



COUNTY OF GALVESTON
SPECIFICATIONS AND CONTRACT DOCUMENTS

GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT

LJA PROJECT NO. 0384-1502 & 0384-1503

October, 2015



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EAST HOUSTON OFFICE
11821 EAST FREEWAY, SUITE 360
HOUSTON, TEXAS 77029
FRN-F-1386

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**GALVESTON COUNTY
PURCHASING DEPARTMENT**



INVITATION TO BID

BID #B161001

GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT

BID DUE DATE: 11/12/2015

2:00 P.M. CST

***Rufus Crowder, CPPO, CPPB
Purchasing Agent
Galveston County
722 Moody (21st Street)
Fifth (5th) Floor
Galveston, Texas 77550
(409) 770-5372***



ITB #B161001
OPEN: 11/12/2015
TIME: 2:00 P.M.

INVITATION TO BID GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT GALVESTON COUNTY, TEXAS

Sealed bids in sets of five (5), one (1) original and four (4) copies will be received in the office of the County Purchasing Agent until 2:00 P.M. CST, on 11/12/2015 and opened immediately in that office in the presence of the Galveston County Auditor and the Purchasing Agent. Sealed bids are to be delivered to Rufus G. Crowder, CPPO CPPB, Galveston County Purchasing Agent at the Galveston County Courthouse, 722 Moody (21st Street), Floor 5, Purchasing, Galveston, Texas 77550, (409) 770-5372. **The time stamp clock located in the Purchasing Agent's office shall serve as the official time keeping piece for this solicitation process. Any bid received after 2:00 P.M. CST on the specified date will be returned unopened.**

Purpose:

Galveston County is seeking bids from qualified responsible contractors to furnish labor, equipment, materials and incidentals as required for the above mentioned project.

All proposals must be marked on the outside of the envelope:

ITB #B161001

GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT

Bidders name and return address should be on the outside of the envelope.

A non-mandatory pre-bid conference will be held on 10/29/2015 at 9:00 a.m. in the Galveston County Purchasing Department located in the Galveston County Courthouse, 722 Moody Avenue (21st St), Fifth Floor, Galveston, Texas 77550.

Specifications can be obtained by visiting the Galveston County website @ <http://www.galvestoncountytexas.gov/pu/Pages/BidListing.aspx>.

Davis-Bacon rates will apply under this disaster recovery program. Attention is called to the fact that no less than the federally determined prevailing (Davis-Bacon and Related Acts) wage rate, as issued by the Office of Rural Community Affairs and contained in the contract documents, must be paid on this project. In addition, the successful bidder must ensure that employees and applicants for employment are not discriminated against because of race, color, religion, sex, age or national origin.

Bid prices shall be either lump sum or unit prices as shown on the proposal sheet, if applicable. The net price will be delivered to Galveston County, including all freight, shipping, and license fees. Galveston County is tax exempt and no taxes should be included in your proposal pricing. Bids will be completed on the forms and proposal sheets provided.

Upon satisfaction of contractual terms (e.g., goods delivered in promised condition, services rendered as agreed, etc.), contractor shall be paid via Galveston County's normal accounts payable process.

Bond Requirement:

Each bid must be accompanied by a Cashier's Check or acceptable Bidder's Bond in the amount of 5% of bid as a guarantee that, if awarded the contract, within thirty (30) days from the date of bid opening, the bidder will enter into a contract and execute Performance and Payment Bonds statutorily required for public works project. The county intends to award a contract within sixty (60) days.

All contractors/subcontractors that are debarred, suspended or otherwise excluded from or ineligible for participation on federal assistance programs may not undertake any activity in part or in full under this project.

The Galveston County Commissioners' Court reserves the right to waive any informality and to reject any and all bids and to accept the bid or bids which, in its opinion, is most advantageous to Galveston County with total respect the governing laws.

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

**GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT
GALVESTON COUNTY, TEXAS**

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GENERAL PROVISIONS
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1. BID PACKAGE:

The Invitation to Bid, general and special provisions, drawings, specifications/line item details, contract documents and the Bid sheet are all part of the Bid package. BIDs must be submitted in sets of five (5), one (1) original and four (4) copies on the forms provided by the County if provided, including the Bid sheets completed in their entirety and signed by an authorized representative by original signature. Failure to complete and sign the Bid sheets/contract page(s) may disqualify the Bid from being considered by the Commissioners' Court. Any individual signing on behalf of the Bidder expressly affirms that he or she is duly authorized to tender this Bid and to sign the Bid sheet/contract under the terms and conditions in this bid. Bidder further understands that the signing of the contract shall be of no effect unless subsequently awarded and the contract properly executed by the Commissioners' Court. All figures must be written in ink or typed. Figures written in pencil or with erasures are not acceptable. However, mistakes may be crossed out, corrections inserted, and initialed in ink by the individual signing the bid. If there are discrepancies between unit prices quoted and extensions, the unit price shall prevail. Each Bidder is required to thoroughly review this entire Bid package to familiarize themselves with the Bid procedures, the plans and specifications for the requested work, as well as the terms, and conditions of the contract the successful Bidder will execute with the County.

2. BIDDER'S RESPONSIBILITY

The Bidder must affirmatively demonstrate its responsibility. The Bidder must also meet the following minimum requirements:

- A. have adequate financial resources or the ability to obtain such resources as required;
- B. be able to comply with all federal, state, and local laws, rules, regulations, ordinances and orders regarding this Request for Bid;
- C. have a satisfactory record of performance;
- D. have a satisfactory record of integrity and ethics;
- E. and be otherwise qualified and eligible to receive an award.

The criteria utilized for determining responsibility of Bidder(s) includes, but is not limited to, the Bidder's experience, skill, ability, business judgment, financial capacity, integrity, honesty, possession of the necessary facilities or equipment, previous performance, reputation, promptness, and any other factor deemed relevant by the County. The Bidders shall furnish any information requested by the County in order for the County to determine whether a Bidder is responsible.

3. TIME FOR RECEIVING BIDS:

Bids received prior to the submission deadline will be maintained unopened until the specified time for opening. If the Bidder fails to identify the Bid Number on the outside of the envelope as required, the Purchasing Agent will open the envelope for the sole purpose of identifying the Bid number for which the submission was made. The envelope will then be resealed. No liability will attach to a County office or employee for the premature opening of a bid. If you do not submit a bid, return this Invitation to Bid and state reason, otherwise your name may be removed from the Purchasing Agent's mailing list.

4. BID OPENING:

The names of the bidders and the pricing will be read aloud at the bid opening. Sealed bids will be received in the office of the County Purchasing Agent and opened immediately in that office in the presence of the County Auditor and the Purchasing Agent. No Bid may be withdrawn for a period of sixty (60) calendar days of the Bid opening date.

5. COMMISSIONERS' COURT:

No contract is binding on the County until it is properly placed on the Commissioners' Court agenda, approved in open Court, authorized to be executed by the County Judge, and fully executed by both parties.

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Department heads and elected officials are not authorized to enter into any type of agreement or contract on behalf of the County. Only the Commissioners' Court acting as a body may enter into a contract on behalf of and contractually bind the County. Additionally, department heads and elected officials are not authorized to agree to any type of supplemental agreements or contracts for goods or services. Supplemental agreements are subject to review by the County Legal Department prior to being accepted and signed by the County's authorized representative.

6. REJECTION OF BIDS/DISQUALIFICATION:

Galveston County, acting through its Commissioners' Court, reserves the right to :

- reject any and all Bids in whole or in part received by reason of this request for bid;
- to waive any informality in the Bids received;
- to disregard the Bid of any Bidder determined to be not responsible and/or;
- to discontinue its efforts for any reason under this Bid package at any time prior to actual execution of contract by the County.

Bidders may be disqualified and rejection of Bids may be recommended to the Commissioners' Court for any of (but not limited to) the following causes:

- A. Lack of signature by an authorized representative on the Bid form(s);
- B. Failure to properly complete the Bid;
- C. Bids that do not meet the mandatory requirements; and/or;
- D. Evidence of collusion among Bidders.
- E. Failure to use the Bid form(s) furnished by the County.

7. RESTRICTIVE OR AMBIGUOUS SPECIFICATIONS:

It is the responsibility of the prospective Bidder to review the entire Invitation to Bid packet and to notify the Purchasing Department if the specifications are formulated in a manner that would restrict competition or appear ambiguous. Any protest or question(s) regarding the specifications or Bid procedures must be received in the Purchasing Department not less than seventy-two (72) hours prior to the time set for Bid opening. Vendors are to submit Bid as specified herein or propose an approved equal.

8. SUBSTITUTES/DESCRIPTION OF MATERIALS AND EQUIPMENT:

Any brand name or manufacturer reference used herein is intended to be descriptive and not restrictive, unless otherwise noted, and is used to indicate the type and quality of material. The term "or equal" if used, identifies commercially produced items that have the essential performance and salient characteristics of the brand name stated in the item description. All supplies, material, or equipment shall be new and of the most suitable grade for the purpose intended. It is not the County's intent to discriminate against any materials or equipment of equal merit to those specified. However, if Bidder desires to use any substitutions, prior written approval must be obtained from the County Purchasing Agent and sufficiently in advance such that an addendum may be issued. All material supplied must be one hundred percent (100%) asbestos free. Bidder, by submission of its bid, certifies that if awarded any portion of this procurement, the bidder will supply only material and equipment that is 100% asbestos free.

9. EXCEPTIONS TO BID:

The Bidder will list on a separate sheet of paper any exceptions to the conditions of the bid. This sheet will be labeled, "Exceptions to Bid Conditions", and will be attached to the bid. If no exceptions are stated, it will be understood that all general and specific conditions will be complied with, without exception.

The Bidder must specify in its Bid any alternatives it wishes to propose for consideration by the County. Each alternative should be sufficiently described and labeled within the Bid and should indicate its possible or actual advantage to the program being offered.

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The County reserves the right to offer these alternatives to other Bidders.

10. PRICING:

Bids will be either lump sum or unit prices as shown on the Bid sheet. The net priced items will be delivered to Galveston County, including all freight or shipping charges. Cash discount must be shown on bid, otherwise prices will be considered net. Unless prices and all information requested are complete, Bid may be disregarded and given no consideration. In case of default by the contractor, the County of Galveston may procure the articles or services from other sources and may deduct from any monies due, or that may thereafter become due to the contractor, the difference between the price named in the contract of purchase order and the actual cost thereof to the County of Galveston. Prices paid by the County of Galveston shall be considered the prevailing market price at the time such purchase is made. Periods of performance may be extended if the facts as to the cause of delay justify such extension in the opinion of the Purchasing Agent and the Commissioners' Court. The unit price for each of the several items in the bid shall include its pro rata share of overhead so that the sum of the products obtained by multiplying the quantity shown for each item by the unit price bid represents the total bid. Any bid not conforming to this requirement may be rejected as informal. Special attention is drawn to this condition, as the unit price will be used to determine the amount of any change orders resulting from an increase or decrease in quantities.

11. PROCUREMENT CARD PROGRAM:

The County of Galveston participates in a Procurement Card (P-Card) program that allows payments made to a vendor by credit card. This method normally results in substantially faster bill payments, sometimes within three (3) to five (5) days of the actual transaction date. All transaction fees from the card provider are to be paid by the successful contractor. If your company will accept payment via credit card (Visa, MasterCard), please notate this in your Bid submittal.

12. PASS THROUGH COST ADJUSTMENTS:

Except in instances of extreme extenuating circumstances Contractor prices shall remain firm throughout the Contract period and any renewals. Examples of extreme extenuating circumstances include such situations as a nationwide rail strike, oil shortage or oil embargo.

In extreme extenuating circumstances, Contractors may be allowed to temporarily "pass through" additional costs they are forced to incur through no fault of their own. A request for a pass through cost increase will not be considered unless a Contractor's cost for his product exceeds 10% over the original cost for the product. Also, the increase in cost must be nationwide and consistent for a minimum period of sixty (60) days. Costs that historically are anticipated to rise over a period of time (for example only, such as wages or insurance costs) do not qualify for pass through. If a Contractor thinks he will be asking for a pass through cost adjustment during the term of the contract, then the original cost of the product to Contractor must be stated in Contractor's original bid.

A request for a pass through cost does not guarantee that one will be granted. Contractors must submit such information on each request as is required by the County Purchasing Agent. The County Purchasing Agent will review each request on a case-by-case basis and determine the appropriateness of each request as well as amount and duration of increase. Contractors will not be permitted any additional compensation for mark-ups or profits based on the increase in price. Rather, such additional compensation will be limited to the actual increase in original cost to the Contractor as such increase is reflected by the original cost stated in the bid. But in no event will the amount of additional compensation exceed 25% increase in Contractor's original cost for his product as such cost is reflected in Contractor's original Bid or the duration exceed a period of sixty (60) days. In addition, should, during the period of the pass through, cost return to normal or decrease to below pre pass through prices, appropriate downward adjustments will be made. No more than one pass through adjustment will be permitted per year.

13. MODIFICATION OF BIDS:

A Bidder may modify a bid by letter at any time prior to the submission deadline for receipt of Bids. Modification requests must be received prior to the submission deadline. Modifications made before opening time must be initialed

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by Bidder guaranteeing authenticity. Bids may not be amended or altered after the official opening with the single exception that any product literature and/or supporting data required by the actual specifications, if any, will be accepted at any time prior to the Commissioners' Court considering of same.

14. SIGNATURE OF BIDS:

Each Bid shall give the complete mailing address of the Bidder and be signed by an authorized representative by original signature with the authorized representative's name and legal title typed below the signature line. Each bid shall include the Bidder's Federal Employer Identification Number (FEIN). Failure to sign the Contract page(s) and bid response sheets may disqualify the bid from being considered by the County. The person signing on behalf of the Bidder expressly affirms that the person is duly authorized to tender the bid and to sign the bid sheets and contract under the terms and conditions of this Invitation to Bid and to bind the Bidder thereto and further understands that the signing of the contract shall be of no effect until it is properly placed on the Commissioners' Court agenda, approved in open Court, authorized to be executed by the County Judge, and fully executed by both parties.

15. AWARD OF BIDS:

The award will be made to the responsive, responsible Bidder whose bid is determined to be the best evaluated, lowest cost offer demonstrating the best ability to fulfill the requirements set forth in this Invitation to Bid. **The proposed cost to the County will be considered firm and cannot be altered after the submission deadline, unless the County invokes its right to request a best and final offer.**

Each Bidder, by submitting a bid, agrees that if their bid is accepted by the Commissioners' Court, such Bidder will furnish all items and services upon which prices have been tendered and upon the terms and conditions in this bid and contract.

The contractor shall commence work only after the transmittal of a fully executed contract and after receiving written notification to proceed from the County Purchasing Agent. The contractor will perform all services indicated in the bid in compliance with this contract.

Neither department heads nor elected officials are authorized to sign any binding contracts or agreements prior to being properly placed on the Commissioners' Court agenda and approved in open court. Department heads and other elected officials are not authorized to enter into any type of agreement or contract on behalf of Galveston County. Only the Commissioners' Court, acting as a body, may enter into a contract on behalf of the County. Additionally, department heads and other elected officials are not authorized to agree to any type of supplemental agreements or contracts for goods or services. Supplemental agreements are subject to review by the County Legal Department prior to being signed by the County's authorized representatives.

The County of Galveston reserves the right to accept bids on individual items listed, or group items, or on the bid as a whole; to reject any and all bids; to waive any informality in the bids; and to accept the bid that appears to be in the best interest of the County. The selection process may, however, include a request for additional information or an oral presentation to support the written bid.

The County reserves the right to reject any or all Bids in whole or in part received by reason of this Invitation to Bid and may discontinue its efforts under this Invitation to Bid for any reason or no reason or solely for the County's convenience at any time prior to actual execution of the contract by the County.

A Bidder whose bid does not meet the mandatory requirements set forth in this Invitation to Bid will be considered non-compliant.

The invitation to submit a bid which appears in the newspaper, or other authorized advertising mediums, these general provisions, the specifications which follow, the Bid sheets, and any addenda issued are all considered part of the Bid.

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Each Bidder, by submitting a bid, agrees that if its bid is accepted by the Commissioners' Court, such Bidder will furnish all items and services upon the terms and conditions in this Invitation to Bid and the resultant contract.

Notice of contract award will be made within ninety (90) days of opening of Bids to the lowest responsive and responsible contractor, whose bid complies with all the requirements in the Invitation to Bid.

Contractor shall submit to the County, for approval, within ten (10) days from notice of contract award, all Certificates of Insurance evidencing the required coverage as described under Insurance in the schedule of the Invitation to Bid.

The contractor shall not commence work under these terms and conditions of the contract until all required and applicable Certificates of Insurance, Performance and Payment Bonds, and Irrevocable Letters of Credit have been approved by the County of Galveston and the Contractor has received notice to proceed in writing and an executed copy of the contract from the County Purchasing Agent.

16. DISPUTE AFTER AWARD/PROTEST:

Any actual or prospective Bidder who is allegedly aggrieved in connection with the solicitation of this Invitation to Bid or award of a contract resulting therefrom may protest. The protest shall be submitted in writing to the Purchasing Agent within seven (7) calendar days after such aggrieved person knows of or should have known of the facts giving rise thereto. If the protest is not resolved by mutual agreement, the Purchasing Agent will promptly issue a decision in writing to the protestant. If the protestant wishes to appeal the decision rendered by the Purchasing Agent, such appeal must be made to the Commissioners' Court through the Purchasing Agent. The decision of the Commissioners' Court will be final. The Commissioners' Court need not consider protests unless this procedure is followed.

17. PUBLIC INFORMATION ACT:

The parties agree that the County is a governmental body for purposes of the Public Information Act, codified as Chapter 552 of the Texas Government Code and as such is required to release information in accordance with the Public Information Act. Bidder agrees that it has **clearly and conspicuously** marked any information that it considers to be confidential, proprietary, and/or trade secret in its Bid. County agrees to provide notice to Bidder in accordance with the Public Information Act in the event the County receives a request for information under the Public Information Act for information that the Bidder has marked as confidential, proprietary, and/or trade secret.

18. BIDDER'S EMAIL ADDRESSES:

Notwithstanding the foregoing Section 17, Bidder acknowledges and agrees that the confidentiality of any and all email addresses it uses or discloses in communicating with the County are open to the public in accordance with Section 552.137 of the Government Code and consents to the release of its email addresses.

19. RESULTANT CONTRACT:

Bidder shall correctly and fully execute the resultant contract first. Afterwards, the contract shall be set for consideration by the Commissioners' Court. If the Commissioners' Court authorizes the execution of the contract, the resultant contract shall become effective upon the Commissioners' Court execution of same. Contract documents shall consist of the contract, the general and special provisions, the drawings, bid package (including best and final offer(s) if such is utilized), any addenda issued, and any change orders issued during the work.

If applicable to the attached, Bidder must sign three (3) original contracts and return with their bid submittal.

Bidder should submit a proposed contract with its Bid or its sample material terms and conditions.

20. CONTRACT TERM:

The term of the resultant contract will begin on the date of execution by the Commissioners' Court and will terminate on the date specified in the resultant contract unless terminated earlier as herein set forth.

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21. TERMINATION FOR DEFAULT:

Failure of either party in the performance of any of the provisions of this contract shall constitute a breach of contract, in which case either party may require corrective action within ten (10) days from date of receipt of written notice citing the exact nature of such breach. Failure of the party being notified to take corrective action within the prescribed ten (10) days, or failure to provide written reply of why no breach has occurred, shall constitute a Default of Contract.

All notices relating to default by Bidder of the provisions of the contract shall be issued by County by its Legal Department, and all replies shall be made in writing to the County Legal Department. Notices issued by or issued to anyone other than the County Legal Department shall be null and void and shall be considered as not having been issued or received.

Galveston County reserves the right to enforce the performance of this contract in any manner prescribed by law in the event of breach or default of this contract, and may contract with another party, with or without solicitation of bids or further negotiations. At a minimum, Bidder shall be required to pay any difference in service or materials, should it become necessary to contract with another source, plus reasonable administrative costs and attorney fees.

In the event of Termination for Default, Galveston County, its agents or representatives shall not be liable for loss of any profits anticipated to be made by Bidder.

In addition to the remedies stated herein, the County has the right to pursue other remedies permitted by law or in equity.

No waiver by either party of any event of default under this agreement shall operate as a waiver of any subsequent default under the terms of this agreement.

County reserves the right to terminate this contract immediately in the event Bidder:

- A. Fails to meet delivery or completion schedules; and/or
- B. Fails to otherwise perform in accordance with the accepted Bid and the contract.

22. TERMINATION FOR CONVENIENCE:

County may terminate this contract upon at least thirty (30) calendar days prior written notice for its convenience or for any reason deemed by the County to serve the public interest. County may terminate this contract upon thirty (30) calendar days prior written notice for any reason resulting from any governmental law, order, ordinance, regulations, or court order. In no event shall County be liable for loss of any profits anticipated to be made hereunder by Bidder should this contract be terminated early.

23. FORCE MAJEURE:

If by reason of Force Majeure either Party shall be rendered unable, wholly or in part, to carry out its responsibilities under this contract by any occurrence by reason of Force Majeure, then the Party unable to carry out its responsibility shall give the other Party notice and full particulars of such Force Majeure in writing within a reasonable time after the occurrence of the event, and such notice shall suspend the Party's responsibility for the continuance of the Force Majeure claimed, but for no longer period.

Force Majeure means acts of God, floods, hurricanes, tropical storms, tornadoes, earthquakes, or other natural disasters, acts of a public enemy, acts of terrorism, sovereign conduct, riots, civil commotion, strikes or lockouts, and other causes that are not occasioned by either Party's conduct which by the exercise of due diligence the Party is unable to overcome and which substantially interferes with operations.

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24. ESTIMATED QUANTITIES:

Any reference to quantities shown in the Invitation to Bid is an estimate only. Since the exact quantities cannot be predetermined, the County reserves the right to adjust quantities as deemed necessary to meet its requirements.

25. CONTRACTOR INVESTIGATION:

Before submitting a bid, each Bidder shall make all investigations and examinations necessary to ascertain all site conditions and requirements affecting the full performance of the contract and to verify any representations made by the County upon which the contractor will rely. If the contractor receives an award as a result of its bid submission, failure to have made such investigations and examinations will in no way relieve the contractor from its obligation to comply in every detail with all provisions and requirements of the contract, nor will a plea of ignorance of such conditions and requirements be accepted as a basis for any claim whatsoever by the contractor for additional compensation.

26. NO COMMITMENT BY COUNTY OF GALVESTON:

This Invitation to Bid does not commit the County of Galveston to award any costs or pay any costs, or to award any contract, or to pay any costs associated with or incurred in the preparation of a bid in response to this Invitation to Bid and does not commit the County of Galveston to procure or contract for services or supplies.

27. BID COSTS BORNE BY BIDDER:

Galveston County shall not be liable for any costs incurred by Bidder in preparation, production, or submission of a bid and shall not be liable for any work performed by Bidder prior to issuance of fully executed contract and properly issued notice to proceed. Galveston County shall not be liable for any costs incurred by Bidder by reason of attending a pre-Bid conference. Galveston County shall not be liable for any costs incurred by Bidder by reason of the County invoking use of best and final offers.

28. SINGLE BID RESPONSE:

If only one bid is received in response to the Invitation to Bid, a detailed cost bid may be requested of the single contractor. A cost/price analysis and evaluation and/or audit may be performed of the cost bid in order to determine if the price is fair and reasonable.

29. CHANGES IN SPECIFICATIONS:

If it becomes necessary to revise any part of this bid, a written notice of such revision will be provided to all Bidders in the form of addenda. The County is not bound by any oral representations, clarifications, or changes made in the written specifications by the County's employees, unless such clarification or change is provided to Bidders in a written addendum from the Purchasing Agent.

The County of Galveston reserves the right to revise or amend the specifications up to the time set for opening of bids. Such revisions and amendments, if any, shall be announced by amendments to the solicitation. Copies of such amendments shall be furnished to all prospective contractors in the form of an addendum. Prospective contractors are defined as those contractors listed on the County's Invitation to Bid list for this material/service or those who have obtained documents subsequent to the advertisement. If revisions and amendments require changes in quantities or prices proposed, or both, the date set for opening of bids may be postponed by such number of days as in the opinion of the County shall enable contractors to revise their bids. In any case, the bid opening shall be at least five (5) working days after the last amendment, and the amendment shall include an announcement of the new date if applicable, for the opening or bids.

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30. BID IDEAS AND CONCEPTS:

The County reserves to itself the right to adopt or use for its benefit, any concept, plan, or idea contained in any bid.

31. BID DISCLOSURES:

The names of those who submitted bids will not be made public information unless in conformity with the County Purchasing Act. No pricing or staffing information will be released. Bidders are requested to withhold all inquiries regarding their bid or other submissions until after an award is made. No communication is to be had with any County employee or official, other than the County Purchasing Agent, regarding whether a bid was received. Violations of this provision may result in the rejection of a bid.

32. WITHDRAWAL OF BID:

Bidders may request withdrawal of a sealed bid prior to the scheduled bid opening time provided the request for withdrawal is submitted to the Purchasing Agent in writing. No bids may be withdrawn for a period of sixty (60) calendar days after opening of the bids.

33. INDEMNIFICATION:

The contractor shall agree to assume all risks and responsibility for, and agrees to indemnify, defend, and save harmless, the County of Galveston, its elected and appointed officials and department heads, and its agents and employees from and against all claims, demands, suits, actions, recoveries, judgments, and costs and expenses including reasonable attorney's fees for the defense thereof in connection therewith on account of the loss of life, property or injury or damage to the person which shall arise from contractor's operations under this contract, its use of County facilities and/or equipment or from any other breach on the part of the contractor, its employees, agents or any person(s), in or about the County's facilities with the expressed or implied consent of the County. Contractor shall pay any judgment with cost which may be obtained against Galveston County resulting from contractor's operations under this contract.

