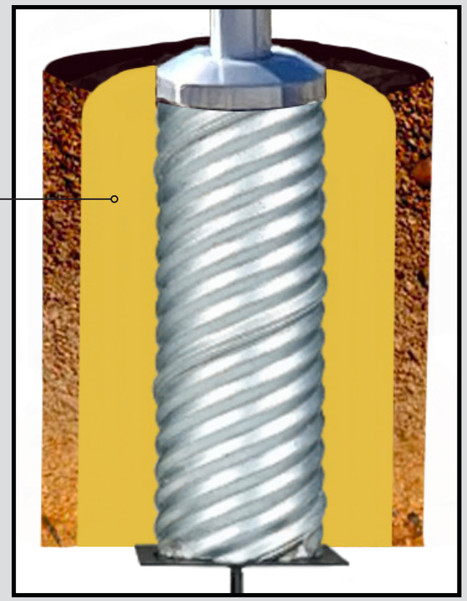
EAGLE MOUNTAIN
Flag & Flagpole

Post Setting Polyurethane Foam for Lasting Results

EAGLE MOUNTAIN
Flag & Flagpole

Polecrete® STABILIZER

Locks ground sleeve into place to firmly stabilize into the surrounding soil.



Field proven since 1988 as a viable alternative to concrete, Polecrete® Stabilizer is equally as strong yet does not require additional elements to complete the job. Delivered in lightweight, portable kits, there is no need for a water source. Ideal in sand, rock and poor soil conditions, Polecrete Stabilizer works year-round in any temperature and continues working for many years to stabilize foundations for flagpoles.

STANDARD SKU LIST
1.0 cu. ft. – Box – PSC1.0CUFT
2.5 cu. ft. – Box – PSC2.5CUFT
3.75 cu. ft. – Box – PSC3.75CUFT
5.0 cu. ft. – Box – PSC5.0CUFT
6.0 cu. ft. – Box – PSC6.0CUFT
7.0 cu. ft. – Box – PSC7.0CUFT
10.0 cu. ft. – Pail – PSC10.0CUFT

MADE IN USA

Benefits

- ✓ Ideal for Remote Locations
- ✓ No Need for Water Source
- ✓ Expands 15X Original Volume
- ✓ Sets in 15 Minutes
- ✓ Resists 500+ lbs. of Lateral Force
- ✓ Non-Hazardous

Void Fill Calculator

QUICK REFERENCE CHART – FOR POLES UP TO 60 AFG

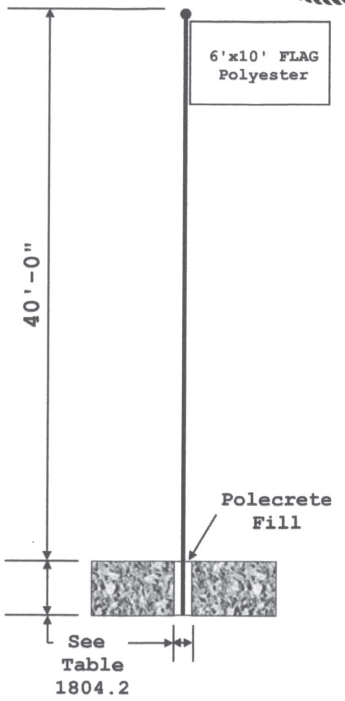
POLE HEIGHT (FT.)	GROUND SLEEVE DIAMETER	GROUND SLEEVE DEPTH (IN.)	HOLE DIAMETER (IN.)	CU. FT.	SKU
20	8	24	14	2.0	PSC1.0CUFT (2 QTY)
25	10	36	16	3.5	PSC3.75CUFT
30	10	36	16	2.5	PSC2.5CUFT
35	10	42	16	3.5	PSC3.75CUFT
40	12	48	20	3.5	PSC3.75CUFT
45	12	48	20	3.5	PSC3.75CUFT
50	15	60	22	7.0	PSC7.0CUFT
60	15	72	22	8.5	PSC10.0CUFT

For more detailed void fill calculations, scan the QR code.

Design Specifications

L Troxell
7/18/2023

Notes:
1. Reference flagpole specifications = 5" diameter
2. Polecrete Stabilizer 4.0 pcf (polyurethane) BMK Maufacturing
   a. Ultimate compressive strength = 80psi
3. Allowable Lateral soil bearing capacity = (See Table Below)
4. Foundation depth (SEE TABLE BELOW)
5. Design standards
   a. Guide Specifications for Design of Metal Flagpoles FP 1001
      i. Figure 3.2.2 Basic Wind Speed = 90 M/H
   b IBC & UBC chapter 18 "Flagepole Footing Design"
6. Foundation Design (Soil Class Controls Design)
   a. Soil pressure at polecrete interface (SEE TABLE BELOW)
   b. Polecrete: allowable pressure (S_1) at soil interface = 5 ksf
   c. Polecrete: allowable pressure at flagpole interface = 5 ksf



IBC 2006 Table 1804.2

Class of Materials	Lateral Bearing S_1 PSF/FT	Depth 1' dia.	Depth 1.5 dia.	Depth 2' dia.
Crystalline Bedrock	1200	4.06	3.53	3.2
Sedimentary and Foliated Rock	400	5.94	5.16	4.67
Sandy Gravel and/or Gravel (GW and GP)	200	7.57	6.57	5.94
Sand, Silty Sand, Clayey Sand, Silty Gravel and Clayey Gravel (SW,SP,SM,SC,GM and GC)	150	8.38	7.27	6.57
Clay, Sandy Clay, Silty Clay, Clayey Sil;t, Silt and Sandy Silt (CL,MI,MH and CH)	100	9.67	8.38	7.57

Site: FLAGPOLE POLYCRETE FOUNDATION	Drawing: S-0001	Project: 00101	Drawn: LT	Notes:	Troxell Engineering
Title: FLAGPOLE FOUNDATION	Scale: 3/32":1'0"	Date: 07/17/2023	Rev: A		San Marcos Tx 78666

Certifications

ICC EVALUATION SERVICE
ICC-ES ESR-5201

Polecrete Stabilizer is used as a stabilizing backfill around embedded posts, as an alternate to concrete described in IBC Section 1807.03.3. Polecrete Stabilizer is also to be used as a footing, to transfer downward axial load from the embedded post to the soil. The elevation of the top of the backfill material must allow for 3 to 6 inches (76 to 152 mm) of soil to be placed over the backfill material, to prevent exposure to fire.

USDA CERTIFIED BIOBASED PRODUCT
PRODUCT 44%

Polecrete® Stabilizer is a USDA Certified Biobased Product which contains 44% USDA certified biobased content. The USDA Certified Biobased product label is a certification mark of the U.S. Department of Agriculture.