Contractor agrees to indemnify and hold the County harmless from all claims of subcontractors, laborers incurred in the performance of this contract. Contractor shall furnish satisfactory evidence that all obligations of this nature herein above designated have been paid, discharged or waived. If Contractor fails to do so, then the County reserves the right to pay unpaid bills of which County has written notice direct and withhold from Contractor's unpaid compensation a sum of money reasonably sufficient to liquidate any and all such lawful claims.

34. REQUIREMENT OF AND PROOF OF INSURANCE:

The successful Bidder shall furnish evidence of insurance to the County Purchasing Agent and shall maintain such insurance as required hereunder or as may be required in the Special Provisions or resultant contract, if different. Contractor shall obtain and thereafter continuously maintain in full force and effect, commercial general liability insurance, including but not limited to bodily injury, property damage, and contractual liability, with combined single limits as listed below or as may be required by State or Federal law, whichever is greater.

- A. For damages arising out of bodily injury to or death of one person in any one accident :
ONE HUNDRED THOUSAND AND NO/100 (\$100,000.00) DOLLARS.
- B. For damages arising out of bodily injury to or death of two or more persons in any one accident:
THREE HUNDRED THOUSAND AND NO/100 (\$300,000.00) DOLLARS.
- C. For any injury to or destruction of property in any one accident :
ONE HUNDRED THOUSAND AND NO/100 (\$100,000.00) DOLLARS.

Insurance shall be placed with insurers having an A.M. Best's rating of no less than A. Such insurance must be issued by a casualty company authorized to do business in the State of Texas, and in standard form approved by the

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Board of Insurance Commissioners of the State of Texas, with coverage provisions insuring the public from loss or damage that may arise to any person or property by reason of services rendered by Contractor.

Galveston County shall be listed as the additional insured on policy certificates and shall be provided with no less than thirty (30) calendar days prior notice of any changes to the policy during the contractual period.

Certificates of Insurance, fully executed by a licensed representative of the insurance company written or countersigned by an authorized Texas state agency, shall be filed with the County Purchasing Agent within ten (10) business days of issuance of notification from the County Purchasing Agent to Bidder that the contract is being activated as written proof of such insurance and further provided that Bidder shall not commence work under this contract until it has obtained all insurance required herein, provided written proof as required herein, and received written notice to proceed issued from the County Purchasing Agent.

Proof of renewal/replacement coverage shall be provided upon expiration, termination, or cancellation of any policy. Said insurance shall not be cancelled, permitted to expire, or changed without thirty (30) days prior written notice to the County.

Insurance required herein shall be maintained in full force and effect during the life of this contract and shall be issued on an occurrence basis. Contractor shall require that any and all subcontractors that are not protected under the Contractor's own insurance policies take and maintain insurance of the same nature and in the same amounts as required of Contractor and provide written proof of such insurance to Contractor. Proof of renewed/replacement coverage shall be provided upon expiration, termination, or cancellation of any policy. Contractor shall not allow any subcontractor to commence work on the subcontract until such insurance required for the subcontractor has been obtained and approved.

Workers' Compensation Insurance: Successful Bidder shall carry in full force Workers' Compensation Insurance Policy(ies), if there is more than one employee, for all employees, including but not limited to full time, part time, and emergency employees employed by the successful Bidder. Current insurance certificates certifying that such policies as specified above are in full force and effect shall be furnished by successful Bidder to the County.

Insurance is to be placed with insurers having a Best rating of no less than A. The Bidder shall furnish the County with certificates of insurance and original endorsements affecting coverage required by these insurance clauses within ten (10) business days of receiving notification from the County Purchasing Agent that the contract is being activated. The certificates and endorsements for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf. The Bidder shall be required to submit annual renewals for the term of this contract prior to expiration of any policy.

In addition to the remedies stated herein, the County has the right to pursue other remedies permitted by law or in equity.

The County agrees to provide Bidder with reasonable and timely notice of any claim, demand, or cause of action made or brought against the County arising out of or related to utilization of the property. Bidder shall have the right to defend any such claim, demand, or cause of action at its sole cost and expense and within its sole and exclusive discretion. The County agrees not to compromise or settle any claim or cause of action arising out of or related to the utilization of the property without the prior written consent of the Bidder.

In no event shall the County be liable for any damage to or destruction of any property belonging to the Bidder.

35. BID GUARANTEE:

Unless specified differently within the Special Provisions of this procurement, each Bidder shall be required to submit a bid guarantee with its proposal as required within this Section.

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Evidencing its firm commitment to engage in contract if Bidder is selected for award of contract, each Bidder is required to furnish with their bid a Cashier's Check or an acceptable Bidder's Bond in the amount of five percent (5%) of the total contract price. If Bidder is using a bond, then the bidder's bond must be executed with a surety company authorized to do business in the State of Texas. Failure to furnish the bid guarantee in the proper form and amount, by the time set for opening of bids may be cause for rejection of the bid.

The Cashier's Check or Bid Bond (as applicable) will be returned to each respective unsuccessful Bidder(s) subsequent to the Commissioners' Court award of contract, and shall be returned to the successful Bid upon the completion and submission of all contract documents. Provided, however, that the Cashier's Check or Bid Bond will be forfeited to the County as liquidated damages should successful Bidder fail to execute the contract within thirty (30) days after receiving notice of the acceptance of its bid.

36. PERFORMANCE AND PAYMENT BONDS:

Successful Bidder, before beginning work, shall execute a performance bond and a payment bond, each of which must be in the full amount of the contract. If the contract exceeds \$50,000.00, the required payment and performance bonds must each be executed by a corporate surety in accordance with Section 1, Chapter 87, Acts of the 56th Legislature, Regular Session, 1959 (Article 7.19-1, Vernon's Texas Insurance Code).

The performance and payment bonds must clearly and prominently display on the bond or on an attachment to the bond:

- A. The name, mailing address, physical address, and telephone number, including the area code, of the surety company to which any notice of claim should be sent; or
- B. The toll-free telephone number maintained by the Texas Department of Insurance under Subchapter B, Chapter 521, Insurance Code, and a statement that the address of the surety company to which any notice of claim should be sent may be obtained from the Texas Department of Insurance by calling the toll free-telephone number.

The performance bond shall be solely for the protection of Galveston County, in the full amount of the contract, and conditioned on the faithful performance of the work in accordance with the plans, specifications, and contract documents. The payment bond is solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the prime contractor or a subcontractor to supply public work labor or material, and in the amount of the contract.

The payment and performance bonds required to be furnished herein must be furnished before the contractor begins work and are a requirement for issuance of a Notice to Proceed. Such bonds must be furnished to the Galveston County Purchasing Agent within thirty (30) days after the date of signing of the contract or receiving notice from the Purchasing Agent that the contract has been fully executed. Failure to provide the required payment and performance bonds within the required business days shall constitute an event of default under this contract. Contractor shall not commence work until all applicable certificates of insurance, performance, and payment bonds have been received and approved by the County Purchasing Agent and the Contractor receives notice to proceed in writing that has been issued by the County Purchasing Agent.

Additionally, if this Invitation To Bid is for the award of a public works contract, then compliance with Chapter 2253 of the Texas Government Code, which is known as the McGregor Act, is mandatory. Performance and payment bonds are required to be furnished in accordance with Chapter 2253 of the Texas Government Code. Bidder should familiarize itself with the entire provisions of Chapter 2253 of the Texas Government Code.

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37. PATENT AND COPYRIGHT PROTECTION:

The Bidder agrees at its sole expense to protect the County from claims involving infringement of patents or copyrights. Bidder shall indemnify and save harmless the County of Galveston, its officers, employees, and agents, from liability of any nature and kind whatsoever, including without limitation cost and expenses, for or on account of any copyrighted, patented or un-patented invention, process, or article manufactured or used in the performance of the contract, including its use by the County. Bidder also agrees that if Bidder is awarded this contract, that no work performed hereunder shall be subject to patent, copyright, or other intellectual property by Bidder.

38. CONFLICT OF INTEREST DISCLOSURE REPORTING:

Bidder may be required under Chapter 176 of the Texas Local Government Code to complete and file a conflict of interest questionnaire (CIQ Form). If so, the completed CIQ Form must be filed with the County Clerk of Galveston County, Texas.

If Bidder has an employment or other business relationship with an officer of Galveston County or with a family member of an officer of Galveston County that results in the officer or family member of the officer receiving taxable income that exceeds \$2,500.00 during the preceding 12-month period, then Bidder **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County.

If Bidder has given an officer of Galveston County or a family member of an officer of Galveston County one or more gifts with an aggregate value of more than \$250.00 during the preceding 12-months, then Bidder **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County.

The Galveston County Clerk has offices at the following locations:

Galveston County Clerk
Galveston County Justice Center, Suite 2001
600 59th Street
Galveston, Texas 77551

Galveston County Clerk
North County Annex, 1st Floor
174 Calder Road
League City, Texas 77573

Again, if Bidder is required to file a CIQ Form, the original completed form is filed with the Galveston County Clerk (not the Purchasing Agent).

For Bidder's convenience, a blank CIQ Form is enclosed with this bid package. Blank CIQ Forms may also be obtained by visiting the Galveston County Clerk's website and/or the Purchasing Agent's website – both of these websites are linked from the Galveston County homepage, at <http://www.co.galveston.tx.us>.

As well, blank CIQ Forms may be obtained by visiting the Texas Ethics Commission website, specifically at http://www.ethics.state.tx.us/whatsnew/conflict_forms.htm.

Chapter 176 specifies deadlines for the filing of CIQ Forms (both initial filings and updated filings).

It is Bidder's sole responsibility to file a true and complete CIQ Form with the Galveston County Clerk if Bidder is required to file by the requirements of Chapter 176 of the Local Government Code. Bidder is advised that it is an offense to fail to comply with the disclosure reporting requirements dictated under Chapter 176 of the Texas Local Government Code.

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If you have questions about compliance with Chapter 176, please consult your own legal counsel. Compliance is the individual responsibility of each person, business, and agent who is subject to Chapter 176 of the Texas Local Government Code.

39. COMPETITIVENESS AND INTEGRITY:

To prevent biased evaluations and to preserve the competitiveness and integrity of such acquisition efforts, **Bidders are to direct all communications regarding this Bid to the Galveston County Purchasing Agent**, unless otherwise specifically noted.

Do not contact the requesting department. Attempts by offering firms to circumvent this requirement will be viewed negatively and may result in rejection of the offer of the firm found to be in non-compliance.

All questions regarding this Request for Bid must be submitted in writing to:

Rufus Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, (21st Street)
Fifth (5th) Floor, Purchasing
Galveston, Texas 77550 Fax: (409) 621-7997
E-mail: rufus.crowder@co.galveston.tx.us

An authorized person from the submitting firm must sign all bids. This signature acknowledges that the Bidder has read the bid documents thoroughly before submitting a bid and will fulfill the obligations in accordance to the terms, conditions, and specifications.

Please carefully review this Invitation to Bid. It provides specific information necessary to aid participating firms in formulating a thorough response.

40. ENTIRETY OF AGREEMENT AND MODIFICATION:

This contract contains the entire agreement between the parties. Any prior agreement, promise, negotiation or representation not expressly set forth in this contract has no force or effect. Any subsequent modification to this contract must be in writing, signed by both parties. An official representative, employee, or agent of the County does not have the authority to modify or amend this contract except pursuant to specific authority to do so granted by the Galveston County Commissioners' Court.

41. NON-COLLUSION AFFIDAVIT:

Bidder certifies, by signing and submitting a bid, that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the contractor has not directly or indirectly induced or solicited another contractor to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any contractor or anyone else to put in a sham Bid or that anyone shall refrain from bidding; that the contractor has not in any manner, directly or indirectly, sought by agreement, communications, or conference with anyone to fix the bid price of the contractor of any other bidder, or to fix any overhead, profit or cost element of the bid price, or that of any other contractor, or to secure any advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the contractor has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any cooperation, partnership, company association, organization, Bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

A blank Non-Collusion Affidavit is included with this Bid packet. Bidder must enclose a truthful and fully executed original Non-Collusion Affidavit with the submission of its bid. This is a mandatory requirement of

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this Invitation to Bid. Failure to include the truthfully and fully executed Non-Collusion Affidavit in the submission of its Bid shall be considered non-compliance with the requirements of this Invitation to Bid by the Bidder and grounds for the rejection of Bidder's submission.

No negotiations, decisions, or actions shall be initiated by any company as a result of any verbal discussion with any County employee prior to the opening of responses to this Invitation to Bid.

No officer or employee of the County of Galveston, and no other public or elected official, or employee, who may exercise any function or responsibilities in the review or approval of this undertaking shall have any personal or financial interest, direct or indirect, in any contract or negotiation process thereof. The above compliance request will be part of all County of Galveston contracts for this service.

42. SOVEREIGN IMMUNITY:

The County specifically reserves any claim it may have to sovereign, qualified, or official immunity as a defense to any action arising in conjunction with this contract.

43. CONTROLLING LAW AND VENUE:

Bidder acknowledges and agrees that the contract is and shall be governed and construed by the laws of the State of Texas and that venue shall lie exclusively in Galveston County, Texas.

44. MERGERS, ACQUISITIONS:

The Bidder shall be required to notify the County of any potential for merger or acquisition of which there is knowledge at the time that a bid is submitted.

If subsequent to the award of any contract resulting from this Invitation to Bid the Bidder shall merge or be acquired by another firm, the following documents must be submitted to the County:

- A. Corporate resolutions prepared by the awarded Bidder and the new entity ratifying acceptance of the original contract, terms, conditions and prices;
- B. New Bidder's Federal Identification Number (FEIN) and;
- C. New Bidder's proposed operating plans.

Moreover, Bidder is required to provide the County with notice of any anticipated merger or acquisition as soon as Bidder has actual knowledge of the anticipated merger or acquisition. The New Bidder's proposed plan of operation must be submitted prior to merger to allow time for submission of such plan to the Commissioners' Court for its approval.

45. DELAYS:

The County reserves the right to delay the scheduled commencement date of the contract if it is to the advantage of the County. There shall be no additional costs attributed to these delays should any occur. Bidder agrees it will make no claims for damages, for damages for lost revenues, for damages caused by breach of contract with third parties, or any other claim by Bidder attributed to these delays, should any occur. In addition, Bidder agrees that any contract it enters into with any third party in anticipation of the commencement of the contract will contain a statement that the third party will similarly make no claim for damages based on delay of the scheduled commencement date of the contract.

46. ACCURACY OF DATA:

Information and data provided through this Invitation to Bid are believed to be reasonably accurate.

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47. SUBCONTRACTING/ASSIGNMENT:

Bidder shall not assign, sell, or otherwise transfer its contract in whole or in part without prior written permission of Commissioners' Court. Such consent, if granted, shall not relieve the Bidder of any of its responsibilities under this contract.

48. INDEPENDENT CONTRACTOR:

Bidder expressly acknowledges that it is an independent contractor. Nothing in this agreement is intended nor shall be construed to create an agency relationship, an employer/employee relationship, a joint venture relationship, or any other relationship allowing County to exercise control or direction over the manner or method by which Bidder or its subcontractors perform in providing the requirements stated in the Invitation to Bid.

49. MONITORING PERFORMANCE:

The County shall have the unfettered right to monitor and audit the Bidder's work in every respect. In this regard, the Bidder shall provide its full cooperation and insure the cooperation of its employees, agents, assigns, and subcontractors. Further, the Bidder shall make available for inspection and/or copying when requested, original data, records, and accounts relating to the Bidder's work and performance under this contract. In the event any such material is not held by the Bidder in its original form, a true copy shall be provided.

50. PROCUREMENT ETHICS:

Galveston County is committed to the highest ethical standards. Therefore, it is a serious breach of the public trust to subvert the public purchasing process by directing purchases to certain favored vendors, or to tamper with the competitive bidding process, whether it's done for kickbacks, friendship or any other reason. Since misuse of the purchasing power of a local government carries criminal penalties, and many such misuses are from a lack of clear guidelines about what constitutes an abuse of office, the Code of Ethics outlined below must be strictly followed.

Galveston County also requires ethical conduct from those who do business with the County.

CODE OF ETHICS – Statement of Purchasing Policy:

"Public employment is a public trust. It is the policy of Galveston County to promote and balance the objective of protecting the County's integrity and the objective of facilitating the recruitment and retention of personnel needed by Galveston County. Such policy is implemented by prescribing essential standards of ethical conduct without creating unnecessary obstacles to entering public office.

Public employees must discharge their duties impartially so as to assure fair competitive access to governmental procurement by responsible contractors. Moreover, they should conduct themselves in such a manner as to foster public confidence in the integrity of the Galveston County procurement organization.

To achieve the purpose of this Article, it is essential that those doing business with Galveston County also observe the ethical standards prescribed here."

General Ethical Standards:

It shall be a breach of ethics to attempt to realize personal gain through public employment with Galveston County by any conduct inconsistent with the proper discharge of the employee's duties.

It shall be a breach of ethics to attempt to influence any public employee of Galveston County to breach the standards of ethical conduct set forth in this code.

It shall be a breach of ethics for any employee of Galveston County to participate directly or indirectly in a procurement when the employee knows that:

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The employee or any member of the employee's immediate family, has a financial interest pertaining to the procurement;

A business or organization in which the employee or any member of the employee's immediate family, has a financial interest pertaining to the procurement; or

Any other person, business, or organization with which the employee or any member of the employee's immediate family is negotiating or has an arrangement concerning prospective employment is involved in the procurement.

Gratuities:

It shall be a breach of ethics for any person to offer, give, or agree to give any employee or former employee of Galveston County, or for any employee or former employee of Galveston County to solicit, demand, accept or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or bid thereof.

Kickbacks:

It shall be a breach of ethics for any payment, gratuity or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or to any person associated therewith as an inducement for the award of a subcontract or order.

Contract Clause:

The prohibition against gratuities and kickbacks prescribed above shall be conspicuously set forth in every contract and solicitation by Galveston County.

Confidential Information:

It shall be a breach of ethics for any employee or former employee of Galveston County to knowingly use confidential information for actual or anticipated personal gain, or for the actual or anticipated gain of any other person.

Prohibition against Contingent Fees:

It shall be a breach of ethical standards for a person to be retained, or to retain a person, to solicit or secure a Galveston County contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except for retention of bona fide employees or bona fide established commercial selling agencies for the purpose of securing business. Failure to abide by this section constitutes a breach of ethical standards.

Representation:

Bidder represents and warrants, by signing and submitting its bid, that it has not retained anyone in violation of this section prohibiting contingent fees.

Contract Clause:

The representation prescribed above shall be conspicuously set forth in every contract and solicitation thereof.

51. SUBJECT TO APPROPRIATION OF FUNDS:

State law prohibits the obligation and expenditure of public funds beyond the fiscal year for which a budget has been approved by the Commissioners' Court. Galveston County anticipates this to be an integral part of future budgets to be approved during the periods of this contract, except for unanticipated needs or events which may prevent such payments against this contract. However, Galveston County cannot guarantee the availability of funds, and enters into this contract

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only to the extent such funds are made available through appropriation (allocation) by the Commissioners' Court. This contract shall not be construed as creating any debt on behalf of the County of Galveston in violation of TEX. CONST. art. XI, § 7, and it is understood that all obligations of Galveston County are subject to the availability of funds.

52. NOTICE:

All notices or other communications required or permitted under this contract shall be in writing and shall be deemed to have been duly given if delivered personally in hand, transmitted by facsimile, or mailed certified mail, return receipt requested with proper postage affixed and addressed to the appropriate party at the following address or at such other address as may have been previously given in writing to the parties (Bidder shall provide its notice information with its Bid submission). If mailed, the notice shall be deemed delivered when actually received, or if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, duly certified, return receipt requested, with proper postage affixed. If delivered in person, notice shall be deemed delivered when received for by, or actually received by, the receiving Party.

If transmitted by facsimile, notice shall be deemed delivered when receipt of such transmission is acknowledged.

To the County at:

Hon. Mark Henry,
County Judge of Galveston County
722 Moody (21st Street), Second (2nd) Floor
Galveston, Texas 77550
Fax: (409) 765-2653

With copies to:

Rufus Crowder, CPPO CPPB,
Galveston County Purchasing Agent
722 Moody (21st Street), Fifth (5th) Floor
Galveston, Texas 77550
Fax: (409) 621-7997

Robert Boemer, Director,
Galveston County Legal Department
722 Moody (21st Street), Fifth (5th) Floor
Galveston, Texas 77550
Fax: (409) 770-5560

To the Contractor at:

(Bidder to provide its contact name, address, and facsimile number for notice hereunder.)

53. NON-DISCRIMINATION:

- A. **Equal Employment Opportunity:** Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, genetic information or veteran status. Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, sex, disability, genetic information or veteran status. Such action shall include, but not be limited to, the following: employment; upgrading; demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices of employment.

Bidder will, in all solicitation or advertisements for employees placed by or on behalf of Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, sex, disability, genetic information, or veteran status.

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Bidder will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Agreement so that such provisions will be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

Bidder will include the provisions herein in every subcontract or purchase order unless exempted.

- B. **Drug Free Work Place Act:** Bidder shall comply with all applicable requirements of the Drug-Free Workplace Act of 1988 and implementing regulations.
- C. **Americans with Disabilities Act:** Bidder shall comply with all applicable provisions of the Americans with Disabilities Act and implementing regulations.
- D. **OSHA Regulations:** Bidder agrees to maintain and to display any applicable materials for its employees in accordance with OSHA regulations.
- E. **Compliance with Immigration Laws and Use of E-Verify:** Bidder agrees to comply with all requirements of the U.S. Immigration Reform and Control Act of 1986, as amended, and any implementing regulations thereto. Bidder further agrees to utilize the E-Verify system through the Department of Homeland Security on its employees. Bidder shall not employ unauthorized aliens, and shall not assign services to be performed to any supplier or subcontractor who are unauthorized aliens. If any personnel performing any services hereunder are discovered to be an unauthorized alien, then Bidder will immediately remove such personnel from performing services hereunder and shall replace such personnel with personnel who are not unauthorized alien(s).
- F. **State and Federal Law Compliance:** Bidder agrees to comply with all other State and Federal laws and regulations applicable to the provision of services under this contract.

54. RECORD RETENTION AND RIGHT TO AUDIT:

Bidder shall keep and maintain all records associated with this contract for a minimum of five (5) years from the close of the contract or as required by Federal or State law or regulation, whichever period is longer. If awarded this contract, Bidder shall allow the County reasonable access to the records in Bidder's possession, custody, or control that the County deems necessary to assist it in auditing the services, costs, and payments provided hereunder. If this contract involves the use of Federal or State funds, then Bidder shall also allow reasonable access to representatives of the Office of Inspector General, the General Accounting Office, and the other Federal and/or State agencies overseeing the funds that such entities deem necessary to facilitate review by such agencies and Bidder shall maintain fiscal records and supporting documentation for all expenditures in a manner that conforms with OMB Circular A-87 (relocated to 2 C.F.R. Part 225) and this contract.

55. TITLE VI ASSURANCES/TxDOT:

The County is subject to Title VI of the Civil Rights Act of 1964 and the Federal and State laws and regulations of the United States Department of Transportation and Texas Department of Transportation (TxDOT). Pursuant to these requirements, the County must have its contractors provide required assurances on compliance with non-discrimination by itself and its subcontractors. The Title VI Assurances within this Subsection are not exhaustive – whenever any Federal, State, or Local requirement requires additional clauses, this list shall not be construed as limiting. Contractor agrees as follows:

- A. **Compliance with Regulations:** The Contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (hereinafter, DOT) Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are incorporated herein by reference and made a part of this contract.

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- B. **Non-discrimination:** The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the basis of race, color, national origin, religion, sex, age, disability or Veteran status in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
- C. **Solicitations for Subcontractors, Including Procurement of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, religion, sex, age, disability or Veteran status.
- D. **Information and Reports:** The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by the Galveston County or the Texas Department of Transportation to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of the Contractor is in the exclusive possession of another who fails or refuses to furnish this information the Contractor shall so certify to Galveston County or the Texas Department of Transportation as appropriate, and shall set forth what efforts it has made to obtain the information.
- E. **Sanctions for Non-compliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, Galveston County shall impose such contract sanctions as it or the Texas Department of Transportation may determine to be appropriate, including, but not limited to:
- 1) withholding of payments to the Contractor under the contract until the Contractor complies, and/or;
 - 2) cancellation, termination, or suspension of the contract, in whole or in part.
- F **Incorporation of Provisions.** The Contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as Galveston County or the Texas Department of Transportation may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request Galveston County to enter into such litigation to protect the interests of Galveston County, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

56. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS:

Bidder certifies that neither it, nor any of its Principals, are presently debarred, suspended, proposed for debarment, disqualified, excluded, or in any way declared ineligible for the award of contracts by any Federal agency. Contractor agrees that it shall refund Galveston County for any payments made to Contractor while ineligible. Contractor acknowledges that Contractor's uncured failure to perform under this Agreement, if such should occur, may result in Contractor being debarred from performing additional work for the County, the GLO, the State, HUD, and other Federal and State entities. Further, Bidder has executed the Certification Regarding Debarment, Suspension,

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Proposed Debarment, and Other Responsibility Matters and returned the fully completed and executed original certification with the submission of its bid. **The truthful and fully completed and executed original of the Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters must be included with the submission of Bidder's Bid and is a mandatory requirement of this Invitation to Bid. Bidder's failure to include the fully completed and executed original of this Certification shall be considered non-compliance with the requirements of this Invitation to Bid and grounds for the rejection of Bidder's Bid.**

57. SECTION 231.006, FAMILY CODE/DELINQUENT CHILD SUPPORT:

Pursuant to Title 5, Section 231.006 of the Texas Family Code, as applicable, Bidder certifies that it, including all of its principals, is/are current in child support payments and therefore, that it is eligible to receive payments from State funds under a contract for property, materials, or services. Bidder acknowledges and agrees that if it is awarded this contract, then the ensuing agreement may be terminated and payment withheld if this certification is inaccurate. Finally, by the submission of its bid, the Bidder certifies that it has included the names and social security numbers of each person with at least 25% ownership interest in Bidder within its response to the Invitation to Bid and that all such persons are current in child support payments.

58. LABOR STANDARDS:

If applicable to this solicitation, Bidder acknowledges that the contract to be awarded pursuant to this solicitation is on a grant program funded with Federal funds.

Bidder shall comply with the requirements of 29 CFR Part 5 and CFR Part 30 and shall be in conformity with Executive Order 11246, entitled "Equal Employment Opportunity", Copeland, "Anti-Kickback" Act (29 C.F.R. Part 3), the Davis-Bacon and Related Acts (29 C.F.R. Parts 1,3, and 5), the Contract Work Hours and Safety Standards Act (40 U.S.C. 3701 et seq.), and all other applicable Federal, State, and local laws and regulations pertaining to labor standards, insofar as those acts apply to the performance of this Agreement. Bidder is also responsible for ensuring that all subcontractors comply with the requirements of 29 CFR Part 5 and CFR Part 30 and shall be in conformity with Executive Order 11246, entitled "Equal Employment Opportunity", Copeland "Anti-Kickback" Act, the Davis-Bacon and Related Acts (29 CFR Parts 1, 3 and 5), the Contract Work Hours and Safety Standards Act (40 U.S.C. 3701 et seq.), and all other applicable Federal, State, and local laws and regulations pertaining to labor standards, insofar as those acts apply to the performance of this Agreement.

59. INSPECTION OF SITE:

Each bidder should visit the site of the proposed work and fully acquaint himself with the existing conditions there and should fully inform himself as to the facilities involved, the difficulties and restrictions attending the performance of the contract. The bidder should thoroughly examine and familiarize himself with the drawings, technical specifications and all other contract documents. The contractor by the execution of the contract shall in no way be relieved of any obligation under it due to his failure to receive or examine any form or legal document or to visit the site or acquaint himself with the conditions there existing. The city/county will be justified in rejecting any claim based on lack of inspection of the site prior to the bid.

60. STATEMENT OF BIDDERS QUALIFICATIONS:

Each bidder shall submit on the form furnished for that purpose a statement of the bidder's qualifications. The County shall have the right to take such steps as it deems necessary to determine the ability of the bidder to perform his obligations under the contract, and the bidder shall furnish the County all such information and data for this purpose as it may request. The right is reserved to reject any bid where an investigation of the available data does not satisfy the County that the bidder is qualified to carry out properly the terms of the contract.

61. WAGES AND SALARIES:

Attention is particularly called to the requirement of paying not less than the prevailing Davis Bacon Related Acts (DBRA) wage rates specified in the Contract Documents. These rates are minimums to be paid during the life of the contract. It is therefore the responsibility of the Bidder to inform themselves as to local labor conditions.

SPECIAL CONTRACT CONDITIONS FOR CONSTRUCTION

1. Contract and Contract Documents

- (a) The project to be constructed pursuant to this contract will be financed with assistance from FEMA and is subject to all applicable Federal and State laws and regulations.
- (b) The Plans, Specifications and Addenda, General Provisions shall form part of this contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth.

2. Definitions

Whenever used in any of the contract Documents, the following meanings shall be given to the terms here in defined:

- (a) The term "Contract" means the Contract executed between the County of Galveston, hereinafter called the Owner, and _____, hereinafter called Contractor, of which these GENERAL CONDITIONS, form a part.
- (b) The term "Project Area" means the area within which are the specified Contract limits of the Improvements contemplated to be constructed in whole or in part under this contract.
- (c) The term "Engineer" means LJA Engineering, Inc., Engineer in charge, serving the Owner with architectural or engineering services, his successor, or any other person or persons, employed by the Owner for the purpose of directing or having in charge the work embraced in this Contract.
- (d) The term "Contract Documents" means and shall include the following: Invitation to Bid, , Signed Copy of Bid, General Conditions, Special Contract Conditions For Construction, Acknowledgement and Certification Regarding Debarment, Non-Collusion Affidavit, Vendor Qualification Packet, Payment and Performance Bonds, Contract Award, Addenda (if any), Technical Specifications, and Drawings (as listed in the Schedule of Drawings).
- (e) The term "Substantially Complete" shall mean that the work is fully completed with the exception of minor miscellaneous work and adjustments.

3. Supervision By Contractor

- (a) Except where the Contractor is an individual and gives his personal supervision to the work, the Contractor shall provide a competent superintendent, satisfactory to the Local Public Agency and the Engineer, on the work at all times during working hours with full authority to act for him. The Contractor shall also provide an adequate staff for the proper coordination and expediting of his work.
- (b) The Contractor shall lay out his own work and he shall be responsible for all work executed by him under the Contract. He shall verify all figures and elevations before proceeding with the work and will be held responsible for any error resulting from his failure to do so.

4. Subcontracts

- (a) The Contractor shall not execute an agreement with any subcontractor or permit any subcontractor to perform any work included in this contract until he has verified the subcontractor as eligible to participate in federally funded contracts.
- (b) No proposed subcontractor shall be disapproved by the city/county except for cause.

- (c) The Contractor shall be as fully responsible to the city/county for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them.
- (d) The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work and required compliance by each subcontractor with the applicable provisions of the Contract.
- (e) Nothing contained in the Contract shall create any contractual relation between any subcontractor and the Owner.

5. Fitting and Coordination of Work

The Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, subcontractors, or material suppliers engaged upon this Contract.

6. Payments to Contractor

(a) Partial Payments

- 1) The Contractor shall prepare his requisition for partial payment as of the last day of the month and submit it, with the required number of copies, to the Engineer for his approval. The amount of the payment due the Contractor shall be determined by adding to the total value of work completed to date, the value of materials properly stored on the site and deducting (1) Five percent (5%) of the total amount, to be retained until final payment and (2) the amount of all previous payments. The total value of work completed to date shall be based on the estimated quantities of work completed and on the unit prices contained in the agreement. The value of materials properly stored on the site shall be based upon the estimated quantities of such materials and the invoice prices. Copies of all invoices shall be available for inspection of the Engineer.
- 2) Monthly or partial payments made by the Owner to the Contractor are moneys advanced for the purpose of assisting the contractor to expedite the work of construction. The Contractor shall be responsible for the care and protection of all materials and work upon which payments have been made until final acceptance of such work and materials by the Owner. Such payments shall not constitute a waiver of the right of the Owner to require the fulfillment of all terms of the Contract and the delivery of all improvements embraced in this Contract complete and satisfactory to the Owner in all details.

(b) Final Payment

- 1) After final inspection and acceptance by the Owner of all work under the Contract, the Contractor shall prepare his requisition for final payment which shall be based upon the careful inspection of each item of work at the applicable unit prices stipulated in the Agreement. The total amount of the final payment due the Contractor under this contract shall be the amount computed as described above less all previous payments.
- 2) The Owner before paying the final estimate, shall require the Contractor to furnish releases or receipts from all subcontractors having performed any work and all persons having supplied materials, equipment (installed on the Project) and services to the Contractor, if the Owner deems it necessary in order to protect its interest. The Owner may, if it deems such action advisable, make payment in part or in full to the Contractor without requiring the furnishing of such releases or receipts and any payments made shall in no way impair the obligations of any surety or sureties furnished under this Contract.
- 3) Any amount due the Owner under Liquidated Damages, shall be deducted from the final payment due the contractor.

(c) Payments Subject to Submission of Certificates

Each payment to the Contractor by the Owner shall be made subject to submission by the Contractor of all written certifications required of him and his subcontractors.

(d) Withholding Payments

The Owner may withhold from any payment due the Contractor whatever is deemed necessary to protect the Owner, and if so elects, may also withhold any amounts due from the Contractor to any subcontractors or material dealers, for work performed or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Owner and will not require the Owner to determine or adjust any claims or disputes between the Contractor and his subcontractors or material dealers, or to withhold any moneys for their protection unless the Owner elects to do so. The failure or refusal of the Owner to withhold any moneys from the Contractor shall in no way impair the obligations of any surety or sureties under any bond or bonds furnished under this Contract.

7. Changes in the Work

- (a) The Owner may make changes in the scope of work required to be performed by the Contractor under the Contract without relieving or releasing the Contractor from any of his obligations under the Contract or any guarantee given by him pursuant to the Contract provisions, and without affecting the validity of the guaranty bonds, and without relieving or releasing the surety or sureties of said bonds. All such work shall be executed under the terms of the original Contract unless it is expressly provided otherwise. Additionally, all such change orders must be approved by the CDBG staff prior to execution of same.
- (b) Except for the purpose of affording protection against any emergency endangering health, life, limb or property, the Contractor shall make no change in the materials used or in the specified manner of constructing and/or installing the improvements or supply additional labor, services or materials beyond that actually required for the execution of the Contract, unless in pursuance of a written order from the Owner authorizing the Contractor to proceed with the change. No claim for an adjustment of the Contract Price will be valid unless so ordered.
- (c) If applicable unit prices are contained in the Agreement, the Owner may order the Contractor to proceed with desired unit prices specified in the Contract; provided that in case of a unit price contract the net value of all changes does not increase the original total amount of the agreement by more than twenty-five percent (25%) or decrease the original the total amount by eighteen percent (18%).
- (d) Each change order shall include in its final form:
 - 1) A detailed description of the change in the work.
 - 2) The Contractor's proposal (if any) or a confirmed copy thereof.
 - 3) A definite statement as to the resulting change in the contract price and/or time.
 - 4) The statement that all work involved in the change shall be performed in accordance with contract requirements except as modified by the change order.
 - 5) The procedures as outlined in this Section for a unit price contract also apply in any lump sum contract.

8. Estimated Quantities

This Contract, including the specifications, plans and estimates, is intended to show clearly all the work to be done and material to be furnished hereunder. The estimated quantities of the various classes of work to be done and material to be furnished under this contract are approximate and are to be used as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed

that the actual amount of work to be done and material to be furnished under this contract may differ somewhat from these estimates, and that the basis for payment under this contract shall be the plan quantity or actual amount of such work done whichever is specified. It is further understood that the County does not guarantee any minimum amount of work under this Contract.

Contractor agrees that it will make no claim for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this Contract and the estimated quantities contemplated and contained in the proposals.

9. Claims for Extra Cost

- (a) If the Contractor claims that any instructions by Drawings or otherwise involve extra cost or extension of time, he shall, within ten days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his protest thereto in writing to the Owner, stating clearly and in detail the basis of his objections. No such claim will be considered unless so made.
- (b) Claims for additional compensation for extra work, due to alleged errors in ground elevations, contour lines, or bench marks, will not be recognized unless accompanied by certified survey data, made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted, or would result, in handling more material, or performing more work, than would be reasonably estimated from the Drawings and maps issued.
- (c) Any discrepancies which may be discovered between actual conditions and those represented by the Drawings and maps shall be reported at once to the Owner and work shall not proceed except at the Contractor's risk, until written instructions have been received by him from the Owner.
- (d) If, on the basis of the available evidence, the Owner determines that an adjustment of the Contract Price and/or time is justifiable, a change order shall be executed.

10. Time

The Contractor is advised that time for completion will consist of the number of calendar days set out in the Contract Award. The time for completion will begin to run on the day after the issuance of a notice to proceed by the County. The Contractor is required to start work no later than ten (10) working days after the issuance of the written notice to proceed. Failure to timely commence operations may be deemed by the County to be a default. The Contractor will complete the work at that site within the time period specified. If there is more than one site listed on the notice to proceed, work for all sites must be completed not later than is specified for each site.

11. Termination, Delays, and Liquidated Damages

- (a) Right of the Owner to Terminate Contract.

In the event that any of the provisions of this contract are violated by the Contractor, or by any of his subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate the contract. The notices shall contain the reasons for such intention to terminate the contract, and unless such violation or delay shall cease and satisfactory arrangement of correction be made within ten days, the contract shall, upon the expiration of said ten (10) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the Surety and the Contractor. The Surety shall have the right to take over and perform the contract. Provided, however, that if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such Surety of notice of termination, the Owner may take over the work and complete the project by bid/contract or by force account at the expense of the Contractor and his Surety shall be liable to the Owner for any excess cost incurred. In such event the Owner may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefore.

(b) Liquidated Damages for Delays.

Contractor agrees that time is of the essence of this contract and that for each day of a delay of a day beyond the number of working days or calendar days herein agreed upon the completion of the work herein specified and contracted for (after due allowance for such extension of time as is provided for under Extension of Time hereinabove) County may withhold permanently from Contractor's total compensation the sum of \$ \$1,000.00 for each calendar day of delay, until the work is completed, as liquidated damages for such delay. The Contractor and his sureties shall be liable to the Owner for the amount thereof.

(c) Excusable Delays.

- 1) The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged with liquidated damages for any delays in the completion of the work due to:
- 2) Any acts of the Government, including controls or restrictions upon or requisitioning of materials, equipment, tools, or labor by reason of war, national defense, or any other national emergency;
- 3) Any acts of the Owner;
- 4) Causes not reasonably foreseeable by the parties to this Contract at the time of the execution of the Contract which are beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, acts of another Contractor in the performance of some other contract with the Owner, fires, floods, epidemics, quarantine, restrictions, strikes, freight embargoes, and weather of unusual severity such as hurricanes, tornadoes, cyclones and other extreme weather conditions.
- 5) Provided, however, that the Contractor promptly notifies the Owner within ten (10) days in writing of the cause of the delay. Upon receipt of such notification, the Owner shall ascertain the facts and the cause and extent of delay. If, upon the basis of the facts and the terms of this contract, the delay is properly excusable, the Owner shall extend the time for completing the work for a period of time commensurate with the period of excusable delay.

12. Assignment or Novation

The Contractor shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the Owner; provided, however, that assignments to banks or other financial institutions may be made without the consent of the Owner. No assignment or novation of this Contract shall be valid unless the assignment or novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment supplied for the performance of the work under this Contract in favor of all persons, firms, or corporations rendering such labor or services or supplying such materials, tools, or equipment.

13. Disputes

- (a) All disputes arising under this Contract or its interpretation except those disputes covered by FEDERAL LABOR STANDARDS PROVISIONS whether involving law or fact or both, or extra work, and all claims for alleged breach of contract shall, within ten (10) days of commencement of the dispute, be presented by the Contractor to the Owner for decision. Any claim not presented within the time limit specified in this paragraph shall be deemed to have been waived, except that if the claim is of a continuing character and notice of the claim is not given within ten (10) days of its commencement, the claim will be considered only for a period commencing ten (10) days prior to the receipt of the Owner.
- (b) The Contractor shall submit in detail his claim and his proof thereof.

- (c) If the Contractor does not agree with any decision of the Owner, he shall in no case allow the dispute to delay the work but shall notify the Owner promptly that he is proceeding with the work under protest.

14. Technical Specifications and Drawings

Anything mentioned in the Technical Specifications and not shown on the Drawings or vice versa, shall be of like effect as if shown on or mentioned in both. In case of difference between Drawings and Technical Specifications, the Technical Specifications shall govern. In case of any discrepancy in Drawings, or Technical Specifications, the matter shall be immediately submitted to the Owner, without whose decision, said discrepancy shall not be adjusted by the Contractor, save only at his own risk and expense.

15. Shop Drawings

- (a) All required shop drawings, machinery details, layout drawings, etc. shall be submitted to the Engineer in copies for approval sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting and rechecking if necessary. The Contractor may proceed, only at his own risk, with manufacture or installation of any equipment or work covered by said shop drawings, etc. until they are approved and no claim, by the Contractor, for extension of the contract time shall be granted by reason of his failure in this respect.
- (b) Any drawings submitted without the Contractor's stamp of approval will not be considered and will be returned to him for proper resubmission. If any drawings show variations from the requirements of the Contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment of contract price and/or time, otherwise the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract even though the drawings have been approved.
- (c) If a shop drawing is in accordance with the contract or involves only a minor adjustment in the interest of the owner not involving a change in contract price or time; the engineer may approve the drawing. The approval shall not relieve the Contractor from his responsibility for adherence to the contract or for any error in the drawing.

16. Requests for Supplementary Information

It shall be the responsibility of the Contractor to make timely requests of the Owner for any additional information not already in his possession which should be furnished by the Owner under the terms of this Contract, and which he will require in the planning and execution of the work. Such requests may be submitted from time to time as the need approaches, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, and list the various items and the latest date by which each will be required by the Contractor. The first list shall be submitted within two weeks after Contract award and shall be as complete as possible at that time. The Contractor shall, if requested, furnish promptly any assistance and information the Engineer may require in responding to these requests of the Contractor. The Contractor shall be fully responsible for any delay in his work or to others arising from his failure to comply fully with the provision of this section.

17. Materials and Workmanship

- (a) Unless otherwise specifically provided for in the technical specifications, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose. Where equipment, materials, articles or workmanship are referred to in the technical specifications as "equal to" any particular standard, the Engineer shall decide the question of equality.
- (b) The Contractor shall furnish to the Owner for approval the manufacturer's detailed specifications for all machinery, mechanical and other special equipment, which he contemplates installing together with full information as to type, performance characteristics, and all other pertinent information as required, and

shall likewise submit for approval full information concerning all other materials or articles which he proposes to incorporate.

- (c) Machinery, mechanical and other equipment, materials or articles installed or used without such prior approval shall be at the risk of subsequent rejection.
- (d) Materials specified by reference to the number or symbol of a specific standard, shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the Invitation for Bids, except as limited to type, class or grade, or modified in the technical specifications shall have full force and effect as though printed therein.
- (e) The Owner may require the Contractor to dismiss from the work such employee or employees as the Owner or the Engineer may deem incompetent, or careless, or insubordinate.

18. Samples, Certificates and Tests

- (a) The Contractor shall submit all material or equipment samples, certificates, affidavits, etc., as called for in the contract documents or required by the Engineer, promptly after award of the contract and acceptance of the Contractor's bond. No such material or equipment shall be manufactured or delivered to the site, except at the Contractor's own risk, until the required samples or certificates have been approved in writing by the Engineer. Any delay in the work caused by late or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the contract time.
- (b) Each sample submitted by the Contractor shall carry a label giving the name of the Contractor, the project for which it is intended, and the name of the producer. The accompanying certificate or letter from the Contractor shall state that the sample complies with contract requirements, shall give the name and brand of the product, its place of origin, the name and address of the producer and all specifications or other detailed information which will assist the Engineer in making a prompt decision regarding the acceptability of the sample. It shall also include the statement that all materials or equipment furnished for use in the project will comply with the samples and/or certified statements.
- (c) Approval of any materials shall be general only and shall not constitute a waiver of the Owner's right to demand full compliance with Contract requirements. After actual deliveries, the Engineer will have such check tests made as he deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Engineer will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable.
- (d) Except as otherwise specifically stated in the Contract, the costs of sampling and testing will be divided as follows:
 - 1) The Contractor shall furnish without extra cost, including packing and delivery charges, all samples required for testing purposes, except those samples taken on the project by the Engineer;
 - 2) The Contractor shall assume all costs of re-testing materials which fail to meet contract requirements;
 - 3) The Contractor shall assume all costs of testing materials offered in substitution for those found deficient;
 - 4) The Owner will pay all other expenses.

19. Permits and Codes

- (a) The Contractor shall give all notices required by and comply with all applicable laws, ordinances, and codes of the Local Government. All construction work and/or utility installations shall comply with all applicable ordinances, and codes including all written waivers. Before installing any work, the Contractor shall examine the drawings and technical specifications for compliance with applicable ordinances and codes and shall immediately report any discrepancy to the Owner. Where the requirements of the drawings and technical specifications fail to comply with such applicable ordinances or codes, the Owner will adjust the Contract by Change Order to conform to such ordinances or codes (unless waivers in writing covering the difference have been granted by the governing body or department) and make appropriate adjustment in the Contract Price or stipulated unit prices.
- (b) Should the Contractor fail to observe the foregoing provisions and proceed with the construction and/or install any utility at variance with any applicable ordinance or code, including any written waivers (notwithstanding the fact that such installation is in compliance with the drawings and technical specifications), the Contractor shall remove such work without cost to the Owner.
- (c) The Contractor shall at his own expense, secure and pay for all permits for street pavement, sidewalks, shed, removal of abandoned water taps, sealing of house connection drains, pavement cuts, buildings, electrical, plumbing, water, gas and sewer permits required by the local regulatory body or any of its agencies.
- (d) The Contractor shall comply with applicable local laws and ordinances governing the disposal of surplus excavation, materials, debris and rubbish on or off the Project Area and commit no trespass on any public or private property in any operation due to or connected with the Improvements contained in this Contract.
- (e) The Contractor will be required to make arrangements for and pay the water, electrical power, or any other utilities required during construction.
- (f) During construction of this project, the Contractor shall use every means possible to control the amount of dust created by construction. Prior to the close of a day's work, the Contractor, if directed by the Owner, shall moisten the bank and surrounding area to prevent a dusty condition.

20. Care of Work

- (a) The Contractor shall be responsible for all damages to person or property that occur as a result of his fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance.
- (b) The Contractor shall provide sufficient competent watchmen, both day and night, including Saturdays, Sundays, and holidays, from the time the work is commenced until final completion and acceptance.
- (c) In an emergency affecting the safety of life, limb or property, including adjoining property, the Contractor, without special instructions or authorization from the Owner is authorized to act at his discretion to prevent such threatened loss or injury, and he shall so act. He shall likewise act if instructed to do so by the Owner.
- (d) The Contractor shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations.
- (e) The Contractor shall shore up, brace, underpin, secure, and protect as maybe necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or other operations connected with the construction of the improvements included in this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property owner or other party before the commencement of any work. The

Contractor shall indemnify and save harmless the Owner from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which the Owner may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

21. Accident Prevention

- (a) No laborer or mechanic employed in the performance of this Contract shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety as determined under construction safety and health standards promulgated by the Secretary of Labor.
- (b) The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work.
- (c) The Contractor shall maintain an accurate record of all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor shall promptly furnish the Owner with reports concerning these matters.
- (d) The Contractor shall indemnify and save harmless the Owner from any claims for damages resulting from property damage, personal injury and/or death suffered or alleged to have been suffered by any person as a result of any work conducted under this contract.
- (e) The Contractor shall provide trench safety for all excavations more than five feet deep prior to excavation. All OSHA Standards for trench safety must be adhered to by the Contractor.
- (f) The contractor shall at all times conduct his work in such a manner as to insure the least possible inconvenience to vehicular and pedestrian traffic. At the close of the work each day, all streets where possible in the opinion of the Owner, shall be opened to the public in order that persons living in the area may have access to their homes or businesses by the use of the streets. Barricades, warning signs, and necessary lighting shall be provided to the satisfaction of the Owner at the expense of the Contractor.

22. Sanitary Facilities

The Contractor shall furnish, install and maintain ample sanitary facilities for the workmen. As the needs arise, a sufficient number of enclosed temporary toilets shall be conveniently placed as required. Drinking water shall be provided from an approved source, so piped or transported as to keep it safe and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing and governing health regulations.

23. Use of Premises

- (a) The Contractor shall confine his equipment, storage of materials, and construction operations to the contract limits as shown on the drawings and as prescribed by ordinances or permits, or as may be desired by the Owner, and shall not unreasonably encumber the site or public rights of way with his materials and construction equipment.
- (b) The Contractor shall comply with all reasonable instructions of the Owner and all existing state and local regulations regarding signs, advertising, traffic, fires, explosives, danger signals, and barricades.

24. Removal of Debris, Cleaning, Etc.

The Contractor shall, periodically or as directed during the progress of the work, remove and legally dispose of all surplus excavated material and debris, and keep the Project Area and public rights of way reasonably clear.

Upon completion of the work, he shall remove all temporary construction facilities, debris and unused materials provided for work, and put the whole site of the work and public rights of way in a neat and clean condition.

25. Inspection

- (a) All materials and workmanship shall be subject to inspection, examination, or test by the Owner and Engineer at any and all times during manufacture or construction and at any and all places where such manufacture or construction occurs. The Owner shall have the right to reject defective material and workmanship or require its correction. Unacceptable workmanship shall be satisfactorily corrected. Rejected material shall be promptly segregated and removed from the Project Area and replaced with material of specified quality without charge. If the Contractor fails to proceed at once with the correction of rejected workmanship or defective material, the Owner may by contract or otherwise have the defects remedied or rejected materials removed from the Project Area and charge the cost of the same against any Monies which may be due the Contractor, without prejudice to any other rights or remedies of the Owner.
- (b) The Contractor shall furnish promptly all materials reasonably necessary for any tests which may be required. All tests by the Owner will be performed in such manner as not to delay the work unnecessarily and will be made in accordance with the provisions of the technical specifications.
- (c) The Contractor shall notify the Owner sufficiently in advance of back filling or concealing any facilities to permit proper inspection. If any facilities are concealed without approval or consent of the Owner, the Contractor shall uncover for inspection and recover such facilities at his own expense, when so requested by the Owner.
- (d) Should it be considered necessary or advisable by the Owner at any time before final acceptance of the entire work to make an examination of work already completed by uncovering the same, the Contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any important or essential respect, due to fault of the Contractor or his subcontractors, the Contractor shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, shall be allowed the Contractor and he shall, in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.
- (e) Inspection of materials and appurtenances to be incorporated in the improvements included in this Contract may be made at the place of production, manufacture or shipment, whenever the quantity justifies it, and such inspection and acceptance, unless otherwise stated in the technical specifications, shall be final, except as regards (1) latent defects, (2) departures from specific requirements of the Contract, (3) damage or loss in transit, or (4) fraud or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the inspection of materials as a whole or in part will be made at the Project Site.
- (f) Neither inspection, testing, approval nor acceptance of the work in whole or in part, by the Owner or its agents shall relieve the Contractor or his sureties of full responsibility for materials furnished or work performed not in strict accordance with the Contract.

26. Review by Owner

The Owner and its authorized representatives and agents shall have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract, provided, however that all instructions and approval with respect to the work will be given to the Contractor only by the Owner through its authorized representatives or agents.

27. Final Inspection

When the Improvements included in this Contract are substantially completed, the Contractor shall notify the Owner in writing that the work will be ready for final inspection on a definite date which shall be stated in the notice. The Owner will make the arrangements necessary to have final inspection commenced on the date stated in the notice, or as soon thereafter as is practicable.

28. Deduction for Uncorrected Work

If the Owner deems it not expedient to require the Contractor to correct work not done in accordance with the Contract Documents, an equitable deduction from the Contract Price will be made by agreement between the Contractor and the Owner and subject to settlement, in case of dispute, as herein provided.

29. Warranty of Title

No material, supplies, or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease-purchase or other agreement by which an interest is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed by him to the Owner free from any claims, liens, or charges. Neither the Contractor nor any person, firm, or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

30. Warranty of Workmanship and Materials

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the improvements included in this Contract by the Owner or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of 12 months from the date of final acceptance of the work.

31. Compliance with Air and Water Acts

- (a) In compliance with the Clean Air Act, as amended, 41 U.S.C. Sec. 7401 et. seq., and the regulations of the Environmental Protection Agency with respect thereto, the Contractor agrees that:
- 1) Any facility to be utilized in the performance of this contract or any subcontract shall not be a facility listed on the EPA List of Violating Facilities pursuant to 40 CFR 15.20.
 - 2) He will comply with all requirements of Section 114 of the Clean Air Act, as amended.
 - 3) Materials utilized in the project shall be free of any hazardous materials, except as may be specifically provided for in the specifications.
- (b) If the Contractor encounters existing material on sites owned or controlled by the Owner or in material sources that are suspected by visual observation or smell to contain hazardous materials, the Contractor shall immediately notify the Engineer and the Owner. The Owner will be responsible for testing for and removal or disposition of hazardous materials on sites owned or controlled by the Owner. The Owner may

suspend the work, wholly or in part during the testing, removal or disposition of hazardous materials on sites owned or controlled by the Owner.

32. Section 109 of the Housing and Community Development Act of 1974

No person in the United States shall on the ground of race, color, national origin, or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under this title.

33. The Provision of Local Training, Employment, and Business Opportunities

- (a) To the greatest extent feasible opportunities for training and employment be given lower income residents of the project area and contracts for work in connection with the project be awarded to business concerns which are located in, or owned in substantial part by persons residing in the area of the project.
- (b) The Contractor will include this clause in every subcontract for work in connection with the project.

34. Non Segregated Facilities

The Contractor certifies that he does not and will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not and will not permit his employees any segregated facilities at any of his establishments, or permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. As used in this paragraph the term "segregated facilities" means any waiting rooms, work areas, rest rooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise.

35. Job Offices

- (a) The Contractor and his subcontractors may maintain such office and storage facilities on the site as are necessary for the proper conduct of the work. These shall be located so as to cause no interference to any work to be performed on the site. The Owner shall be consulted with regard to locations.
- (b) Upon completion of the improvements, or as directed by the Owner, the Contractors shall remove all such temporary structures and facilities from the site, and leave the site of the work in the condition required by the contract.

36. Partial Use of Site Improvements

The Owner may give notice to the Contractor and place in use those sections of the improvements which have been completed, inspected and can be accepted as complying with the technical specifications and if in its opinion, each such section is reasonably safe, fit, and convenient for the use and accommodation for which it was intended, provided:

- (a) The use of such sections of the Improvements shall in no way impede the completion of the remainder of the work by the Contractor.
- (b) The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.
- (c) The period of guarantee stipulated in the Section 29 hereof shall not begin to run until the date of the final acceptance of all work which the Contractor is required to construct under this Contract.

37. Contract Documents and Drawings

The Local Public Agency will furnish the Contractor without charge copies of the Contract Documents, including Technical Specifications and Drawings. Additional copies requested by the Contractor will be furnished at cost.

38. Contract Period

The work to be performed under this contract shall commence within the time stipulated by the Owner in the Notice to Proceed, and shall be fully completed within 120 calendar days thereafter.

39. Keeping Of Plans And Specifications Accessible

The Contractor shall keep one (1) copy of all Plans and Specifications constantly accessible at the work site and available for inspection at all times.

40. Utilities

Contractor shall be responsible for any charges which may be made by any city or utility companies for the work to be performed by Contractor.

41. Parking

Contractor shall be responsible for the expense of parking the Contractor's vehicle(s) in a legal manner and at no expense or inconvenience to the County.

42. Fire And Safety

Contractor is completely responsible for fire protection at the job site as well as the safety of its own employees as well as those entering onto the job site.

43. Contractor's Buildings

The building of structures for housing men, or the erection of tents or other forms of protection will be permitted only at such places as the County shall permit, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in the manner satisfactory to the County.

44. Worksite Security

Contractor shall maintain the security of the worksite.

Contractor shall provide adequate protection to persons on the worksite, adjacent properties, and utilities as is necessary to keep each free of damage or injury. Contractor shall furnish all barricades, warning lights and other safety devices necessary for the safety and protection of the public and shall remove them upon completion of the work performed on those premises under the terms of this contract.

Contractor will have complete control over the work site and shall be fully responsible for any loss of or damage to any County property from any cause and will reimburse County in the event of any loss or damage to County's property from any cause.

Contractor shall take proper means to protect adjacent or adjoining properties which might be injured or seriously affected by construction undertaken under this Agreement from any damage or injury by reason of said process of construction. Contractor shall be liable for any and all claims for such damage on account of its failure to fully protect all adjoining properties.

45. Final Grading

If grading is required, when work is complete, Contractor shall grade the site to fill in holes and make a presentable appearance without disturbing trees and add fill dirt if needed. Contractor may not leave voids in the grading and compaction of the property. The land shall have a smooth appearance without concrete, bricks, building materials, and other debris on the surface.

46. Changes And Alterations

Contractor further agrees that County may make such changes and alterations as County may see fit, in the line, grade, form dimensions, plans or materials for the work herein contemplated, or any part thereof, either before or after the beginning of the contract construction, without affecting the validity of this Contract and the accompanying bonds.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the work that may be dispensed with. If they increase the amount of the work, and the increased work can fairly be classified under the specifications, such increase shall be paid for according to the quantity actually done and at the unit price established for such work under this contract; otherwise such additional work shall be paid for as provided under the paragraph entitled "EXTRA WORK". In case the County shall make such changes or alterations as shall make useless any work already done or material already furnished or used in said work, then County shall recompense Contractor for any material or labor so used, and for any actual loss occasioned by such change due to actual expenses incurred in preparation for the work as originally planned.

47. Extra Work

The term "Extra Work" as used in this contract shall be understood to mean and include all work that may be required by the County to be done by Contractor to accomplish any change, alteration or addition to the work shown in the plans and specifications.

It is agreed that Contractor shall perform all Extra Work under the direction of the County when presented with a Written Work Order signed by the County. It is also agreed that the compensation to be paid Contractor for performing said Extra Work shall be determined by one or more of the following methods:

- Method (a) - By agreed unit prices; or
- Method (b) - By agreed lump sum; or
- Method (c) - If Neither Method (a) nor Method (b) can be agreed upon before the Extra Work is commenced, then Contractor shall be paid the "Actual field cost" of the work plus fifteen (15) percent.

In the event said Extra Work be performed and paid for under Method (c), then the provisions of this paragraph shall apply and the "actual field cost" is hereby defined to include the cost of all workmen, such as foremen, timekeepers, merchants, and laborers, and materials, supplies, teams, trucks, rentals on machinery and equipment for time actually employed or used on such Extra Work plus actual transportation charges necessarily incurred, if the kind of equipment or machinery is not already on the job, together with all power, fuel, lubricants, water and similar operating expenses, also all necessary incidental expenses incurred directly on account of such Extra Work including Social Security, Old Age Benefits and other payroll taxes, and a ratable proportion of premiums on Construction and Maintenance Bonds, Public Liability and Property Damage and Workmen's Compensation, and all other insurance as may be required by any law or ordinance. The County may direct the form in which accounts of the "actual field cost" shall be kept and may also specify in writing, before the work commences, the method of doing the work and the type and kind of machinery and equipment to be used, otherwise these matters shall be determined by Contractor. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using the one hundred (100) percent of the actual hourly or daily rate (for the time used plus time in moving to and from Job) of the latest schedule of Equipment Ownership Expense adopted by the Association General Contractors of America. Where practicable the terms and prices for the use of Machinery and Equipment shall be incorporated in the

Written Extra Work Order. The fifteen (15) percent of the "Actual Field Cost" to be paid Contractor shall cover and compensate him for his profit, overhead, general superintendence and field office expense, and all other elements of cost and expense not embraced within the 'actual field cost" as herein defined, save that where the Contractor's Camp or Field Office must be maintained primarily on account of such extra work, then the cost to maintain and operate same shall be included in the "actual field cost".

No claim for extra work of any kind will be allowed unless ordered in writing by the County. In case any orders or instructions, either oral or written appear to Contractor to involve extra work for which he should receive compensation, it shall make written request to the County for written order authorizing Extra Work. Should a difference of opinion arise as to what does or does not constitute extra work, or as to the payment therefor, and the County insists upon its performance, Contractor shall proceed with the work after making written order and shall keep an accurate account of the "actual field cost" thereof, as provided under Method (c) and by this action Contractor will thereby preserve the right to submit the matter of payment to litigation.

48. Salvage

Any materials, equipment and fixtures specifically ordered to be salvaged under these specifications shall remain the property of County and will be delivered to the site designated by the County. All other items shall be disposed of by Contractor in compliance with all applicable laws and regulations.

49. Compliance With Codes

Contractor shall comply with all city, county, and state codes, laws, and ordinances in force at the time of award of contract and applicable to such work. Contractor shall obtain, at Contractor's own expense such permits, certificates, and licenses as may be required in the performance of the specified work.

50. Laws And Ordinances

Contractor shall at all times observe and comply with all Federal, State and Local Laws, ordinances and regulations which in any manner effect the contract or the work, and shall indemnify and save harmless the County against any claim arising from the violation of any such laws and ordinances, whether by Contractor or its employees.

51. Permits And Licenses

Contractor shall be responsible for obtaining and furnishing all necessary permits and licenses, City, County, State or Federal as are required for the performance of this contract.

52. Lines And Grades

The Engineer will furnish points for horizontal and vertical control. Any additional stakes required by the Contractor shall be set at his expense. Whenever necessary, work shall be suspended to permit this work, but such suspension will be as brief as practicable and the Contractor shall be allowed no extra compensation therefor. The Contractor shall give the Engineer ample notice of the time and place where control lines and bench marks will be needed. All control stakes, marks, etc. shall be carefully preserved by the Contractor, and in case of careless destruction or removal by him or his employees, such control stakes, marks, etc. shall be replaced by the Engineer at the Contractor's expense.

53. Excess, Waste Material And Debris

All excess material, waste material and debris shall become the property of the Contractor and shall be properly disposed of off-site. No separate payment shall be made for same.

54. Material Hauling

Hauling of materials will not be paid for directly, but shall be considered as subsidiary work pertaining to the respective bid items. Haul routes for full and empty loads shall be restricted to State Highways. Hauling of equipment is also restricted to State Highways.

55. Abatement And Mitigation Of Excessive Or Unnecessary Construction Noise

Throughout all phases of the construction of this project, including the moving, unloading, operating and handling of construction equipment prior to commencement of work, during the project and after the work is complete, the contractor shall make every reasonable effort to minimize the noise imposed upon the immediate neighborhood surrounding the area of construction. Particular and special efforts shall be exercised by the Contractor to avoid the creation of unnecessary noise impacts on adjacent sensitive receptors in the placement of non-mobile equipment such as air compressors, generators, pumps, etc. The placement of temporary parked mobile equipment with the engine running shall be such as to cause the least disruption of normal adjacent activities not associated with the work to be performed by the contractor.

All equipment associated with the work shall be equipped with components designed by the manufacturer wholly or in part to suppress excessive noise and these components shall be maintained in their original operating condition considering normal depreciation. Noise-attenuation devices installed by the manufacturer such as mufflers, engine covers, insulation, etc., shall not be removed nor rendered ineffectual nor be permitted to remain off the equipment while the equipment is in use.

56. Working Hours

Work shall not be commenced by the contractor before sunrise and shall be so conducted that all equipment is off the road and safely stored by sunset. Specific permission shall be obtained by the contractor from the Engineer for work during those hours between 7:00 P.M. and 6:00 A.M. of the following day.

57. Pipeline, Utility Locations And Contractor Responsibility

An effort to determine all pipelines and utilities which may impact the project has been made. All known pipelines and utilities have been approximately located and shown on the plans. The Contractor shall notify all utility and pipeline owners before beginning the work. Additional unknown utilities and pipelines may be found. Adjustments of these utilities or pipelines shall be done by others at no expense to the contractor. However, the Contractor shall cooperate and coordinate his work with the adjustment

The Contractor will anticipate this in making his bid. The contractor will not be allowed claims for damages or delays for these adjustments should they be necessary. However, additional time will be considered for the contract period.

This action, however, shall in no way be interpreted as relieving the Contractor of his responsibilities under the terms of the contract as set out in the plans and specifications. The Contractor shall repair any damage to the facilities caused by his operations at the Contractor's expense and shall restore facilities to service in a timely manner.

58. Incidentals

All items of work required under this contract not specifically called for in the proposal as pay items shall be considered incidental to the various bid items and no separate payment shall be made for same.

59. Flagmen

During certain phases of construction flagmen will be required to direct and control traffic. This work will not be paid for directly, but shall be considered incidental the various bid items and no separate payment shall be made for same.

60. Field Office

For this project the Contractor will not have to provide a field office.

61. Wage Rates:

The attached schedule of wages per hour for this Contract follow.

General Decision Number: TX150056 01/02/2015 TX56

Superseded General Decision Number: TX20140056

State: Texas

Construction Type: Highway

Counties: Austin, Brazoria, Chambers, Fort Bend, Galveston, Hardin, Harris, Jefferson, Liberty, Montgomery, Orange, San Jacinto and Waller Counties in Texas.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Executive Order (EO) 13658 establishes an hourly minimum wage of \$10.10 for 2015 that applies to all contracts subject to the Davis-Bacon Act for which the solicitation is issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.10 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/02/2015

* SUTX2011-013 08/10/2011

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER (Paving and Structures).....	\$ 12.98	
ELECTRICIAN.....	\$ 27.11	
FORM BUILDER/FORM SETTER		
Paving & Curb.....	\$ 12.34	
Structures.....	\$ 12.23	
LABORER		
Asphalt Raker.....	\$ 12.36	
Flagger.....	\$ 10.33	
Laborer, Common.....	\$ 11.02	
Laborer, Utility.....	\$ 11.73	
Pipelayer.....	\$ 12.12	
Work Zone Barricade Servicer.....	\$ 11.67	
PAINTER (Structures).....	\$ 18.62	

POWER EQUIPMENT OPERATOR:

Asphalt Distributor.....	\$ 14.06
Asphalt Paving Machine.....	\$ 14.32
Broom or Sweeper.....	\$ 12.68
Concrete Pavement	
Finishing Machine.....	\$ 13.07
Concrete Paving, Curing,	
Float, Texturing Machine....	\$ 11.71
Concrete Saw.....	\$ 13.99
Crane, Hydraulic 80 Tons	
or less.....	\$ 13.86
Crane, Lattice boom 80	
tons or less.....	\$ 14.97
Crane, Lattice boom over	
80 Tons.....	\$ 15.80
Crawler Tractor.....	\$ 13.68
Excavator, 50,000 pounds	
or less.....	\$ 12.71
Excavator, Over 50,000	
pounds.....	\$ 14.53
Foundation Drill, Crawler	
Mounted.....	\$ 17.43
Foundation Drill, Truck	
Mounted.....	\$ 15.89
Front End Loader 3 CY or	
Less.....	\$ 13.32
Front End Loader, Over 3 CY.	\$ 13.17
Loader/Backhoe.....	\$ 14.29
Mechanic.....	\$ 16.96
Milling Machine.....	\$ 13.53
Motor Grader, Fine Grade....	\$ 15.69
Motor Grader, Rough.....	\$ 14.23
Off Road Hauler.....	\$ 14.60
Pavement Marking Machine....	\$ 11.18
Piledriver.....	\$ 14.95
Roller, Asphalt.....	\$ 11.95
Roller, Other.....	\$ 11.57
Scraper.....	\$ 13.47
Spreader Box.....	\$ 13.58

Servicer.....\$ 13.97

Steel Worker

Reinforcing Steel.....	\$ 15.15
Structural Steel Welder.....	\$ 12.85
Structural Steel.....	\$ 14.39

TRUCK DRIVER

Low Boy Float.....	\$ 16.03
Single Axle.....	\$ 11.46
Single or Tandem Axle Dump..	\$ 11.48
Tandem Axle Tractor w/Semi	
Trailer.....	\$ 12.27

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate

that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION



BID PROPOSAL

The bidder hereby proposes to furnish all labor, material, equipment and incidentals for:

GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT

Enclosed is a Cashier's Check or Bid Bond in the sum of 5% of the greatest amount bid.

Bidder agrees to perform in accordance with the requirements of the contract documents in consideration of payment by the County of the prices in this proposal.

**IN CASE OF DISCREPANCY BETWEEN UNIT PRICES AND EXTENDED PRICES,
UNIT PRICES WILL GOVERN.**

This bid sheet must be completely filled out in ink or typewritten with any necessary supplemental information attached.

The undersigned hereby agrees to all of the foregoing terms and provisions and to all terms and provisions of the contract, if awarded of this bid package.

BIDDER _____

SIGNATURE _____

PRINT NAME _____

TITLE _____

ADDRESS _____

CITY, STATE _____

ZIP _____

TELEPHONE _____

FAX NO. _____

DATE _____

TAX I.D. NO. _____

**BID FORM GALVESTON COUNTY SEAWALL ENDCAP REPAIR AND REPLACEMENT
18TH STREET TO 39TH STREET SOUTH SIDE BASE BID**

Partial Concrete Repair							
ITEM NO.	SPEC NO.	DESCRIPTION	UNIT	QUAN.	UNIT PRICE IN WORDS	UNIT PRICE	TOTAL PRICE
1	438	CLEANING AND SEALING JOINTS, SEALANT CLASS 8 (GRAY COLOR), PRE-QUALIFIED JOINT SEAL, PRODUCER WITH TXDOT, COMPLETE IN PLACE	L.F.	25,000	_____ DOLLARS _____ CENTS		
2	DWG	REMOVE EXISTING SIDEWALK & FILL MATERIAL (8-INCH DEPTH), COMPLETE IN PLACE	S.Y.	1,250	_____ DOLLARS _____ CENTS		
Full Depth Concrete Repair							
3	400	SELECT FILL, LEAN CLAY OR SANDY LEAN CLAY WITH A LIQUID LIMIT LESS THAN 40 AND PLASTICITY INDEX BETWEEN 10 AND 20, COMPACTED, COMPLETE IN PLACE	C.Y.	70	_____ DOLLARS _____ CENTS		
4	360	6-INCH REINFORCED CONCRETE SIDEWALK(MINIMUM 5.5 SACKS PER CUBIC YARD), COMPLETE IN PLACE	S.Y.	1,250	_____ DOLLARS _____ CENTS		
5	360	6-INCH CONCRETE CURB, COMPLETE IN PLACE	L.F.	500	_____ DOLLARS _____ CENTS		
6	DWG	ADA ACCESSIBLE CONCRETE RAMP PER DETAIL, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	EA.	3	_____ DOLLARS _____ CENTS		
7	DWG	CONCRETE WHEEL STOP, AS DIRECTED BY OWNER'S REPRESENTATIVE	EA.	40	_____ DOLLARS _____ CENTS		

Traffic Control and Pavement Markings							
8	DWG	TRAFFIC MARKINGS, PREP AND PAINT 4" WIDE SOLID YELLOW STRIPING, COMPLETE IN PLACE	L.F.	3,000	_____ DOLLARS _____ CENTS		
9	DWG	TRAFFIC MARKINGS, PREP AND PAINT 4" WIDE SOLID WHITE STRIPING, COMPLETE IN PLACE	L.F.	6,000	_____ DOLLARS _____ CENTS		
10	DWG	TRAFFIC MARKINGS, PREP AND PAINT 4" WIDE SOLID RED STRIPING, COMPLETE IN PLACE	L.F.	200	_____ DOLLARS _____ CENTS		
11	644	MATCH EXISTING HANDICAP, NO PARKING, PAID PARKING, SIGN WITH TXDOT REMOVABLE MOUNT PER DETAILS, COMPLETE IN PLACE	EA.	8	_____ DOLLARS _____ CENTS		
12	DWG	TRAFFIC CONTROL PLAN PER DETAIL, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	LS	1	_____ DOLLARS _____ CENTS		
						Total Bid 18th to 39th South Side=	

18TH STREET TO 39TH STREET SOUTH SIDE SUPPLEMENTARY ITEMS

ITEM NO.	SPEC NO.	DESCRIPTION	UNIT	QUAN.	UNIT PRICE IN WORDS	UNIT PRICE	TOTAL PRICE
13	DWG	INLET SILT SACK, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	EA.	50	_____ DOLLARS _____ CENTS		
14	400	"EXTRA" CEMENT STABILIZED SAND, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	TON	50	_____ DOLLARS _____ CENTS		
15	360	"EXTRA" CLASS A CONCRETE, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	C.Y.	25	_____ DOLLARS _____ CENTS		
16	464	24-INCH REINFORCED CONCRETE PIPE, ASTM C-76, CLASS III, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	L.F.	50	_____ DOLLARS _____ CENTS		
17	292	2-INCH THICK HMHL SURFACE COURSE, TYPE "D" , COMPLETE IN PLACE	S.Y.	100	_____ DOLLARS _____ CENTS		
18	292	8-INCH THICK ASPHALT BASE, GR. 2, PG-64, INCLUDES MILLING OR EXCAVATING OF EXISTING ASPHALT AND BASE MATERIAL, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	S.Y.	25	_____ DOLLARS _____ CENTS		
						Total Bid 18th to 39th South Side Supplementary Items=	
						Total Bid 18th to 39th South Side Base and Supplementary Items=	

**BID FORM GALVESTON COUNTY SEAWALL ENDCAP REPAIR AND REPLACEMENT
EAST BEACH DRIVE TO F.M. 3005 NORTH AND SOUTH SIDE BASE BID**

Partial Concrete Repair							
ITEM NO.	SPEC NO.	DESCRIPTION	UNIT	QUAN.	UNIT PRICE IN WORDS	UNIT PRICE	TOTAL PRICE
1	438	CLEANING AND SEALING JOINTS, SEALANT CLASS 8 (GRAY COLOR), PRE-QUALIFIED JOINT SEAL, PRODUCER WITH TXDOT, COMPLETE IN PLACE	L.F.	3,000	_____ DOLLARS _____ CENTS		
2	DWG	REMOVE EXISTING SIDEWALK & FILL MATERIAL (8-INCH DEPTH), COMPLETE IN PLACE	S.Y.	8,700	_____ DOLLARS _____ CENTS		
Full Depth Concrete Repair							
3	400	SELECT FILL, LEAN CLAY OR SANDY LEAN CLAY WITH A LIQUID LIMIT LESS THAN 40 AND PLASTICITY INDEX BETWEEN 10 AND 20 AND COMPACTED, COMPLETE IN PLACE	C.Y.	484	_____ DOLLARS _____ CENTS		
4	360	6-INCH REINFORCED CONCRETE SIDEWALK(MINIMUM 5.5 SACKS PER CUBIC YARD), COMPLETE IN PLACE	S.Y.	8,700	_____ DOLLARS _____ CENTS		
5	360	6-INCH CONCRETE CURB, COMPLETE IN PLACE	L.F.	3,000	_____ DOLLARS _____ CENTS		
6	DWG	ADA ACCESIBLE CONCRETE RAMP PER DETAIL, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	EA.	11	_____ DOLLARS _____ CENTS		
7	465	SINGLE INLET PER PLAN DETAILS, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	EA.	18	_____ DOLLARS _____ CENTS		
8	465	DOUBLE INLET PER PLAN DETAILS, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	EA.	9	_____ DOLLARS _____ CENTS		
9	DWG	CONCRETE WHEEL STOP, AS DIRECTED BY OWNER'S REPRESENTATIVE	EA.	40	_____ DOLLARS _____ CENTS		

Traffic Control and Pavement Markings							
10	DWG	TRAFFIC MARKINGS, PREP AND PAINT 4" WIDE SOLID YELLOW STRIPING, COMPLETE IN PLACE	L.F.	3,000	_____ DOLLARS _____ CENTS		
11	DWG	TRAFFIC MARKINGS, PREP AND PAINT 4" WIDE SOLID WHITE STRIPING, COMPLETE IN PLACE	L.F.	6,000	_____ DOLLARS _____ CENTS		
12	DWG	TRAFFIC MARKINGS, PREP AND PAINT 4" WIDE SOLID RED STRIPING, COMPLETE IN PLACE	L.F.	900	_____ DOLLARS _____ CENTS		
13	644	MATCH EXISTING HANDICAP, NO PARKING, PAID PARKING, SIGN WITH TXDOT REMOVABLE MOUNT PER DETAILS, COMPLETE IN PLACE	EA.	38	_____ DOLLARS _____ CENTS		
14	DWG	TRAFFIC CONTROL PLAN PER DETAIL, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	LS	1	_____ DOLLARS _____ CENTS		
						Total Bid East Beach Drive to F.M. 3005 North and South Side=	

EAST BEACH DRIVE TO F.M. 3005 NORTH AND SOUTH SIDE SUPPLEMENTARY ITEMS

ITEM NO.	SPEC NO.	DESCRIPTION	UNIT	QUAN.	UNIT PRICE IN WORDS	UNIT PRICE	TOTAL PRICE
15	DWG	INLET SILT SACK, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	EA.	200	_____ DOLLARS _____ CENTS		
16	400	"EXTRA" CEMENT STABILIZED SAND, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	TON	100	_____ DOLLARS _____ CENTS		
17	360	"EXTRA" CLASS A CONCRETE, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	C.Y.	50	_____ DOLLARS _____ CENTS		
18	464	24-INCH REINFORCED CONCRETE PIPE, ASTM C-76, CLASS III, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	L.F.	200	_____ DOLLARS _____ CENTS		
19	292	2-INCH THICK HMHL SURFACE COURSE, TYPE "D" , COMPLETE IN PLACE	S.Y.	200	_____ DOLLARS _____ CENTS		
20	292	8-INCH THICK ASPHALT BASE, GR. 2, PG-64, INCLUDES MILLING OR EXCAVATING OF EXISTING ASPHALT AND BASE MATERIAL, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	S.Y.	100	_____ DOLLARS _____ CENTS		
						Total Bid East Beach Drive to F.M. 3005 North and South Side Supplementary Items=	
						Total Bid East Beach Drive to F.M. 3005 North and South Side Base Bid and Supplementary Items=	

EAST BEACH DRIVE TO F.M. 3005 NORTH AND SOUTH SIDE ALTERNATE ITEMS

Full Depth Concrete Repair							
ITEM NO.	SPEC NO.	DESCRIPTION	UNIT	QUAN.	UNIT PRICE IN WORDS	UNIT PRICE	TOTAL PRICE
21	DWG	REMOVE EXISTING SIDEWALK & FILL MATERIAL (8-INCH DEPTH), COMPLETE IN PLACE. EXISTING SIDEWALK & FILL MATERIAL BECOMES PROPERTY OF CONTRACTOR.	S.Y.	1,785	_____ DOLLARS _____ CENTS		
22	400	SELECT FILL, LEAN CLAY OR SANDY LEAN CLAY WITH A LIQUID LIMIT LESS THAN 40 AND PLASTICITY INDEX BETWEEN 10 AND 20 AND COMPACTED, AS DIRECTED BY OWNER'S REPRESENTATIVE, COMPLETE IN PLACE	C.Y.	99	_____ DOLLARS _____ CENTS		
23	360	6-INCH REINFORCED CONCRETE SIDEWALK(MINIMUM 5.5 SACKS PER CUBIC YARD), COMPLETE IN PLACE	S.Y.	1,785	_____ DOLLARS _____ CENTS		
Total Bid East Beach Drive to F.M. 3005 North and South Side Alternate Items=							

Sub Totals Bid	Cost
18th Street to 39th Street Base Bid	
18th Street to 39th Street Supplementary Items	
East Beach Drive to F.M. 3005 North and South Side Base Bid	
East Beach Drive to F.M. 3005 North and South Side Supplementary Items	
East Beach Drive to F.M. 3005 North and South Side Alternate Items	
Total Base Bid:	
Total Base Bid With Supplementary Items:	
Total Base Bid With Supplementary Items & Alternate Items:	

This Proposal consists of a Base, Supplementary, and Add-On Alternate Bids. For a bid to be considered responsive all sections must be completed. Any combination of Base, Supplementary, and Add-On Alternate Bids may be awarded for contract. The Contract will be based on the combination considered to be in the best interest of Galveston County.

All items of work required under this contract not specifically called for in the proposal as pay items shall be considered incidental to various bid items and no separate payment shall be made for same.

BID PROPOSAL

State of Texas Tax Statement of Materials and other charges:

The cost of in-place materials to be incorporated into the project. \$ _____

The cost of labor, profit, materials not in-place and all other charges \$ _____

TOTAL: (Must agree with bid) \$ _____

CONTRACT AWARD

CONTRACT FOR: GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT

THIS CONTRACT IS ENTERED INTO BETWEEN GALVESTON COUNTY AND THE CONTRACTOR NAMED BELOW PURSUANT TO SUBCHAPTER B, CHAPTER 271, TEXAS LOCAL GOVERNMENT CODE, AND THE REFERENCED INVITATION TO BID.

Contract No: CM15339

Bid No: B161001

Contractor: _____

Drawings: See Next Sheet

Addenda: _____

Drawing List

- 1 COVER SHEET
- 2 GENERAL NOTES
- 3 OVERALL PROJECT LAYOUT - 1 OF 2
- 4 OVERALL PROJECT LAYOUT - 2 OF 2
- 4A LOCATION SQUARE YARDAGE SCHEDULE
- 5 PROJECT LAYOUT 1
- 6 PROJECT LAYOUT 2
- 7 PROJECT LAYOUT 3
- 8 PROJECT LAYOUT 4
- 9 PROJECT LAYOUT 5
- 10 PROJECT LAYOUT 6
- 11 PROJECT LAYOUT 7
- 12 PROJECT LAYOUT 8
- 13 PROJECT LAYOUT 9
- 14 PROJECT LAYOUT 10
- 14A PROJECT LAYOUT 10 - PHOTOS
- 15 PROJECT LAYOUT 11
- 16 PROJECT LAYOUT 12
- 17 PROJECT LAYOUT 13
- 18 PROJECT LAYOUT 14
- 18A PROJECT LAYOUT 14 - PHOTOS
- 19 PROJECT LAYOUT 15
- 19A PROJECT LAYOUT 15 - PHOTOS
- 20 PROJECT LAYOUT 16
- 21 PROJECT LAYOUT 17
- 22 PROJECT LAYOUT 18
- 23 PROJECT LAYOUT 19
- 24 PROJECT LAYOUT 20
- 24A PROJECT LAYOUT 20 - PHOTOS
- 25 PROJECT LAYOUT 21
- 25A PROJECT LAYOUT 21 - PHOTOS
- 26 PROJECT LAYOUT 22
- 26A PROJECT LAYOUT 22 - PHOTOS
- 27 PROJECT LAYOUT 23
- 27A PROJECT LAYOUT 23 - PHOTOS
- 28 PROJECT LAYOUT 24
- 29 PROJECT LAYOUT 25
- 29A PROJECT LAYOUT 25 - PHOTOS
- 30 PROJECT LAYOUT 26
- 30A PROJECT LAYOUT 26 - PHOTOS
- 31 PROJECT LAYOUT 27
- 31A PROJECT LAYOUT 27 - PHOTOS
- 32 PROJECT LAYOUT 28
- 32A PROJECT LAYOUT 28 - PHOTOS
- 33 PROJECT LAYOUT 29
- 34 PROJECT LAYOUT 30
- 35 PROJECT LAYOUT 31
- 36 PROJECT LAYOUT 32
- 37 SIDEWALK DETAILS - 1 OF 2
- 38 SIDEWALK DETAILS - 2 OF 2
- 39 MISCELLANEOUS DETAILS - 1 OF 2
- 40 MISCELLANEOUS DETAILS - 2 OF 2
- 41 SIGN MOUNTING DETAILS
- 42 SEAWALL DETAILS
- 43 TRAFFIC CONTROL PLAN - 1 OF 2
- 44 TRAFFIC CONTROL PLAN - 2 OF 2

CONTRACT AWARD

Invitation to Bid; General Provisions; Special Contract Conditions for Construction, Bid Proposal, Affidavit and Surety Forms, Non-Collusion Affidavit, Debarment Form, Vendor Qualification Packet, Specifications, Plans attached to this Contract Award are all made a part of this Contract and collectively evidence and constitute the entire contract. Contractor shall furnish all materials, perform all of the work required to be done and to everything else required by these documents.

Time of Completion: The Contractor shall complete the work within 120 Calendar Days of the issuance of the notice to proceed. The time set forth for completion of the work is an essential element of the Contract.

The Contract Sum: The County shall pay the Contractor for performance of the Contract, the sum of _____ Dollars and No/100 (\$ _____), payments to be made as described herein.

Performance Bond required: () yes () no

Payment Bond required: () yes () no

This Contract is issued pursuant to award made by Commissioners' Court on _____, 20____.
EXECUTED this _____ day of _____, 20_____.

COUNTY OF GALVESTON, TEXAS

BY: _____
MARK HENRY, County Judge

ATTEST:

DWIGHT SULLIVAN, County Clerk

CONTRACTOR

BY: _____
Signature-Title

Printed Name

CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIEN

TO (Owner):

PROJECT NO:

CONTRACT FOR:

PROJECT:
(name, address)

CONTRACT DATE:

State of:

County of:

The undersigned, hereby certifies that, to the best of his knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Sub-contractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR:

Address:

BY:

Subscribed and sworn to before me this

day of 20

Notary Public:

My Commission Expires:

CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS

TO (Owner):

PROJECT NO:

CONTRACT FOR:

PROJECT:
(name, address)

CONTRACT DATE:

State of:

County of:

The undersigned, hereby certifies that, except as listed below, he has paid in 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 Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his property might in any way be held responsible.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment.
Whenever Surety is involved, consent of Surety is required. CONSENT OF SURETY, may be used for this purpose.
Indicate attachment: yes _____ no _____

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens.

CONTRACTOR:

Address:

BY:

Subscribed and sworn to before me this

day of _____ 20

Notary Public:

My Commission Expires:

CONSENT OF SURETY TO REDUCTION IN OR PARTIAL RELEASE OF RETAINAGE

TO (Owner):

PROJECT NO:

PROJECT:
(name, address)

CONTRACT FOR:

CONTRACT DATE:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(here insert name and address of Surety as it appears in the bond).

, SURETY,

on bond of (here insert name and address of Contractor as it appears in the bond)

, CONTRACTOR,

hereby approves the reduction in or partial release of retainage to the contractor as follows:

The Surety agrees that such reduction in or partial release of retainage to the Contractor shall not relieve the Surety of any of its
obligations to (here insert name and address of Owner)

, OWNER,

as set forth in the said Surety's bond.

IN WITNESS WHEREOF,
the Surety has hereunto set its had this

day of

20 .

Surety

Signature of Authorized Representative

Title

ATTEST:
(Seal):

CONSENT OF SURETY COMPANY TO FINAL PAYMENT

TO (Owner):

PROJECT NO:

PROJECT:
(name, address)

CONTRACT FOR:

CONTRACT DATE:

CONTRACTOR:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(here insert name and address of Surety as it appears in the bond).

, SURETY COMPANY,

on bond of (here insert name and address of Contractor)

, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety
Company of any of its obligations to (here insert name and address of Owner)

, OWNER,

as set forth in the said Surety Company's bond.

IN WITNESS WHEREOF,
the Surety Company has hereunto set its had this

day of _____ 20__ .

Surety Company

Signature of Authorized Representative

Title

ATTEST:
(Seal):

NOTE: This form is to be use as a companion document to Contractor's Affidavit of Payment of Debts and Claims.

State of Texas

§

County of Galveston

§

§

NON-COLLUSION AFFIDAVIT

Before me, the undersigned notary, on this day personally appeared _____ (Affiant), whom being first duly sworn, deposes and certifies that:

- Affiant is the _____ of _____, that
(Individual, Partner, Corporate Officer) (Name of Proposer)
- submitted the attached Bid/Proposal in **Bid #B161001 Galveston Seawall Endcap Repair & Replacement**
- Affiant is a duly authorized representative of Proposer and is authorized to make this Non-Collusion Affidavit;
- The attached Proposal/Bid is genuine and is not a collusive or sham Proposal/Bid;
- The attached Proposal/Bid has been independently arrived at without collusion with any other bidder, proposer, person, firm, competitor, or potential competitor;
- Bidder/Proposer has not colluded, conspired, connived or agreed, directly or indirectly, with any other bidder, proposer, person, firm, competitor, or potential competitor, to submit a collusive or sham bid or that such other bidder, proposer, person, firm, competitor, or potential competitor shall refrain from bidding/proposing;
- Bidder/Proposer has not in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other bidder, proposer, person, firm, competitor, or potential competitor to fix the price or prices in the attached Bid/Proposal or of the bid/proposal any other bidder/proposer;
- Bidder/Proposer has not in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other bidder, proposer, person, firm, competitor, or potential competitor to fix the overhead, profit or cost element of the Bid/Proposal price or prices of any other bidder/proposer, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against Galveston County or any person interested in the proposed contract;
- Affiant has not in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other bidder, proposer, person, firm, competitor, or potential competitor, paid or agreed to pay any other bidder, proposer, person, firm, competitor, or potential competitor any money or anything of value in return for assistance in procuring or attempting to procure a contract or in return for establishing the price or prices in the attached Bid/Proposal or the bid/proposal of any other Bidder/Proposer; and
- Affiant certifies that Affiant is fully informed regarding the accuracy of the statements contained herein, and under penalties of perjury, certifies and affirms the truth of the statements herein, such penalties being applicable to the Bidder/Proposer as well as to Affiant signing on its behalf.

Signature of Affiant

SWORN TO and SUBSCRIBED before me this _____ day of _____, 2015.

Notary Public

My Commission Expires: _____



County of Galveston

**ACKNOWLEDGMENT AND CERTIFICATION REGARDING DEBARMENT,
SUSPENSION, AND OTHER INELIGIBLE
Executive Orders 12549 & 12689 Certification, Debarment and Suspension**

Solicitation Number: BID #B161001

Solicitation Title: GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT

Contractor hereby CERTIFIES that:

Contractor, and all of its principals, is not presently debarred, suspended, proposed for debarment, proposed for suspension, or declared ineligible under Executive Order 12549 or Executive Order 12689, Debarment and Suspension, and is not in any other way ineligible for participation in Federal or State assistance programs;

Contractor, and all of its principals, were not and have not been debarred, suspended, proposed for debarment, proposed for suspension, or declared ineligible under Executive Order 12549 or Executive Order 12689, Debarment and Suspension, and were not and have not been in any other way ineligible for participation in Federal or State assistance programs at the time its' proposal was submitted in the procurement identified herein and at any time since submission of its' proposal;

Contractor has included, and shall continue to include, this certification in all contracts between itself and any sub-contractors in connection with services performed under this contract; **and**

Contractor shall notify Galveston County in writing immediately, through written notification to the Galveston County Purchasing Agent, if Contractor is not in compliance with Executive Order 12549 or 12689 during the term of its contract with Galveston County.

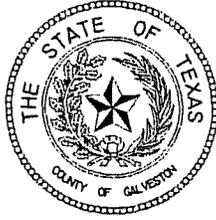
Contractor **Represents** and **Warrants** that the individual executing this Acknowledgment and Certification on its behalf has the full power and authority to do so and can legally bind the Contractor hereto.

Name of Business

Date

By: _____
Signature

Printed Name & Title



County of Galveston Purchasing Department Vendor Qualification Packet

(rev. 1.2, March 29, 2010)

All interested parties seeking consideration for qualified vendor status with the County of Galveston should complete and return only the following attached forms to:

Galveston County Purchasing Department
722 Moody Avenue, (21st Street), 5th Floor
Galveston, Texas 77550
(409) 770-5371 office
(409) 621-7987 fax

- Form PEID:** Person /Entity Information Data
Form W-9: Request for Taxpayer Identification Number and Certification
(please note that the included form may not be the latest revised form issued by the Internal Revenue Service. Please check the IRS website at <http://www.irs.gov/pub/irs-pdf/fw9.pdf> for the latest revision of this form.)
Form CIQ: Conflict of Interest Questionnaire
(please note that the included form may not be the latest revised form issued by the State of Texas Ethics Commission. Please check the Texas Ethics Commission website at for the latest revision of this form. Please note that Galveston County Purchasing Agent is not responsible for the filing of this form with the Galveston County Clerk per instructions of the State of Texas Ethics Commission).

Certificate(s) of Insurance: If the person or entity seeking qualified vendor status with the County will be performing work at or on any County owned facility and/or property, Certificate(s) of Insurance are required to be submitted prior to performing any work.

Insurance requirements are as follows:

Public Liability and Property Damage Insurance:

Successful vendor agrees to keep in full force and effect, a policy of public liability and property damage insurance issued by a casualty company authorized to do business in the State of Texas, and in standard form approved by the Board of Insurance Commissioners of the State of Texas, with coverage provisions insuring the public from any loss or damage that may arise to any person or property by reason of services rendered by vendor. Vendor shall at its own expense be required to carry the following minimum insurance coverages:

- For damages arising out of bodily injury to or death of one person in any one occurrence – one hundred thousand and no/100 dollars (\$100,000.00);
- For damages arising out of bodily injury to or death of two or more persons in any one occurrence – three hundred thousand and no/100 dollars (\$300,000.00); and
- For injury to or destruction of property in any one occurrence – one hundred thousand and no/100 dollars (\$100,000.00).

This insurance shall be either on an occurrence basis or on a claims made basis. Provided however, that if the coverage is on a claims made basis, then the vendor shall be required to purchase, at the termination of this agreement, tail coverage for the County for the period of the County's relationship with the vendor under this agreement. Such coverage shall be in the amounts set forth in subparagraphs (1), (2), and (3) above.

Worker's Compensation Insurance:

Successful vendor shall also carry in full force Workers' Compensation Insurance policy(ies), if there is more than one employee, for all employees, including but not limited to full time, part time, and emergency employees employed by the vendor. Current insurance certificates certifying that such policies as specified above are in full force and effect shall be furnished by the vendor to the County.

The County of Galveston shall be named as additional insured on policies listed in subparagraphs above and shall be notified of any changes to the policy(ies) during the contractual period.

Insurance is to be placed with insurers having a Best rating of no less than A. The vendor shall furnish the County with certificates of insurance and original endorsements affecting coverage required by these insurance clauses. The certificates and endorsements for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf. The vendor shall be required to submit annual renewals for the term of any contractual agreement, purchase order or term contract, with Galveston County prior to expiration of any policy.

In addition to the remedies stated herein, the County has the right to pursue other remedies permitted by law or in equity.

The County agrees to provide vendor with reasonable and timely notice of any claim, demand, or cause of action made or brought against the County arising out of or related to utilization of the property. Vendor shall have the right to defend any such claim, demand, or cause of action at its sole cost and expense and within its sole and exclusive discretion. The County agrees not to compromise or settle any claim or cause of action arising out of or related to the utilization of the property without the prior written consent of the vendor.

In no event shall the County be liable for any damage to or destruction of any property belonging to the vendor unless specified in writing and agreed upon by both parties.

Procurement Policy - Special Note:

Understand that it is, according to Texas Local Government Code, Section 262.011, Purchasing Agents, subsections (d), (e), and (f), the sole responsibility of the Purchasing Agent to supervise all procurement transactions.

Therefore, be advised that all procurement transactions require proper authorization in the form of a Galveston County purchase order from the Purchasing Agent's office prior to commitment to deliver supplies, materials, equipment, including contracts for repair, service, and maintenance agreements. Any commitments made without proper authorization from the Purchasing Agent's office, pending Commissioners' Court approval, may become the sole responsibility of the individual making the commitment including the obligation of payment.

Code of Ethics - Statement of Purchasing Policy:

Public employment is a public trust. It is the policy of Galveston County to promote and balance the objective of protecting the County's integrity and the objective of facilitating the recruitment and

retention of personnel needed by Galveston County. Such policy is implemented by prescribing essential standards of ethical conduct without creating unnecessary obstacles to entering public office.

Public employees must discharge their duties impartially so as to assure fair competitive access to governmental procurement by responsible contractors. Moreover, they should conduct themselves in such a manner as to foster public confidence in the integrity of the Galveston County procurement organization.

To achieve the purpose of these instructions, it is essential that those doing business with Galveston County also observe the ethical standards prescribed here.

General Ethical Standards: It shall be a breach of ethics to attempt to realize personal gain through public employment with Galveston County by any conduct inconsistent with the proper discharge of the employee's duties.

It shall be a breach of ethics to attempt to influence any public employee of Galveston County to breach the standards of ethical conduct set forth in this code.

It shall be a breach of ethics for any employee of Galveston County to participate directly or indirectly in procurement when the employee knows that:

- The employee or any member of the employee's immediate family has a financial interest pertaining to the procurement.
- A business or organization in which the employee, or any member of the employee's immediate family, has a financial interest pertaining to the procurement.
- Any other person, business or organization with which the employee or any member of the employee's immediate family is negotiating or has an arrangement concerning prospective employment is involved in the procurement.

Gratuities: It shall be a breach of ethics to offer, give or agree to give any employee of Galveston County, or for any employee or former employee of Galveston County to solicit, demand, accept or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation of any part of a program requirement or purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any program requirement or a contract or subcontract, or to any solicitation or proposal therefore pending before this government.

Kickbacks: It shall be a breach of ethics for any payment, gratuity or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor for any contract for Galveston County, or any person associated therewith, as an inducement for the award of a subcontract or order.

Contract Clause: The prohibition against gratuities and kickbacks prescribed above shall be conspicuously set forth in every contract and solicitation by Galveston County.

Confidential Information: It shall be a breach of ethics for any employee or former employee of Galveston County to knowingly use confidential information for actual or anticipated personal gain, or for the actual or anticipated gain of any person.

Questions/Concerns:

If you have any questions or concerns regarding the information or instructions contained within this packet, please contact any member of the Purchasing Department staff at (409) 770-5371.

CONFLICT OF INTEREST DISCLOSURE REPORTING

Proposer may be required under Chapter 176 of the Texas Local Government Code to complete and file a conflict of interest questionnaire (CIQ Form). If so, the completed CIQ Form must be filed with the County Clerk of Galveston County, Texas.

If Proposer has an employment or other business relationship with an officer of Galveston County or with a family member of an officer of Galveston County that results in the officer or family member of the officer receiving taxable income that exceeds \$2,500.00 during the preceding 12-month period, then Proposer **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County.

If Proposer has given an officer of Galveston County or a family member of an officer of Galveston County one or more gifts with an aggregate value of more than \$250.00 during the preceding 12-months, then Proposer **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County.

The Galveston County Clerk has offices at the following locations:

Galveston County Clerk
Galveston County Justice Center, Suite 2001
600 59th Street
Galveston, Texas 77551

Galveston County Clerk
North County Annex, 1st Floor
174 Calder Road
League City, Texas 77573

Again, if Proposer is required to file a CIQ Form, the original completed form is filed with the Galveston County Clerk (not the Purchasing Agent).

For Proposer's convenience, a blank CIQ Form is enclosed with this proposal. Blank CIQ Forms may also be obtained by visiting the Galveston County Clerk's website and/or the Purchasing Agent's website – both of these web sites are linked to the Galveston County homepage, at <http://www.co.galveston.tx.us>.

As well, blank CIQ Forms may be obtained by visiting the Texas Ethics Commission website, specifically at http://www.ethics.state.tx.us/whatsnew/conflict_forms.htm.

Chapter 176 specifies deadlines for the filing of CIQ Forms (both initial filings and updated filings).

It is Proposer's sole responsibility to file a true and complete CIQ Form with the Galveston County Clerk if Proposer is required to file by the requirements of Chapter 176. Proposer is advised that it is an offense to fail to comply with the disclosure reporting requirements dictated under Chapter 176 of the Texas Local Government Code.

If you have questions about compliance with Chapter 176, please consult your own legal counsel. Compliance is the individual responsibility of each person, business, and agent who is subject to Chapter 176 of the Texas Local Government Code.



**COUNTY of GALVESTON
Purchasing Department**

rev. 1.3, March 29, 2010

FORM PEID:	Request for Person-Entity Identification Data
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Instructions: Please type or print clearly when completing sections 1 thru 4 and return completed form to:

Galveston County Purchasing Agent
722 Moody Avenue (21st. Street), 5th Floor
Galveston, Texas 77550
(409) 770-5371 office
(409) 621-7987 fax

1.

Business Name:			
Attention Line:			

2.

Physical Address:			
City:	State:	Zip+4:	

3.

Billing / Remit Address:			
City:	State:	Zip+4	

4.

Main Contact Person:			
Main Phone Number:			
Fax Number:			
E-mail Address:			

Areas below are for County use only.

Requested By:	Phone / Ext. #
Department:	Date:

Action Requested - Check One:	IFAS PEID Vendor Number:	
<input type="checkbox"/> Add New	<input type="checkbox"/> Change Data	<input type="checkbox"/> Re-activate
<input type="checkbox"/> Inactivate	<input type="checkbox"/> Employee	<input type="checkbox"/> Attorney
<input type="checkbox"/> Landlord	<input type="checkbox"/> Foster Parent	<input type="checkbox"/> Refund
<input type="checkbox"/> One Time	<input type="checkbox"/> Foster Child	

Request for Taxpayer Identification Number and Certification

Give form to the
 requester. Do not
 send to the IRS.

Print or type See Specific Instructions on page 2.	Name (as shown on your income tax return)		
	Business name, if different from above		
	Check appropriate box: <input type="checkbox"/> Individual/Sole proprietor <input type="checkbox"/> Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Limited liability company. Enter the tax classification (D=disregarded entity, C=corporation, P=partnership) ▶	<input type="checkbox"/> Exempt payee	
	<input type="checkbox"/> Other (see instructions) ▶		
	Address (number, street, and apt. or suite no.)	Requester's name and address (optional)	
City, state, and ZIP code			
List account number(s) here (optional)			

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on Line 1 to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Social security number
or
Employer identification number

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification Instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here

Signature of U.S. person ▶

Date ▶

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,

- The U.S. grantor or other owner of a grantor trust and not the trust, and
- The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person, do not use Form W-9. Instead, use the appropriate Form W-8 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate Instructions for the Requester of Form W-9.

Also see *Special rules for partnerships* on page 1.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name" line.

Limited liability company (LLC). Check the "Limited liability company" box only and enter the appropriate code for the tax classification ("D" for disregarded entity, "C" for corporation, "P" for partnership) in the space provided.

For a single-member LLC (including a foreign LLC with a domestic owner) that is disregarded as an entity separate from its owner under Regulations section 301.7701-3, enter the owner's name on the "Name" line. Enter the LLC's name on the "Business name" line.

For an LLC classified as a partnership or a corporation, enter the LLC's name on the "Name" line and any business, trade, or DBA name on the "Business name" line.

Other entities. Enter your business name as shown on required federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name" line.

Note. You are requested to check the appropriate box for your status (individual/sole proprietor, corporation, etc.).

Exempt Payee

If you are exempt from backup withholding, enter your name as described above and check the appropriate box for your status, then check the "Exempt payee" box in the line following the business name, sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following payees are exempt from backup withholding:

1. An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2),
2. The United States or any of its agencies or instrumentalities,
3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities,
4. A foreign government or any of its political subdivisions, agencies, or instrumentalities, or
5. An international organization or any of its agencies or instrumentalities.

Other payees that may be exempt from backup withholding include:

6. A corporation,
7. A foreign central bank of issue,
8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States,
9. A futures commission merchant registered with the Commodity Futures Trading Commission,
10. A real estate investment trust,
11. An entity registered at all times during the tax year under the Investment Company Act of 1940,
12. A common trust fund operated by a bank under section 584(a),
13. A financial institution,
14. A middleman known in the investment community as a nominee or custodian, or
15. A trust exempt from tax under section 664 or described in section 4947.

The chart below shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 15.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 9
Broker transactions	Exempt payees 1 through 13. Also, a person registered under the Investment Advisers Act of 1940 who regularly acts as a broker
Barter exchange transactions and patronage dividends	Exempt payees 1 through 5
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 7 ²

¹See Form 1099-MISC, Miscellaneous Income, and its instructions.

²However, the following payments made to a corporation (including gross proceeds paid to an attorney under section 6045(f), even if the attorney is a corporation) and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, and payments for services paid by a federal executive agency.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited liability company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at www.ssa.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/businesses and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting www.irs.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, and 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). Exempt payees, see *Exempt Payee* on page 2.

Signature requirements. Complete the certification as indicated in 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

Call the IRS at 1-800-829-1040 if you think your identity has been used inappropriately for tax purposes.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS personal property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: spam@uce.gov or contact them at www.consumer.gov/idtheft or 1-877-IDTHEFT(438-4338).

Visit the IRS website at www.irs.gov to learn more about identity theft and how to reduce your risk.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor ²
4. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee ³
b. So-called trust account that is not a legal or valid trust under state law	The actual owner ¹
5. Sole proprietorship or disregarded entity owned by an individual	The owner ³
For this type of account:	Give name and EIN of:
6. Disregarded entity not owned by an individual	The owner
7. A valid trust, estate, or pension trust	Legal entity ⁴
8. Corporate or LLC electing corporate status on Form 8832	The corporation
9. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
10. Partnership or multi-member LLC	The partnership
11. A broker or registered nominee	The broker or nominee
12. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or "DBA" name on the second name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons who must file information returns with the IRS to report interest, dividends, and certain other income paid to you, mortgage interest you paid, the acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA, or Archer MSA or HSA. The IRS uses the numbers for identification purposes and to help verify the accuracy of your tax return. The IRS may also provide this information to the Department of Justice for civil and criminal litigation, and to cities, states, the District of Columbia, and U.S. possessions to carry out their tax laws. We may also disclose this information to other countries under a tax treaty, to federal and state agencies to enforce federal nontax criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism.

You must provide your TIN whether or not you are required to file a tax return. Payers must generally withhold 28% of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to a payer. Certain penalties may also apply.

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor or other person doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

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

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

OFFICE USE ONLY

Date Received

1 Name of person who has a business relationship with local governmental entity.

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

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 Name of local government officer with whom filer has employment or business relationship.

Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

Yes No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

Yes No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

Yes No

D. Describe each employment or business relationship with the local government officer named in this section.

4

Signature of person doing business with the governmental entity

Date

ITEM 1400

**MEASUREMENT AND PAYMENT
18th STREET TO 39TH STREET SOUTH SIDE**

MEASUREMENT AND PAYMENT: It is the intent of the Proposal and of the General and Supplementary Conditions that the total bid, as submitted, shall cover all work required by these Contract Documents and the Plans. All costs in connection with the work, including furnishing of all materials, appliances, equipment, supplies and all appurtenances; providing all construction equipment and tools; and performing all necessary labor to fully complete the work shall be included in the unit prices in the Proposal. No item of work that is required by the Contract Documents for the proper and successful completion of the Contract will be paid for outside of or in addition to the prices submitted to the Proposal. All work not specifically set forth in the Proposal as a pay item shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices named in the Proposal.

The method of measurement and basis of payment shall be as stipulated in the following subparagraphs:

BASE BID ITEMS:

1. Cleaning and Sealing Joints, Sealant Class 8 (Gray Color), Pre-Qualified Joint Seal, Producer with TxDOT; Bid Item 1:

Measurement shall be "Per Linear Foot". The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work including cleaning and sealing joints and cracks in the rigid concrete sidewalk, use sealants of the class specified that meet the requirements of DMS-6310, and follow the plans details as required in locations pre-approved before work begins following TxDOT Specification 438.

2. Remove Existing Sidewalk and Fill Material (8-Inch Depth); Bid Item 2:

Measurement shall be "Per Square Yard". The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, marking/painting sidewalk before removal to check with owner's representative, including saw-cutting for a clean edge (no extra pay), breaking out concrete, exposing rebar, excavating to proper depth, hauling off spoil and concrete off site (becomes property of the contractor), marking off/covering from public and implementing traffic control plan.

3. Select Fill, Lean Clay or Sandy Lean Clay with a Liquid Limit Less than 40 and Plasticity Index Between 10 and 20, Compacted; Bid Item 3:

Measurement shall be “Per Cubic Yard”. Payment shall be full compensation for supplying all materials to deliver select fill and compact for sidewalk bedding. Select Fill characteristics shall be verified from soil testing before contractor will begin placing fill as directed by the engineer.

4. 6-Inch Reinforced Concrete Sidewalk (Minimum 5.5 Sacks per Cubic Yard); Bid Item 4:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for shaping and compacting the select fill bed, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing longitudinal, warping, expansion, sawed control and contraction joints , and load transmission units, and joint filler material in proper position; for coating steel bars where required by plans, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work.

5. 6-Inch Concrete Curb; Bid Item 5:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including layout, forming, reinforcement including rebar, supply and installation of concrete per details, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix, curb laydown machine, and incidentals to complete the work.

6. ADA Accessible Concrete Ramp Per Detail; Bid Item 6:

Measurement shall be “Per Each”. The unit price shall be full compensation for shaping, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing truncated domes, slopes, and tie-ins to new or existing sidewalk and pavement, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work for a concrete ramp complete in place.

7. 6 Inch Concrete Wheel Stops; Bid Item 7:

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Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including layout, forming, reinforcement including rebar, supply and installation of concrete, drilling holes, setting stops, salvaging, transporting, and delivering the material, as required to place wheel stops as directed, complete in place.

8. Traffic Markings, Prep and Paint, 4” Solid Yellow Striping; Bid Item 8:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including the layout, and surface preparation to place a 4” solid yellow stripe, as directed by the engineer, complete in place.

9. Traffic Markings, Prep and Paint, 4” Solid White Striping; Bid Item 9:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including the layout, and surface preparation to place a 4” solid white stripe, as directed by the engineer, complete in place.

10. Traffic Markings, Prep and Paint, 4” Solid Red Striping; Bid Item 10:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including the layout, and surface preparation to place a 4” solid red stripe, as directed by the engineer, complete in place.

11. Match Existing Handicap, No Parking, Pair Parking, Sign with TxDOT Removable Mount per Detail; Bid Item 11:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing all labor, tools, equipment, sign post caps, supplies and incidentals necessary to complete the work, including the removal of existing signs in repair areas and salvaging, placement of new TxDOT mount on sign as shown in plans, as directed by the engineer, complete in place.

12. Traffic Control Plan per Detail; Bid Item 12:

Measurement shall be “Per Lump Sum”. The unit price shall be full compensation for furnishing traffic control plan needed for excavating, forming and concrete activities as necessary. Roadways are to be open to local traffic. The unit price shall include furnishing, installation, and removal of signs and/or barricades as necessary, and the use of flagmen to assist in traffic control during working hours in order to follow details as shown.

SUPPLEMENTARY BID ITEMS:

13. SWPPP Inlet Silt Sack, As Directed by Owner’s Representative; Supplemental Bid Item 13:

Measurement shall be “Per Each”. The unit price shall be full compensation for supplying gravel bags for each curb inlet, installation of gravel bags, maintenance of barrier with removal of solids build up on upstream side, and removal of barrier at the end of construction, finish grading, clean-up, and all incidental work.

14. “Extra” Cement Stabilized Sand, per TXDOT Item 400, As Directed by Owner’s Representative; Supplemental Bid Item 14:

Measurement shall be “Per Ton”. Payment shall be full compensation for supplying all materials to deliver cement stabilized sand (2 sacks per Cubic Yard), labor to place cement stabilized sand as directed by the engineer.

15. “Extra” Class A Concrete, per TXDOT Item 360, As Directed by Owner’s Representative; Supplemental Bid Item 15:

Measurement shall be “Per Cubic Yard”. Payment shall be full compensation for supplying all materials to deliver class A concrete, labor to place class A concrete as directed by the engineer.

16. 24-Inch Reinforced Concrete Pipe, ASTM C-76, Class III, As Directed by Owner’s Representative; Supplemental Bid Item 16:

Measurement shall be “Per Linear Foot”. Payment shall be full compensation for supplying all materials to deliver 24-inch reinforced concrete pipe, labor to place reinforced concrete pipe as directed by the engineer.

17. 2-inch Thick HMHL Surface Course, Type “D” per TXDOT Item 340; Bid Item 17:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for furnishing, delivery, placing and compacting the aggregate to the depth specified, and for all other items (tack and/or prime coat) necessary and incidental to the performance of the work in accordance to the Specifications and Plans.

18. 8-Inch Thick Asphalt Base, Gr. 2, PG-64, Per TXDOT Item 292, Includes Milling or Excavating of Existing Asphalt and Base Material, Includes Delivery of Millings to an Area as Directed by the City; Bid Item 18:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for furnishing all labor, tools, equipment, materials, disposal and manipulation as required to remove existing asphalt and base materials and replace materials in accordance with the Specifications and Plans in locations specified by the Engineer.

ITEM 1400

**MEASUREMENT AND PAYMENT
EAST BEACH DRIVE TO F.M. 3005 NORTH AND SOUTH SIDE**

MEASUREMENT AND PAYMENT: It is the intent of the Proposal and of the General and Supplementary Conditions that the total bid, as submitted, shall cover all work required by these Contract Documents and the Plans. All costs in connection with the work, including furnishing of all materials, appliances, equipment, supplies and all appurtenances; providing all construction equipment and tools; and performing all necessary labor to fully complete the work shall be included in the unit prices in the Proposal. No item of work that is required by the Contract Documents for the proper and successful completion of the Contract will be paid for outside of or in addition to the prices submitted to the Proposal. All work not specifically set forth in the Proposal as a pay item shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices named in the Proposal.

The method of measurement and basis of payment shall be as stipulated in the following subparagraphs:

BASE BID ITEMS:

1. Cleaning and Sealing Joints, Sealant Class 8 (Gray Color), Pre-Qualified Joint Seal, Producer with TxDOT; Bid Item 1:

Measurement shall be "Per Linear Foot". The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work including cleaning and sealing joints and cracks in the rigid concrete sidewalk, use sealants of the class specified that meet the requirements of DMS-6310, and follow the plans details as required in locations pre-approved before work begins following TxDOT Specification 438.

2. Remove Existing Sidewalk and Fill Material (8-Inch Depth); Bid Item 2:

Measurement shall be "Per Square Yard". The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, marking/painting sidewalk before removal to check with owner's representative, including saw-cutting for a clean edge (no extra pay), breaking out concrete, exposing rebar, excavating to proper depth, hauling off spoil and concrete off site (becomes property of the contractor), marking off/covering from public and implementing traffic control plan.

3. Select Fill, Lean Clay or Sandy Lean Clay with a Liquid Limit Less than 40 and Plasticity Index Between 10 and 20, Compacted; Bid Item 3:

Measurement shall be “Per Cubic Yard”. Payment shall be full compensation for supplying all materials to deliver select fill and compact for sidewalk bedding. Select Fill characteristics shall be verified from soil testing before contractor will begin placing fill as directed by the engineer.

4. 6-Inch Reinforced Concrete Sidewalk (Minimum 5.5 Sacks per Cubic Yard); Bid Item 4:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for shaping and compacting the select fill bed, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing longitudinal, warping, expansion, sawed control and contraction joints , and load transmission units, and joint filler material in proper position; for coating steel bars where required by plans, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work.

5. 6-Inch Concrete Curb; Bid Item 5:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including layout, forming, reinforcement including rebar, supply and installation of concrete per details, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix, curb laydown machine, and incidentals to complete the work.

6. ADA Accessible Concrete Ramp Per Detail; Bid Item 6:

Measurement shall be “Per Each”. The unit price shall be full compensation for shaping, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing truncated domes, slopes, and tie-ins to new or existing sidewalk and pavement, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work for a concrete ramp complete in place.

7. Single Inlet per Plan Details; Bid Item 7:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing and installation of type “Single Drain” inlet including excavation and embedment as required, backfilling, clean-up and all appurtenances including cement stabilized sand backfill around inlet a minimum of 1 foot bedding and backfill per City of Houston standard detail.

8. Single Inlet per Plan Details; Bid Item 8:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing and installation of type “Double Drain” inlet including excavation and embedment as required, backfilling, clean-up and all appurtenances including cement stabilized sand backfill around inlet a minimum of 1 foot bedding and backfill per City of Houston standard detail. Contractor to show inlet damage to Owner’s representative before excavation of inlet to ensure replacement is needed.

9. 6-Inch Concrete Wheel Stops; Bid Item 9:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including layout, forming, reinforcement including rebar, supply and installation of concrete, drilling holes, setting stops, salvaging, transporting, and delivering the material, as required to place wheel stops as directed, complete in place.

10. Traffic Markings, Prep and Paint, 4” Solid Yellow Striping; Bid Item 10:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including the layout, and surface preparation to place a 4” solid yellow stripe, as directed by the engineer, complete in place.

11. Traffic Markings, Prep and Paint, 4” Solid White Striping; Bid Item 11:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including the layout, and surface preparation to place a 4” solid white stripe, as directed by the engineer, complete in place.

12. Traffic Markings, Prep and Paint, 4” Solid Red Striping; Bid Item 12:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including the layout, and surface preparation to place a 4” solid red stripe, as directed by the engineer, complete in place.

13. Match Existing Handicap, No Parking, Pair Parking, Sign with TxDOT Removable Mount per Detail; Bid Item 13:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing all labor, tools, equipment, sign post caps, supplies and incidentals necessary to complete the work, including the removal of existing signs in repair areas and salvaging, placement of new TxDOT mount on sign as shown in plans, as directed by the engineer, complete in place.

14. Traffic Control Plan per Detail; Bid Item 14:

Measurement shall be “Per Lump Sum”. The unit price shall be full compensation for furnishing traffic control plan needed for excavating, forming and concrete activities as necessary. Roadways are to be open to local traffic. The unit price shall include furnishing, installation, and removal of signs and/or barricades as necessary, and the use of flagmen to assist in traffic control during working hours in order to follow details as shown.

SUPPLEMENTARY BID ITEMS:

15. SWPPP Inlet Silt Sack, As Directed by Owner’s Representative; Supplemental Bid Item 15:

Measurement shall be “Per Each”. The unit price shall be full compensation for supplying gravel bags for each curb inlet, installation of gravel bags, maintenance of barrier with removal of solids build up on upstream side, and removal of barrier at the end of construction, finish grading, clean-up, and all incidental work.

16. “Extra” Cement Stabilized Sand, per TXDOT Item 400, As Directed by Owner’s Representative; Supplemental Bid Item 16:

Measurement shall be “Per Ton”. Payment shall be full compensation for supplying all materials to deliver cement stabilized sand (2 sacks per Cubic Yard), labor to place cement stabilized sand as directed by the engineer.

17. “Extra” Class A Concrete, per TXDOT Item 360, As Directed by Owner’s Representative; Supplemental Bid Item 17:

Measurement shall be “Per Cubic Yard”. Payment shall be full compensation for supplying all materials to deliver class A concrete, labor to place class A concrete as directed by the engineer.

18. 24-Inch Reinforced Concrete Pipe, ASTM C-76, Class III, As Directed by Owner’s Representative; Supplemental Bid Item 18:

Measurement shall be “Per Linear Foot”. Payment shall be full compensation for supplying all materials to deliver 24-inch reinforced concrete pipe, labor to place reinforced concrete pipe as directed by the engineer.

19. 2-inch Thick HMHL Surface Course, Type “D” per TXDOT Item 340; Bid Item 19:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for furnishing, delivery, placing and compacting the aggregate to the depth specified, and for all other items (tack and/or prime coat) necessary and incidental to the performance of the work in accordance to the Specifications and Plans.

20. 8-Inch Thick Asphalt Base, Gr. 2, PG-64, Per TXDOT Item 292, Includes Milling or Excavating of Existing Asphalt and Base Material, Includes Delivery of Millings to an Area as Directed by the City; Bid Item 20:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for furnishing all labor, tools, equipment, materials, disposal and manipulation as required to remove existing asphalt and base materials and replace materials in accordance with the Specifications and Plans in locations specified by the Engineer.

ALTERNATE BID ITEMS:

21. Remove Existing Sidewalk and Fill Material (8-Inch Depth); Alternate Bid Item 21:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, marking/painting sidewalk before removal to check with owner’s representative, including saw-cutting for a clean edge (no extra pay), breaking out concrete, exposing rebar, excavating to proper depth, hauling off spoil and concrete off site (becomes property of the contractor), marking off/covering from public and implementing traffic control plan.

22. Select Fill, Lean Clay or Sandy Lean Clay with a Liquid Limit Less than 40 and Plasticity Index Between 10 and 20, Compacted; Alternate Bid Item 22:

Measurement shall be “Per Cubic Yard”. Payment shall be full compensation for supplying all materials to deliver select fill and compact for sidewalk bedding. Select Fill

characteristics shall be verified from soil testing before contractor will begin placing fill as directed by the engineer.

23. 6-Inch Reinforced Concrete Sidewalk (Minimum 5.5 Sacks per Cubic Yard); Alternate Bid Item 23:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for shaping and compacting the select fill bed, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing longitudinal, warping, expansion, sawed control and contraction joints , and load transmission units, and joint filler material in proper position; for coating steel bars where required by plans, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work.

ITEM 1578

TRAFFIC PAINT STRIPING

I. GENERAL

A. Description

This Item shall govern for the installation of reflectorized traffic paint striping on pavement, where the color and width of line shall be as specified on the Plans and/or Exhibits.

B. Related Work (if utilized in this project)

1. Item 1533 - Barricades, Signs, and Traffic Handling - No TCP
2. Item 1582 - Traffic Paint

II. EXECUTION

A. Description

The Contractor shall use a crew experienced in the work of installing paint striping and the necessary traffic control for such operations on the roadway surface and shall supply all of the equipment, personnel, traffic control and materials necessary for the placement of paint striping as shown on the Plans and/or Exhibits or as directed by the Engineer. All work shall be in accordance with the latest edition of the Texas State Department of Highways and Public Transportation's "Manual on Uniform Traffic Control Devices."

The pavement surface to receive the striping shall be thoroughly cleaned of all dirt, organic growth, or other material that will prevent adhesion of the paint to the roadway surface.

The striping shall be placed in the proper alignment with guides established on the roadway. Deviation from the alignment established shall not exceed two inches and, in addition, the deviation in alignment of the markings being placed shall not exceed one inch per 200-feet of roadway, nor shall the deviation be abrupt.

When deemed necessary by the Engineer, the Contractor, at his expense shall place any additional pilot markings required to facilitate the placement of the

permanent markings in the alignment specified. Any and all additional markings placed on the roadway for alignment purposes shall be temporary in nature and shall not establish a permanent marking on the roadway.

Materials used for pilot markings and equipment used to place such markings shall be approved by the Engineer. Paint shall be applied at a rate which will yield a wet film thickness of 15 to 20 mils.

Glass reflective spheres for traffic paint shall be applied in accordance with the item, Item 1581 - Glass Reflective Spheres for Traffic Paint. Under no circumstances shall the bead application rate be less than 7½ pounds of beads per gallon of paint applied to the road surface.

Applied markings shall be protected from traffic until they have dried sufficiently so as not to be damaged or tracked by normal traffic movement.

B. Equipment

Paint striping equipment used to place four-inch solid or broken lines shall have a capability of an average hourly placement rate of 7,000 linear feet in any five consecutive working days of seven hours or more. The equipment shall be capable of applying one 4-inch broken line and either one or two solid lines simultaneously.

The equipment shall be equipped with an automatic cut-off device (with manual operating capabilities) to provide clean square marking ends and to provide a method of applying a broken line in a stripe to gap ratio of 15 to 25. The equipment shall be capable of placing lines of all widths with clean edges and of uniform cross-section. Four-inch lines shall be 4-inch plus or minus c-inch. Eight-inch lines shall be 8-inches minimum and 8¼-inches maximum in width.

When necessary, the equipment shall be equipped so with bead dispensers, one for each paint spray gun, placed on the equipment so that beads are applied to the paint almost instantly as the marking is being placed on the roadway surface. The bead dispensers shall be designed and aligned so that beads are applied uniformly to the entire surface of the marking. The bead dispensers shall be equipped with automatic cut-off controls, synchronized with the cut-off of the marking equipment.

Paint pots or tanks shall be equipped with an agitator that will keep the paint thoroughly mixed and may be either a pressurized or non-pressurized type.

C. Removal

When construction operations require the alternation of any pavement marking, the contractor shall provide for the covering or complete obliteration of any markings to the satisfaction of the Engineer. Removal of the markings shall leave no discernible evidence of the marking having ever been in place. No direct payment shall be made for marking removal.

ITEM 1582

TRAFFIC PAINT

I. GENERAL

A. Description

This Item shall govern for the materials composition, manufacture and testing of all traffic paint and related materials as covered herein.

B. Intent

The coating design specified has been stipulated by means of carefully controlled formulations durability testing methods. The intent of the Engineer is to procure coatings which are identical in all essential respects to the standards of the State Department of Highways and Public Transportation; hereafter referred to as "Standards."

Specifications, codes, accepted practices, etc., not specifically listed in these specifications are not applicable.

When required, the paint manufacturer shall supply Labor Form LSB-OOOS-4, "Material Safety Data Sheet."

C. Conformance of Finished Products

Coatings shall conform, on a weight basis, to the composition requirements of the standard formula. No variation from the standard formula will be permitted except for replace of volatiles lost in processing, or those approved by the Engineer. The finished coatings shall conform with all requirements stipulated for each standard formula, and, in addition, shall equal a Wet Standard in characteristics such as color, drying, flow, settling, brush ability, can stability, hiding, etc.

Film characteristics such as floss, hardness, light permanency, adhesion, etc., shall also conform. When testing for such conformity, the coating shall be applied and tested under parallel conditions with the Wet Standard.

The finished product shall be free of skins and foreign materials.

D. Inspection, Sampling and Testing

All products required to meet these specifications shall be inspected and tested at the discretion of the Engineer.

E. Related Work (if utilized in this project)

1. Item 1578 - Traffic Paint Striping
2. Item 1581 - Glass Reflective Spheres For Traffic Paint

II. MATERIALS

A. Raw Materials

The exact brands and types of raw materials used in the Wet Standard are listed for the purpose of facilitating the selection of parallel material equal not only in quality and composition but also in physical and chemical behavior after being used in the finished product. Since evaluation of paint containing questionable materials may require sixty days and since meeting delivery schedules is a responsibility of the paint manufacturer, he is reminded that he should schedule material procurement and paint production to permit him to meet delivery commitments. The final decision as to the equality of materials shall be made by the Engineer. After the Engineer has agreed to the brand names of raw materials proposed by the Contractor, no substitutions will be allowed during the manufacture prior agreement with the Engineer.

“The Contractor should be aware that it is his responsibility to select raw materials that not only meet the individual raw material specifications but will also produce coating conforming to the specific formula requirements.”

1. Materials of Foreign Origin: Because of the limited information available on materials manufactured outside the continental limits of the United States, the manufacturer is advised to review paragraphs 691.5 and 691.8 of the specifications when considering the use of materials of foreign origin.
2. Materials Required to Meet Federal And ASTM Specifications: All materials required to meet Federal or ASTM specifications must conform to the specifications as shown. Specifications or Amendments of other dates will not supersede.
3. Pigments

- a. White
 - 1) Pure Titanium Dioxide, Rutile, Non-Chalking, shall meet ASTM Specifications D-476, Type II.
 - 2) Lead free zinc Oxide shall meet ASTM Specification D-79 either American process or French Process.

b. Colored: Titanium Dioxide, Special, Tutile, Non-Chalking:

Specific Gravity	4.1 + 0.05
Oil Absorption	18 + 10% Moisture 0.5% max.
Retained on #325 Mesh	0.1% max.
TiO ₂	95% min.
Fe ₂ O ₃	2.0 - 3.0%
PH	6.5 - 7.0
Ignition Loss	0.34% max.
Y (luminosity)	42.5 - 45.5

c. Medium Chrome Yellow

Color and Color Characteristics. The luminance factor of the pigment shall be within the limits listed below when tested before and after exposure.

	Min.	Max.
Initial	53	59.0
Final	45	

In addition, the allowable change between the initial and final luminance factors shall be not more than 9 units.

The initial X, & chromaticity color coordinates of the pigment shall be within the rectangle defined by the sets of coordinates shown below:

<u>X</u>	<u>Y</u>
0.490	0.455
0.511	0.433
0.514	0.480
0.535	0.458

Method of Test: The pigment shall be tested according to Test Method Tex-810-B. (State Department of Highways & Transportation).

Color Standard: National Bureau of Standards, Chromatic Standard No. SCH-30.

The formula of the test enamel using the pigment to be tested is as follows:

<u>Material</u>	<u>Parts by Weight</u>
Color Pigment	54.0
Long Oil Alkyd Resin (1)	31.5
4% Calcium Drier	0.6
6% Cobalt Drier	0.3
Anti-Livering Agent	0.1
Anti-Skinning Agent	0.2
Mineral Spirits (2)	13.3 (3)

- 1) Alkyd Resin Solution meeting Federal Specification TT-T-266D, Type 1, Class A, November 17, 1971.
- 2) Mineral Spirits meeting ASTM D-235, Type IV.
- 3) The amount of Mineral Spirits may be varied slightly to produce the desired grinding consistency.

Number of coats: Two

d. Inert

- 1) Talc, Paint-Grade Magnesium Silicate shall meet ASTM Specification D-605-69 (Reapproved 1976).
- 2) Calcium Carbonate

CaCO ₃	Min. 97.0%
H ₂ O	Max. 0.4%
Specific Gravity	2.63 - 2.73
Weight Retained on #325 Screen	Max. 0.75%

Color: Equal to material listed in Standard Formula. Substitution in a Standard Formula shall not result in a viscosity variation greater than 4 KU.

- 3) Calcined Kaolin (Aluminum Silicate Anhydrous)

Min. %	Max. %
---------------	---------------

Al ₂ O ₃	39.6	44.0
SiO ₂	51.0	56.5
Fe ₂ O ₃		1.0
TiO ₂		2.5
CAO + M _g		0.8
Na ₂ O + K ₂ O		1.2
Ignition Loss		1.0

In addition, the X-ray diffraction pattern shall match the X-ray diffraction pattern specified by the State Department of Highways and Public Transportation.

Materials having color requirements shall be tested according to Test Method Tex- 810-B. (State Department of Highways and Public Transportation).

4. Resins

- a. Chlorinated Paraffin: Shall meet Federal Specification MIL-C-429C, type I.
- b. Chlorinated Rubber: Shall be similar and equal to the standard sample submitted to an independent licensed testing laboratory by the manufacturer and approved by the County prior to the award of contract for coatings in which the material is proposed for use.

Viscosity @ 25°C (20% solution with Toluol) * 17 - 22 cups.

*Toluol shall meet ASTM Specification D-362.

Substitution in a Standard Formula shall not result in a viscosity variation greater than 4 KU.

c. Traffic Paint Alkyd Resin solution

1) General

Type:	Pure, drying alkyd
Length:	Medium
Type Oil:	Soya, linseed or tall. No mixture of two or more oils will be permitted.
Solvent:	Toluol, ASTM Specification D-362.

Compatibility: A solution of one part 75% traffic alkyd and five parts Toluol shall be clear.

A solution containing the equivalent of 120 grams of 20 cps chlorinated rubber 130 grams of 75% traffic alkyd, 200 grams of methyl ethyl ketone shall be clear, transparent, and show no separation after 24 hours of storage in a ¾ full test tube at 80° + 5° F. This rubber-alkyd- solvent solution shall produce a clear film upon drying.

2)	Percent Phthalic Anhydrides	33 to 37
	Percent Oil Acids	48 to 55
	Acid Number, Max.	8.0
	Ash Residue, Max.	0.10%
	Iodine Number of Fatty Acids, Min.	115
	Refractive Index of Fatty Acids, Min.	1.4660
	Percent Resin based on Fatty Acids (Tall Oil Alkyds), Max.	1.0

3) 45% Solids Basis *

Color: Gardner 1953 Standard - 9 max. Drying time: A wet film 3 mils thick shall set to touch in not more than 90 minutes.

Driers: Based on the resin solids present, add the equivalent of 0.06% Cobalt (metal) and 1.0% Lead (metal).

*Toluol shall be used to reduce the resin solution of 45% solids, and shall meet ASTM Specifications D-362.

4) Turbidity: In addition to the above requirements, the Traffic Alkyd Resin shall meet the following % Transmittance requirements when tested according to Test Method Tex-814-B, utilizing methyl ethyl ketone as primary solvent, and methyl alcohol as precipitating agent.

% Transmittance	<u>Min.</u>	<u>Max.</u>
T ₁	10.0%	
T ₂		70.0%

Calculate volume in milliliters of precipitating agent as follows:

$$V_1 = 91x$$

where: V_1 = volume of precipitating agent
required for T_1

x = grams of alkyd resin solids

and $V_2 = 1.398V_1$

where: V_2 = additional volume of
precipitating agent required for T_2

5. Thinners

a. Methyl Ethyl Ketone: Shall meet ASTM D-740

b. Aromatic Naphtha

1) Appearance: Clear, free of sediment

2) Color: Water white

3) Boiling Range: 360° F - 415° F

4) Kauri Butanol Value: 88 minimum

5) Specific Gravity, (25° C): 0.884-0.894

6) Flash Point °F (TTC) 140 minimum

6. Additives and Chemicals

a. Driers: Shall pass ASTM D600

b. Additives listed below must be similar and equal to the standard sample submitted to an independent licensed testing laboratory by the manufacturer and approved by the County Engineer prior to the award of contract for coatings in which the additive is proposed for use:

1) Stabilizer

a) Class A - Thermolite 813, M&T Chemicals, Inc.

b) Class B - Stanclere T-55, Interstab Chemicals, Inc.

2) Treated Bentonite Clay

- a) Bentone 34, NL Industries;
- b) Claytone 40, Southern Clay Products;
- c) Tixogel VP, United Catalyst, Inc.

7. Formula

a. WPT - 8f White Paint, Traffic	Pounds
Traffic Alkyd, 75% solids (Tuluol)	130
Chlorinated Rubber, 20 cps, Hercules, Parlon S-20	120
Chlorinated Paraffin, Type 1, Hercules, Chlorafin 40	75
Titanium Dioxide, Rutile, DuPont, R-900	150
Lead Free zinc Oxide, ASARCO, AXOO33	50
Talc, WC&D 4404	225
Calcium Carbonate, Pure Stone Micro Fill #1	225
Treated Bentonite Clay	5
Stabilizer, Class A	0.4
Stabilizer, Class B	0.4
24% Lead Drier	3
6% Cobalt Drier	2
Aromatic Naphtha, SC-150	5
Methyl Ethyl Ketone	<u>280</u>
	1270.80

Grind: 4 minimum, Particles: 8 maximum
(Test Method Tex-806-B)

Gallon Weight: ± 0.05 of theoretical gallon weight

Consistency: 83 to 97 KU

Skimming: No skinning within 48 hours (Test Method Tex-811-B)

b.	<u>YPT-8f Yellow Paint, Traffic</u>	<u>Pounds</u>
	Traffic Alkyd, 75% Solids (Toluol)	130
	Chlorinated Rubber, 20 cps, 1C1 Alloperene X-20	120
	Chlorinated Paraffin, Type 1, 1C1 Cereclor 42	75
	Titanium Dioxide Special, Rutile, Benilite Corp, Hitox	35
	Lead Fee Zinc Oxide, ASARCO, AXO-33	50
	Medium Chrome Yellow, DuPont, Y-469-D	125
	Calcium Carbonate, Pure Stone Micro Fill #1	225
	Talc, WC&D 4404	225
	Treated Bentonite Clay	5
	Stabilizer, Class A	0.4
	Stabilizer, Class B	0.4
	24% Lead Drier	3
	6% Cobalt Drier	2
	Aromatic Naphtha, SC-150	5
	Methyl Ethyl Ketone	<u>285</u>
		1285.80

Grind: 4 minimum, Particles: 8 maximum (Test Method Tex-806-B)

Gallon Weight: ± 0.05 lbs. of theoretical gallon weight

Consistency: 83 to 97 KU

Skimming: No skinning within 48 hours (Test Method Tex-811-B)

III. EXECUTION

A. Construction Methods

All traffic paint applications shall meet the following requirements:

1. Traffic paint shall be applied at the rate of one gallon of un-thinned paint per 105 square feet of surface area.
2. Traffic paint shall be applied with a minimum thickness of 15 mils, measured in a wet condition.
3. Paint striping shall be applied and measured to \pm ¼-inch of the specified widths.

All traffic paint striping not meeting these requirements shall be “touched up” and/or completely restriped to these standards and in accordance with the Plans and/or Exhibits at no additional cost.

Where traffic buttons exist, the paint shall be applied to the pavement adjacent to, but not on the buttons or markers, unless another method is specified.

Word and symbol markings on pavement shall be in accordance with “Pavement Work and Symbol Markings” Section of the latest Texas Manual on Uniform Traffic Control Devices of the State Department of Highways and Public Transportation.

B. Testing

When required, the Contractor shall pay for and provide to the Engineer, a testing report performed by a local testing laboratory designated by the Engineer. The report shall verify that the raw and finished materials to be supplied under this contract meet the requirements of this specification.

Rejection, materials and finished products which fail to meet any or all requirements of these specifications shall be subject to rejection. All materials and finished products rejected by the Engineer, whether in containers or applied to roadway surface shall be removed from the jobsite and replaced with materials meeting specifications and requirements and all costs of such removal and replacement shall be borne by the Contractor.

ITEM 1584

PROJECT IDENTIFICATION SIGNS

I. GENERAL

- A. Scope: This Item governs furnishing, installing and maintaining a project sign or signs as described below:
- B. Design Requirements
 - 1. Design sign and structure to remain in place and withstand 60 miles-per-hour wind velocity.
 - 2. Sign Manufacturer/Maker/Painter: Experienced as a professional sign company.
 - 3. Finishes, Painting: Adequate to withstand weathering, fading and chipping for duration of construction.
 - 4. Appearance: Project signs shall present a fresh, new and neat look. All project signs shall be new or refurbished so as to look new.
- C. Number and Location
 - 1. Linear Projects: A linear project is one involving paving, overlay, sewer lines, storm drainage or water mains that run in the right-of-way over a distance. A linear project requires project signs at each end of the construction.
 - 2. Single Site or Building Projects: Provide one project sign.
 - 3. Multiple Sites: Provide one sign at each site at a location designated by the Engineer.
- D. Unit Prices
 - 1. Unless indicated in the Bid Form, no separate payment will be made for design, fabrication, installation and maintenance of project identification signs under this Item. Include cost of work performed under this Item in pay item of which this work is a component.

2. If changes to project identification signs are requested by the Engineer to keep them current, payment will be made on a cost plus overhead and profit through a change order.

II. MATERIALS

A. Sign Materials

1. **Structure and Framing:** Use new 4-inch by 4-inch wood posts to reach 8-feet above existing grade. Paint structural members white on all sides and edges to resist weathering. Set posts approximately 4-feet apart.
2. **Sign:** For sign use 4-foot by 8-foot marine plywood, minimum $\frac{3}{4}$ -inch thick. Use full size sheets for sign to minimize joints; do not piece wood to fabricate a sign face. Paint sign material white, two (2) coats, on all sides and edges to resist weathering.
3. **Paint and Primers:** White paint used to prime surfaces and to resist weathering shall be an industrial grade, fast drying, oil-based paint with gloss finish. Paint all signs surfaces with two (2) coats of this weather-protective paint prior to adding any lettering.
4. **Sign Border:** Add 2½-inch wide black border along the four edges of the project sign. For border use 3M Scotchcal Engineer Grade, Pressure Sensitive Sheeting (Black) or approved equal.
5. **Sign Lettering:** Make lettering and symbols from 3M Scotchcal Pressure Sensitive Films or approved equal, or at Contractor's option, signs may be painted using approved paints. Whether film or paint is used, match color to 3M Scotchcal Pressure Sensitive Film, Black.
6. **Rough Hardware:** Galvanized steel or brass for fasteners and other hardware.

B. Sign Components

1. **Sign**
 - a. The 4-foot by 8-foot component of the sign has fields of information as indicated on the Exhibits.
 - b. Exhibit No. 1 will identify the name of the project. The Engineer will provide the project title and personnel names to the Contractor for preparation of the sign.

2. Sign Support Structure
 - a. Sign Posts: 4-inch by 4-inch sign posts, 8-feet long for skid mounting and 11-feet long minimum for post hole mounting to set top of posts at 8-feet above existing grade.
 - b. Skid Members: 2-inch by 6-inch framing material.
3. Fasteners
 - a. ½-inch by 5½-inch button heads carriage bolts for posts with nuts and flat head washers. Cover button heads with white reflective film or paint to match sign background.

III. EXECUTION

A. Installation

1. Install project identification sign within fourteen (14) calendar days after date of Notice to Proceed.
2. Erect at location designated by the Engineer or where shown on the Plans and/or Exhibits. In either case, position the sign in such a manner as to be fully visible and readable to the general public.
3. Erect sign level and plumb.
4. If post hole mounted, sink posts at least 3-feet below grade. Stabilize posts to minimize lateral motion. Leave minimum of 9-feet of post above existing grade for mounting of the sign.
5. Erect sign so that the top edge of the sign is at a nominal 8-feet above existing grade.
6. Skid mounted signs shall be allowed only when approved by the Engineer. Approval of the use of skid-mounted signs shall not release the Contractor from responsibility of maintaining a project sign on the project site and shall not make Owner responsible for the security of such signs.

B. Maintenance and Removal

1. Maintain signs and supports clean. Repair deterioration and damage.
2. Remove signs, framing, supports and foundations at completion of project

and restore the area.

IV. QUALITY ASSURANCE

A. Shop Drawings

1. Submit Shop Drawings prior to construction and installation of sign(s). Submit sufficient copies (three (3) copies will not be returned) to allow proper approval and fabrication.
2. Submittal will show content, layout, lettering style, lettering size and colors.

ITEM 2102

CLEARING AND GRUBBING

I. GENERAL

- A. Scope: Clearing and grubbing consists of removal and disposal of trees, stumps, brush, roots, vegetation, logs, rubbish, and other objectionable matter along the construction route within utility easements, access road easements right-of-way, and where designation within the boundaries of the plant site.
- B. Measurement and Payment
 - 1. No Separate Payment. Include cost of work in contract bid prices.
 - 2. The Contractor shall not remove trees 6-inches in diameter or larger, unless said tree has been marked for removal.
- C. Notification to Engineer: The Contractor will notify the Engineer at least three days before any clearing is begun so that all trees to be removed can be marked.
- D. Related Work (if utilized in this project)
 - 1. Item 2227 - Waste Material Disposal

II. MATERIALS

The Contractor shall use equipment and materials necessary to properly complete clearing and grubbing.

III. EXECUTION

- A. Clearing: Remove all stumps, brush, vegetation, logs, rubbish, and other objectionable matter from designated areas. Trees to be saved shall be marked prior to execution of this Item.
- B. Grubbing: Remove stumps and roots within pavement and foundation sections to depth of 2-feet below finish subgrade elevation. For areas outside pavement and foundation sections, remove stumps and roots to depth of 2 feet below finished surface of required cross sections.

- C. Preservation: Protect trees unless designated for removal and those on adjacent property.
- D. Removing Material: Unless otherwise specified, cleared and grubbed material becomes property of the Contractor, to be removed from the work site or disposed of in manner not to damage the Owner. Burning of cleared and grubbed material is not permitted.

ITEM 2107

TURF ESTABLISHMENT

I. GENERAL

This Item specifies requirements for preparation of the seedbed and planting of turfgrass.

II. MATERIALS

A. Seedbed (Top Soil): Topsoil may be from on-site or imported. All topsoil shall be easily cultivated, relatively free from objectionable material including, gravel, large roots, stumps, wood, brush, debris, hard clods, clay balls, hardpan, refuse or other deleterious materials, and be of reasonably uniform quality.

1. In the case of on-site or nearby source, topsoil is the surface layer of material containing decaying vegetable matter and roots. It is not necessary to strip all soil containing fine hairlike roots, only soil containing moderate to heavy root mat.
2. Imported topsoil shall satisfy the following property values:

	<u>TEST PROPERTY</u>	<u>TEST METHOD</u>	<u>UNIT</u>	<u>VALUE</u>	
a.	Soil Reaction	ASTM D4972	pH	6-8	(a)
b.	Passing No. 4 Sieve	ASTM D422	%	95-100	(b)
c.	Sand Size, 2.0-0.05 mm	ASTM D422	%	10-70	(b)
d.	Silt Size, 0.05-0.005 mm	ASTM D422	%	0-40	(b)
e.	Clay Size, <0.005 mm	ASTM D422	%	20-50	(b)
f.	Easily Oxidizable Organic Matter	AASHTO T194	%	2.5-10	(b&c)

NOTES:

- a) Determine pH by Method A, pH meter. In the event that the imported topsoil does not satisfy the specified pH range, Contractor shall achieve the desired pH by applying soil amendments as recommended by the certified agronomist's report of soil sample analysis.
- b) Dry weight of sample.

- c) Soil testing company shall identify test method used if different than listed.
- d) Soil tests will be paid for by Owner.

B. Seed: Seed shall be applied in accordance with the following:

SEED PLAN	PLANTING DATES	PLANT SPECIES	PLS RATE (pounds/acre)
1	October 1 to March 31	*"KY-31" Tall Fescue Hulled Common Bermuda grass *"Gulf" Annual Ryegrass Crimson Clover & Inoculant	15 50 15 20
2	April 1 to Sept. 30	*Foxtail Millet Hulled Common Bermuda grass	15 60
3	April 1 to Sept. 30	*Foxtail Millet Hulled Common Bermuda grass "Pensacola" Bahia grass	15 60 15
4	As directed	Hulled Common Bermuda grass	50
5	As directed	Crimson Clover & Inoculant	20

* - Indicates **MAXIMUM APPLICATION RATE ALLOWED.**

NOTES:

- a) All planting dates are approximate. Engineer shall determine Seed Plan prior to the start of seeding.
- b) Seed Plan 1 shall be used when the average maximum daylight air temperature for the preceding two calendar weeks is less than 75 degrees F.
- c) Seeding rate is for "Pure Live Seed (PLS)." Percentage of purity, germination, and dormant seeds, as shown on the seed tag, shall be used to determine actual application rate of bulk material to obtain required amount of PLS per acre.

Pure Live Seed (PLS) = (% Germination + % Dormant seed) x % Purity.
- d) Seed Plans 4 and 5 shall be used **only** as directed by the Engineer.

C. Sod

1. Sod shall consist of live, growing Bermudagrass or "Raleigh" St. Augustine grass, as required by the Engineer.
2. Sod shall be dark green and have a healthy vigorous system of dense, thickly matted roots throughout the soil of the sod for a minimum depth of 1-inch (∇ ¼ inch), excluding top growth and thatch.
3. Sod shall contain no more than 5% noxious weeds and other crop and weed contaminants. Sod shall be free of diseases and harmful insects.
4. Sod shall be cut in uniform panels. Broken panels or panels with torn or uneven ends will not be accepted.
5. Sod panels shall be strong enough to support their own weight and retain size and shape when suspended vertically from a firm grasp on the upper 10% of the panel.
6. Sod shall be harvested, delivered, and installed within a 36 hour period. Sod not planted within this time period shall be inspected and approved by the Engineer prior to installation.
7. Sod which has been allowed to dry out by exposure to the sun and air is unacceptable and shall be rejected.

D. Fertilizer

1. Fertilizer shall be a commercial type conforming to the fertilizer laws in effect as regulated by the Texas Department of Agriculture. A pelleted or granulated fertilizer shall be used which has the specified analysis. The guaranteed analysis represents the percent nitrogen (total N), percent water insoluble nitrogen (where applicable), percent phosphate (citrate soluble P as P₂O₅), and percent potash (water soluble K and K₂O) nutrients as determined by the methods of the Association of Official Analytical Chemists.
2. Contractor shall use a complete fertilizer with an analysis ratio of 3:1:2 (N:P:K), such as 15:5:10, or as directed by the Engineer.
3. Fertilizer shall be applied at a rate of 60 pounds N/acre, which is 400 pounds/acre of 15:5:10.
4. Fertilizer shall be delivered in bags or containers clearly labeled with name and address of the manufacturer, weight, and guaranteed analysis.

Bulk fertilizer shall be acceptable if accompanied by an invoice or label with the name and address of the manufacturer and guaranteed analysis and appropriate means to accurately measure and record weight of fertilizer used.

5. Fertilizer shall be in clean, unopened, and undamaged bags.
6. Fertilizer shall not contain objectionable material which may hinder proper distribution.
7. Fertilizer shall be dry and free-flowing. Caked fertilizer will be rejected.

III. EXECUTION

A. General

1. Turf establishment shall be performed as soon as practical after construction activities, but not later than 21 calendar days. Long term exposure of bare earth will not be permitted. Engineer may stop work on portions, or all, of the project until exposed areas receive the designated turf establishment.
2. Work shall not be performed on areas that are so wet that equipment operation causes tracking and compaction of the ground, or when the soil is in a non-tillable condition.

B. Seedbed

1. Seedbed Installation, Imported
 - a. Imported Topsoil: Engineer may direct the Contractor to import topsoil if on-site seedbed is of insufficient quantity or quality.
 - b. Topsoil Delivery, Storage and Handling: Topsoil shall be delivered, stockpiled and handled in such a way as to not contaminate the material with other soils or objectionable materials.
 - c. Topsoil Excavation (On-Site): Contractor shall strip topsoil specified on the Plans and/or Exhibits or as directed by the Engineer from areas to be excavated or filled and stockpile it for use on the final designated area.

- d. Topsoil Placement
 - 1) Prior to placing topsoil, scarify the subgrade to a minimum depth of 4-inches until it is loose and uncompacted to provide bonding of topsoil layer to subgrade.
 - 2) Top elevation of topsoil shall be placed at the design finish grade elevation shown on the Plans and/or Exhibits.
 - 3) Topsoil shall not be spread when excessively wet or dry.
- e. Disposal: Contractor shall dispose of excess topsoil only after approval by the Engineer and in accordance with Item 2227 - Waste Material Disposal.

2. Seedbed Preparation, On Site

- a. Seedbed is defined as the soil designated to support turfgrass and/or sod, approximately 6-inches in depth below the design surface.
- b. Irregularities in finished seedbed surfaces shall be corrected to eliminate depressions.
- c. Disc, harrow, rake and grade the seedbed until it is free of clods and roots.
- d. Roots and woody plants over 1-inch diameter shall be removed.
- e. Final surface shall be left in a roughened condition. Imprints from the equipment shall be left horizontally on the slope.
- f. Surface crusting of the seedbed after rainfall or compaction, but prior to turf establishment, shall be broken up by disking, harrowing, or raking.
- g. For areas receiving sod, grade the seedbed adjacent to existing turf, pavement, etc., to permit sod to be flush with adjacent surfaces.
- h. Prepared seedbeds shall be protected from damage by pedestrian or vehicular traffic.
- i. Prepared seedbeds shall be inspected and accepted by the Engineer prior to turf establishment.

C. Seeding Methods: Method of planting shall be as noted on the Bid Sheets or Plans and/or Exhibits, or as directed by the Engineer.

1. Dry Application

a. Fertilizer shall be spread evenly and uniformly and incorporated (disked, raked, or harrowed) into the seedbed prior to seeding.

b. Seeding

1) Plant seed with a broadcast seeder or a culti-packer seeder. Grass seed shall be planted no deeper than ¼-inch, and the distance between rows shall be 12-inches or less. Distribute seed uniformly.

2) Roll the planted seedbed with a culti-packer or rake immediately after seeding and prior to applying mulch cover.

3) Seed may be broadcast by hand for small areas or areas inaccessible to seeding equipment, as approved by the Engineer. Areas seeded by hand shall be rolled or lightly compacted, if possible.

c. Mulching

1) Immediately after application of seed, straw or hay mulch shall be applied to all seeded areas with a slope steeper than 6H:1V (Horizontal:Vertical).

2) Straw or hay mulch shall be applied at a rate of 2,500 pounds (dry weight) per acre.

3) The straw or hay mulch must be secured with hydromulch or other approved methods.

a) Hydromulch, consisting of an homogeneous aqueous mixture of recycled paper fiber, water, and tackifier, shall be applied to achieve a rate of 1,000 pounds of paper fiber mulch per acre over the straw mulch. Guar gum tackifier shall be applied at a minimum rate of 50 pounds (dry weight) per acre.

b) Application rate for other tackifier/soil binder compounds shall be in accordance with

manufacturer recommendations and approved by the Engineer.

- d. Watering: After mulching, water the seedbed until the surface is uniformly moist to an approximate depth of ½-inch. Excessive watering pressure or quantity which would cause washing of mulch and seed, erosion, or rilling shall not be allowed.

2. Hydroseeding With Mulch

- a. Hydroseeding with mulch is the application of an homogeneous aqueous mixture of seed, water, fertilizer, dye, wood fiber mulch, and tackifier/soil binder to the seedbed.
- b. Fertilizer shall be added to the aqueous mixture no more than 30 minutes prior to application to prevent damage to the seed. Fertilizer shall be completely water soluble.
- c. Guar gum tackifier shall be applied at a minimum rate of 50 pounds (dry weight) per acre.
- d. Wood fiber mulch shall be applied at a rate of 2,000 pounds (dry weight) per acre.
- e. Application rate for other tackifier/soil binder compounds shall be in accordance with manufacturer's recommendations and approved by the Engineer.

3. Overseeding

- a. Overseeding is the application of an homogeneous aqueous mixture containing water, seed (per Seed Plan 4 or 5), and fertilizer to an area with existing vegetation.
- b. At the direction of the Engineer, site shall be mowed prior to overseeding.
- c. Soil surface shall be lightly disked no more than 1-inch deep.
- d. Fertilizer shall be added to the aqueous mixture no more than 30 minutes prior to application to prevent damage to the seed. Fertilizer shall be completely water soluble.
- e. Area shall be rolled with a culti-packer, or lightly harrowed or raked to cover seed with a ¼-inch of soil.

D. Sodding

1. Sod shall be placed in areas as shown on the Plans and/or Exhibits or as directed by the Engineer.
2. Fertilizer shall be spread evenly and uniformly and incorporated (disked, raked, or harrowed) into the seedbed prior to placing sod.
3. Prepared seedbed shall be lightly watered immediately prior to placing sod, as required.
4. Sod panels shall be placed tightly against each other in rows.
5. Lateral joints shall be staggered. Care shall be exercised to ensure the sod is not stretched or overlapped and that all joints are butted tightly with no spaces between strips.
6. Tamp or roll the sod to ensure good contact with the seedbed.
7. Lightly water sod during installation to prevent excessive moisture loss.
8. Immediately after installation of sod, remove extraneous clumps of sod or soil on sod, rake and wash off plant remnants on sod or adjacent pavements.

IV. QUALITY ASSURANCE

- A. Engineer shall accept turf establishment when specified area is complete with an established growth on soil stabilized turf.
- B. Contractor shall be responsible for repairing areas damaged until the turf establishment is accepted by the Engineer. Repairs include, but not limited to, damage due to erosion, rilling, traffic, or other causes.
- C. Contractor shall replace all dead or dying sod panels.

ITEM 2220

STRUCTURAL EXCAVATION AND BACKFILL

I. GENERAL

- A. Description: This section describes the excavation for and backfilling around completed structures and the disposal of all excess excavated material. All operations required for the proper completion of the excavation work, including sheeting, shoring and bracing, dewatering of excavations and compaction of backfill are included under this section.
- B. Protection: Before the start of earthwork operations, adequately protect existing structures, utilities, trees and shrubs and other permanent objects. Costs resulting from damage to permanent facilities due to negligence or lack of adequate protection will be charged to the contractor. The contractor will also be charged for damage to facilities scheduled for later removal or demolition if the damage sufficiently impairs proper operation to the extent that temporary replacement or repair is required.
- C. Blasting: Blasting will not be permitted.
- D. Related Work (if utilized in this project)
 - 1. Item 2227 - Waste Material Disposal

II. MATERIALS

- A. Regular Backfill: Where no other backfill is specified, use suitable soils from the excavation as backfill material.
- B. Sand Backfill: Where sand backfill is specified, use reasonably clean bank sand from an approved source. The sand must be free from large lumps of clay, rubbish, organic matter or other deleterious substances. Not more than 12 percent by weight shall pass the 200 mesh sieve and the plasticity index shall not exceed 4.0.
- C. Select Fill: Select fill shall be lean clay to sandy, lean clay soil with a maximum liquid limit of 35 and a PI range of 8 to 20 and a minimum of 60 percent passing the No. 200 sieve. Select fill may consist of lime stabilized soils excavated on

site. Lime stabilization of 8-inch loose lifts should be performed by blending 25 pounds of hydrated lime per square yard into 8-inch loose lift of fill soils.

D. Cement Stabilized Backfill

1. Cement stabilized sand shall be used for backfill and bedding as called for on the Plans and/or Exhibits or as directed by the Engineer.

2. Cement shall consist of Type I portland cement conforming to ASTM C 150.

3. Sand shall be clean, durable sand containing not more than the following:

a. Deleterious materials

- 1) Clay lumps, ASTM C 142; less than 0.5 percent.
- 2) Lightweight pieces, ASTM C 123; less than 5.0 percent.
- 3) Organic impurities, ASTM C 40; shall not show a color darker than the standard color.
- 4) Aggregate: Use sand containing deleterious materials not to exceed the following requirements by weight.

Material removed by decantation	5.0%
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Other deleterious substances such as coal, shale, or coated grains of soft flaky particles	2.0%
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Gradation Requirements:

Retained on 3/8-inch sieve	0%
Retained on 1/4-inch sieve	0% - 5%
Retained on 20-mesh sieve	15% - 50%
Retained on 100-mesh sieve	80% - 100%

b. Plasticity index shall be six (6) or less when tested in accordance with ASTM D 423 and ASTM D 424.

4. Water shall be potable, free of oils, acids, alkalies, organic matter or other deleterious substances.

5. Sand cement mixture product shall consist of the proper percentage of cement per cubic yard or per ton of sand with sufficient water to hydrate the cement.
6. Mix in a pug mill using not less than 1½ sacks of cement per cubic yard of mixture with sufficient water to hydrate the cement.

III. EXECUTION

A. Excavation

1. Excavation work shall be unclassified and includes removal of all types of materials encountered without exception. Make excavations to lines and grades indicated on Plans and/or Exhibits. Complete excavations within the tolerances specified. Perform all work in conformity with the rules and regulations of the Federal Occupational Safety and Health Act.
2. Shoring, Bracing, Dewatering: Provide shoring, bracing and dewatering of excavations required to properly and safely complete the work as shown. Construct shoring and bracing to prevent the excavation from extending beyond specified or indicated limits and to protect workmen. Keep excavations dewatered by drainage, pumps or well points as necessary while work is in progress. Dewatering methods are subject to approval. Remove shoring, bracing and sheathing as excavations are backfilled in a manner to prevent injurious caving.
3. Structures Other than Pipes
 - a. Wherever practicable cut all footing excavations to neat lines with a tolerance of minus 1-inch or plus 3-inches and place concrete to bear against earth sides. Cut all excavations a sufficient distance from walls, shafts or similar elements of structures to allow for placing and removing forms and for inspection. Make no excavation beyond a vertical plane 3-feet outside of footing lines or wall lines except as shown or specifically authorized.
 - b. Carry all excavations to the elevations shown and to deeper levels as directed when suitable foundation soils are not encountered at plan depth. Remove all pockets of soft or otherwise unstable soils and replace with concrete or with suitable well compacted soil as directed.
 - c. Fill all unauthorized excessive excavation with concrete at no change in the contract sum.

- d. Protect all open excavations from rainfall or excessive drying. Provide pumps and other equipment as required to keep excavations reasonably free of water at all times and completely free of water during placement of concrete.
- e. Do not remove the last 4-inch depth of excavation for slabs or footings until reinforcing steel and concrete are ready to be placed.

B. Backfill

- 1. Complete backfill to the surface of natural ground or to the lines and grades shown on Plans and/or Exhibits. Except where special materials are requested, use suitable soils from the excavation as backfill material. Do not use peat or other organic matter, silt, muck, debris or similar materials. Deposit backfill in uniform layers and compact each layer as specified.
- 2. Select Backfill at Structures: Place backfill as promptly as practicable after completion of each structure or portion of a structure. Do not, however, place backfill against concrete walls or similar structures until concrete forms are removed. Remove shoring and bracing as the work progresses. Take care to prevent any wedging action of backfill against the structure. Step cut (bench) or serrate the slopes bounding the excavation as required to prevent wedging.
- 3. Compacting Backfill: Place material in uniform layers of prescribed maximum thickness and wet or dry the material to approximately optimum moisture content. Compact with power-driven hand tampers to the prescribed density.
 - a. Regular and Select Backfill: Place in 8-inch maximum layers, loose measure. Compact to not less than 95 percent of maximum soil density as determined by ASTM D 698, within ± 2 percent of optimum moisture content.
 - b. Sand Backfill and Filter Material Backfill: Place in 6-inch maximum layers, loose measure. Compact to not less than 95 percent of maximum soil density as determined by ASTM D 698, within $\nabla 3$ percent of optimum moisture content.
 - c. Cement Stabilized Backfill: Place in 8-inch maximum layers. Compact to a dry density of 95% of ASTM D 698 without additional moisture control. The sand-cement mixture shall produce a minimum unconfined compressive strength of one

hundred pounds per square inch (100 psi) in 48 hours when compacted to 95 percent of ASTM D 698 without additional moisture control, cured (ASTM C 31, Hem 9), and tested in accordance with ASTM C 31.

4. Disposal of Excess Material: Dispose of excess or unsuitable material from the excavation off the job site.

ITEM 2221

EXCAVATION, TRENCHING AND BACKFILLING FOR UTILITIES

I. GENERAL

- A. Scope: This specification covers excavation and trenching work and shall include the necessary pavement removal and preparation of the site, removal and disposal of all debris, excavation, and trenching as required, handling, storage transportation, and disposal of all excavated material, all necessary sheeting, shoring, and protection work, preparation of sub-grades, pumping and dewatering as necessary or required, protection of adjacent property, backfilling, pipe embedment, pipe abandonment, backfill, maintenance, and other appurtenant work for the installation of underground utilities.
- B. Related Work (if utilized in this project)
1. Item 2555 – Water Piping
 2. Item 2560 – Sanitary Sewers
 3. Item 2600 – Repair of Asphalt Paving
 4. Item 15061 – Steel Piping and Fittings
 5. Item 15062 – Ductile Iron Pipe and Fittings
 6. Item 15064 – Plastic Piping and Fittings (4-Inches or Smaller)
- C. Existing Utilities: The Plans and/or Exhibits show the approximate location of all known underground utilities, foreign pipe lines and structures. No guarantee is made that all such obstructions have been found and located, unknown lines may be encountered. The trench shall be excavated well ahead of the pipe laying operations to expose underground utilities, foreign pipe lines and structures. The Contractor shall employ skilled operators and proceed with caution at all times. Upon encountering such an obstruction the Contractor shall immediately notify the Engineer and the Owner. If the encounter results in damage of the nature that may endanger the public, he shall take such emergency measures as appropriate to notify the affected public, and to mitigate the danger. If the obstruction conflicts with the proposed work, he shall stop work until directions are given by the Engineer. Avoid damage to utilities and foreign pipe lines throughout all operations.

- D. Pavement Protection: All tracked construction equipment shall have tracks fitted with suitable pads to minimize damage to pavement. Those not so fitted may be driven across pavement surfaces only when suitable planking or mats are interposed between track and pavement, or when pavement is protected by suitable layer of earth. All construction operations shall be conducted so to minimize damage to pavement other than that scheduled for removal. All such damage shall be repaired by the Contractor restoring damaged areas to as near original condition as practical.
- E. Blasting will not be permitted without specific written approval from the Engineer.

II. MATERIALS

- A. Earth Backfill (EF): Where no other backfill is specified, use suitable soils from the excavation as backfill material. Bedding and backfill material shall be free of roots, trash, mud balls and conform to the following limits for deleterious materials:
 - 1. Clay Lumps: Less than 0.5 percent when tested in accordance with ASTM C142.
 - 2. Lightweight Pieces: Less than 5 percent when tested in accordance with ASTM C123.
 - 3. Organic Impurities: No color darker than standard color when tested in accordance with ASTM C40.
- B. Sand Backfill (BS): Where sand backfill is required, Contractor may select, unless specified on Plans and/or Exhibits, sand backfill depending upon availability from the following:
 - 1. Bank Run Sand: Durable bank run sand classified as SP, SW, or SM by the Unified Soil Classification System (ASTM D2487) meeting the following requirements:
 - a. Less than 15 percent passing the number 200 sieve when tested in accordance with ASTM C136.
 - b. Material passing the number 40 sieve shall meet the following requirements when tested in accordance with ASTM D4318:
 - 1) Liquid limit not exceeding 25.
 - 2) Plasticity index not exceeding 7.

2. Concrete Sand: Natural sand, manufactured sand, or a combination of natural and manufactured sand conforming to the requirements of ASTM C33 and graded within the following limits when tested in accordance with ASTM C136:

Sieve	Percent Passing
$\frac{3}{8}$ inch	100
No. 4	95 to 100
No. 8	80 to 100
No. 16	50 to 85
No. 30	25 to 60
No. 50	10 to 30
No. 100	2 to 10

3. Gem Sand: Sand conforming to the requirements of ASTM C33 for course aggregates specified for number 8 size and graded within the following limits when tested in accordance with ASTM C136:

Sieve	Percent Passing
$\frac{3}{8}$ inch	95 to 100
$\frac{1}{4}$ inch	60 to 80
No. 4	15 to 40
No. 10	0 to 5

- C. Select Fill (ES): Select fill shall be lean clay to sandy, lean clay soil with a maximum liquid limit of 35 and a PI range of 8 to 20 and minimum of 60 percent passing the No. 200 sieve. Select fill may consist of lime stabilized soils excavated on site. Lime stabilization of 8-inch loose lifts should be performed by blending 25 pounds of hydrated lime per square yard into each 8-inch loose lift of fill soils.

D. Aggregate Bedding (AB): Where aggregate bedding is required, Contractor may select, unless specified on Plans and/or Exhibits, aggregate bedding for trench stabilization or backfill depending on availability from the following:

1. Pea Gravel: Durable particles composed of small, smooth, rounded stones or pebbles and graded within the following limits when tested in accordance with ASTM C136:

Sieve	Percent Passing
½ inch	100
¾ inch	85 to 100
No. 4	10 to 30
No. 8	0 to 10
No. 16	0 to 5

2. Crushed Aggregates: All crushed aggregates consist of durable particles obtained from an approved source and meeting the following requirements:

- a. All materials of one product delivered for the same construction activity from a single source.
- b. Non-plastic fines
- c. Los Angeles abrasion test wear not exceeding 40 percent when tested in accordance with ASTM C131.
- d. Gradations, as determined in accordance with Tex-110-E.

Sieve	Percent Passing by Weight for Pipe Embedment By Ranges of Nominal Pipe Sizes		
	>15"	15" - 8"	<8"
1"	95 - 100	100	-
¾"	60 - 90	90 - 100	100
½"	25 - 60	-	90 - 100
¾"	-	20 - 55	40 - 70
No. 4	0 - 5	0 - 10	0 - 15
No. 8	-	0 - 5	0 - 5

- e. Crushed Stone: Produced from oversize quarried aggregate, sized by crushing from a naturally occurring single source. Crushed gravel or uncrushed gravel are not acceptable material for utility embedment.
- f. Crushed Concrete: Crushed concrete is an acceptable substitute for crushed stone as utility backfill. Gradation and quality control test requirements are the same as crushed stone. Provide crushed concrete produced from normal weight concrete of uniform quality; containing particles of aggregate and cement material, free from other substances such as asphalt, base course material, reinforcing steel fragments, soil, debris, or deteriorated concrete fragments.

E. Cement Stabilized Backfill

- 1. Cement stabilized sand shall be used for backfill and bedding as called for on the Plans and/or Exhibits or as directed by the Engineer.
- 2. Cement shall consist of Type I portland cement conforming to ASTM C150.
- 3. Sand shall be clean, durable sand containing not more than the following:
 - a. Deleterious Materials
 - 1) Clay lumps, ASTM C142; less than 0.5 percent
 - 2) Lightweight pieces, ASTM C123; less than 5.0 percent
 - 3) Organic impurities, ASTM C40; shall not show a color darker than the standard color.
 - b. Plasticity index shall be six (6) or less when tested in accordance with ASTM D4318.
- 4. Water shall be potable, free of oils, acids, alkalis, organic matter or other deleterious substances.
- 5. Sand-cement mixture product shall consist of the proper percentage of cement per cubic yard or per ton of sand with sufficient water to hydrate the cement.
- 6. Mix in a pug mill using not less than 2 sacks of cement per ton of mixture with sufficient water to hydrate the cement.

III. EXECUTION

A. Preparation

1. Any clearing and grubbing required shall have been performed pursuant to the appropriate Item.
2. Where concrete or asphalt pavement is to be cut; true saw cuts defining the area to be removed shall have been made (a parallel pavement joint may be used as one boundary), and the pavement broken into pieces suitable for handling by excavating equipment.
3. Layout staking of the utility line shall have been made with adequate definition of alignment and grade of the particular portion to be laid.
4. Utility line materials (Pipe and fittings, conduits, etc.) shall be on site prior to excavation for its placement.
5. Bedding materials and any special backfill material shall be on site, or delivery arrangements definitely made with a reliable source.
6. Any permits pertinent to work to be performed are to be on site. All required notifications shall have been made and any special inspection forces on site or proper and arrangement therefore made.

B. Excavation

1. The trench for the utility line or appurtenance shall be excavated on the given alignment to the grade indicated on Plans and/or Exhibits, minimum cover requirements and construction to govern. Trench sides shall be as near vertical as practical considering wall stability and need for safety. From the bottom of the trench to the top at the proposed pipe, the wall shall be near vertical with slopes, if any, above this level. Where conditions require, vertical wall shall be shored or sheeted and braced. It is the Contractor's responsibility to fully comply with all OSHA safety requirements. Sheet piling to be employed if necessary for trench wall stability.
2. Excavated material suitable for backfilling to be piled as far as practical from edge of ditch, to increase soil stability and allow working room for pipe-laying operations. Excess material is to be removed from the trench bank as soon as practical. Excess is to belong to Contractor and disposition is his responsibility. Placement of excavated material on adjacent private property without written consent of Owner is prohibited. The written consent shall specifically absolve the Owner and Engineer of

any liability in regard to such placement. Excavation material may be placed in existing drainage ditches subject to the following restrictions:

- a. Bypass piping is to be provided.
 - b. Standing water in such ditch to be removed.
 - c. Rain does not appear to be imminent.
 - d. Ability is to be demonstrated that the earth can be removed in a short time if rain does occur during the day, including access for earth-moving equipment.
 - e. All such earth is to be removed before the working day is over and the drainage capacity of the ditch fully restored. Sidewalks are not to be blocked with earth unless approved substitute passage and access is provided.
3. Where trenches are scheduled to be partly or totally in the drainage ditch, the requirements given in the preceding paragraph shall apply. Work shall not be undertaken when rain is threatening. Should rain threaten during the work day, the drainage capacity of the ditch shall be immediately restored and maintained, and the trench backfilled. Full drainage capacity shall be restored at the end of each working day. Any liabilities resulting from drainage obstructions created by construction operations shall occur solely to the Contractor.

C. Trench Water

1. Where practical, ground surfaces shall be graded or diked to prevent the entry of surface water into the open trench.
2. Ground water entering the open trench from the walls and from a firm bottom in small quantities is to be promptly removed by trench pumps. Multiple pumps in good operating order shall be kept on the excavation site for such purposes at all times. Under such trench conditions, the rough excavation grades to drain to the pumps prior to under-bedding placement, with suitable screening to exclude sand from pump suction. Other methods may be employed by the Contractor to achieve the required results. The water level shall be maintained below the pipe invert until full compaction of the pipe bedding can be and is accomplished.
3. In the event that trench pumps are unable to maintain the required level, or, if the water entry is from the bottom of the excavation in such quantities as to make the bottom unstable, or, from the sides in such quantities as to make the walls unstable, then the Contractor shall provide

and operate an effective well point system to dewater the trench to the required pipe laying conditions.

4. Water removed from trenches, from drainage ditches and by well points shall be conveyed to the Owner's drainage system (pipe or ditch) and not discharged upon the roadway, sidewalk or private property in such a manner as not to create damages or public nuisance.
 5. Dewatering or well point systems shall be placed and operated so as to minimize inconvenience and annoyance to public, mechanical equipment shall be housed or shielded to minimize noise; engines are to be provided with efficient noise mufflers. Points and headers shall not block pedestrian and vehicular access to adjacent property. Location of pumping units to be chosen for minimum disturbance. Site to be promptly restored to original condition after point removal.
- D. Pipe Embedment, General: Pipe materials, handling and joining, cable and utility appurtenances are covered in other sections of these specifications. These work elements are to be closely coordinated with the trench excavation, trench backfill, and with embedment placement.
- E. Pipe Embedment: Concrete Steel Cylinder, Corrugated Metal Pipe, Reinforced Concrete Pipe, Cast Iron, Ductile Iron, Vitrified Clay, PVC Pipe, Reinforced Plastic Mortar, Steel.
1. After trenching to rough grade, and trench water removal arrangements are made, the prescribed underbedment, using the dry material of type specified (stabilized sand, bank sand, etc.) and minimum depth shown on details this Item and/or specified herein, is to be placed across the width of the trench and approximately to the grade of the bottom of the pipe, with bell hole left open and additional material on sides. Additional dry, loose material is to be placed in uniformly spaced amounts along pipe (clearing sling points, if any, and bell holes) sufficient to support lower quadrant of pipe barrel for 30 percent or more of its length. The pipe is to be lowered into the trench, aligned, positioned so spigot end is just outside bell and lowered against sand. It is to be checked for vertical alignment of spigot vs. bell and for gradient. The length is to be worked into true alignment and gradient by "bumping", and/or adding or removing underbedment material, so pipe is uniformly supported, under its own weight, for the lower quadrant for not less than 80 percent of its length. The pipe piece is then to be moved horizontally (axially) to make up joint, and additional underbedment material promptly worked under the pipe and tamped to provide support for its lower $\frac{1}{3}$ for its entire length. Joint is to be checked for make-up, and exterior protection placement commenced. Pipe bedding material placement to continue, and pipe shall be solidly anchored against axial movement before next joint is made-up. Remaining bedding and

backfill placing to continue until complete. Trench water not to be allowed to rise appreciably until bedding level is above spring line of pipe.

2. Bedding placement on sides and top to be in layers of 8-inch maximum thickness and mechanically compacted. Placement shall be made on both sides of pipe in such a manner that pipe is not moved horizontally or vertically by placement or compaction.
 3. Bank sand placement on sides and top to be in layers of 8-inch maximum thickness and mechanically compacted to not less than 90% of Texas State Department of Highways and Public Transportation test method TEX-113-E within ± 3 percent of optimum moisture content. Placement shall be made on both sides of pipe in such a manner that pipe is not moved horizontally or vertically by placement or compaction.
- F. Pipe Embedment, 3-Inches and Smaller Water Lines: Small diameter pipe lines not shown to be on a specific grade may be laid on 2-inch loose fill in ditch bottom, and stabilized with loose materials placed sides and top to cover pipe not less than 6-inches, then backfilled.
- G. Backfill (Normal, Select or Regular)
1. Where excavation has been by ladder or wheel trenchers, or:
 2. Where excavation by other types of equipment has resulted in clods not larger than 10-inches in largest dimension, and where excavated materials have been separated into "suitable" and "non-suitable", the surface excavated material (or select imported substitute material) may be pushed into the trench in layers not thicker than 12-inches and compacted. Where excavation has resulted in large clods:
 - a. The clods are to be removed from the trench area and select imported material substituted therefor, or
 - b. The clods are to be reduced to not greater than allowed above, and adequate finer material sufficient to fill voids between large clods provided. Highly-organic excavated material is to be considered "unsuitable" and excluded from the backfill.
 3. Each layer of the backfill is to be mechanically compacted, to densities per ASTM D698 (standard proctor) within ± 3 percent of optimum moisture content. Reopen trenches inadequately compacted and recompact.
 4. Backfill shall be hand placed and compacted under lines crossing the trench, steep slopes, valves, valve boxes, service connections, manholes, inlets and other appurtenances and specials.

5. Any trench settlement to be promptly filled, all trenches to be given final dressing immediately after settlement.
6. Final clean-up to follow backfill operation within 48 hours of construction or earlier if directed by the Engineer.

H. Backfill (Under Roadways and Driveways)

1. Where utility line excavation is open cut across a roadway or driveway, the backfill from top of bedding to bottom of future pavement restoration to be made with cement stabilized sand. The material is to be fresh (mixed not more than 3 hours before final placement). It is to be placed in layers not exceeding 10-inches depth (loose measure) and mechanically compacted from the bottom to top to minimum density not less than 95 percent of optimum, ASTM D698.
2. The surface of the material is to be dampened and covered with polyethylene or otherwise prevented from drying, for 72 hours. Wood bridges or steel plates shall be positioned to permit vehicular traffic, with the remaining portion barricaded for the curing period. After 3 days, the space for future surfacing may be temporarily filled with limestone until pavement restoration is begun and/or restoration undertaken immediately.

I. Crossing Existing Utility and Foreign Lines

1. Where existing utility or pipe lines are found crossing the route of the proposed utility line and are one “main” diameter or more above the proposed utility on undisturbed soil, the Contractor shall “jump” the crossing main with the excavating machinery, leaving a minimum of 1 foot of undisturbed area on each side of the crossing pipe. An opening for the proposed utility is to be tunneled under the crossing pipe line, and the proposed utility carefully threaded through. The crossing line is to be protected from damage at all times. In the event the undisturbed soil is found to be unstable, or if the Engineer decides support is required because of the nature or configuration of the pipe, the Contractor shall:
 - a. Excavate down to the crossing line;
 - b. Provide a temporary strong-back support; and/or
 - c. Provide a reinforced concrete cradle across trench adequately supported to carry crossing pipe and backfill.
2. Where existing utilities or pipe lines are encountered in grade, subject to the approval of the Engineer and conditions of paragraph 1 above, the Contractor shall:

- a. Adjust the grade of the proposed utility to clear the existing utility.
 - b. Remove and replace the existing utility in a manner shown on the Plans and/or Exhibits or as approved by the Owner of the existing utility.
- J. Removing and Replacing Culverts: Where it is necessary to remove culverts in order to install the proposed utility, the Contractor may at his option:
1. Remove and waste the existing pipe, replacing with new, equivalent pipe, or,
 2. Salvage existing pipe in good condition and relay. New pipe shall be substituted for damaged pipe at the Contractor's expense. The re-laid culvert shall be of the same length, same depth, same location as original, and in no way inferior to the original. No extra pay will be allowed for replacement of damaged culvert pipe whether or not was caused by Contractor.
- K. Miscellaneous Precautions, Restoration of Damages
1. Contractor shall at all times be vigilant in observing overhead electric power and communication equipment.
 2. Damage to overhanging tree limbs shall also be avoided.
 3. Damage to pavement curbing is to be avoided. If such are damaged, the damaged section from joint shall be removed and replaced with curb of like material, dimension, texture and finish.
- L. Test for Displacement of Sewers: After the trench has been backfilled to 2-feet above the pipe and tamped as specified, check the alignment as follows. Flash a light through the sewer between manholes. Use a flashlight or reflect sunlight with a mirror. If the illuminated interior of the pipe line shows poor alignment, pipe displacement, or other defects, remedy them satisfactorily.
- M. Deflection Test of Thermoplastic Pipe (PVC, etc.): Deflection test shall not be performed before 30 days have passed after backfill (installation), but must occur prior to final acceptance. All thermoplastic lines shall be tested by pulling a mandrel or approved deflectometer through the line. All sections indicating five percent (5%) deflection or more shall be removed, reinstalled, and retested for leakage and deflection. A drawing of a typical testing mandrel follows.

IV: PIPE ABANDONMENT

A. Description: This specification shall govern all work and materials required for grouting abandoned utility lines.

B. Materials:

1. Raw Soil: Soil shall be typical clayey soil of the area. It shall be from the project site or other approved source not suspected of being contaminated. The soil shall have a Plasticity Index over 15 and a Liquid Limit not to exceed 65.
2. Lime: Lime shall be hydrated lime, calcium hydroxide, in accordance with AASHTO M 216.
3. Water: Water shall be potable.

C. Construction Methods:

1. Mix Design: The following is given as a typical mix design for trial mix. The mix design is based on damp soil with initial water content of about 15%. The proportions of soil and lime shall not be altered. The Contractor shall determine the amount of water to be added as required to produce a mix at its liquid limit.

a. Trial Mix Design:

Damp Soil	1,000 lb.
Lime	50 lb.
Water (Approximate)	48 gal.

Consistency shall be checked with liquid limit apparatus.

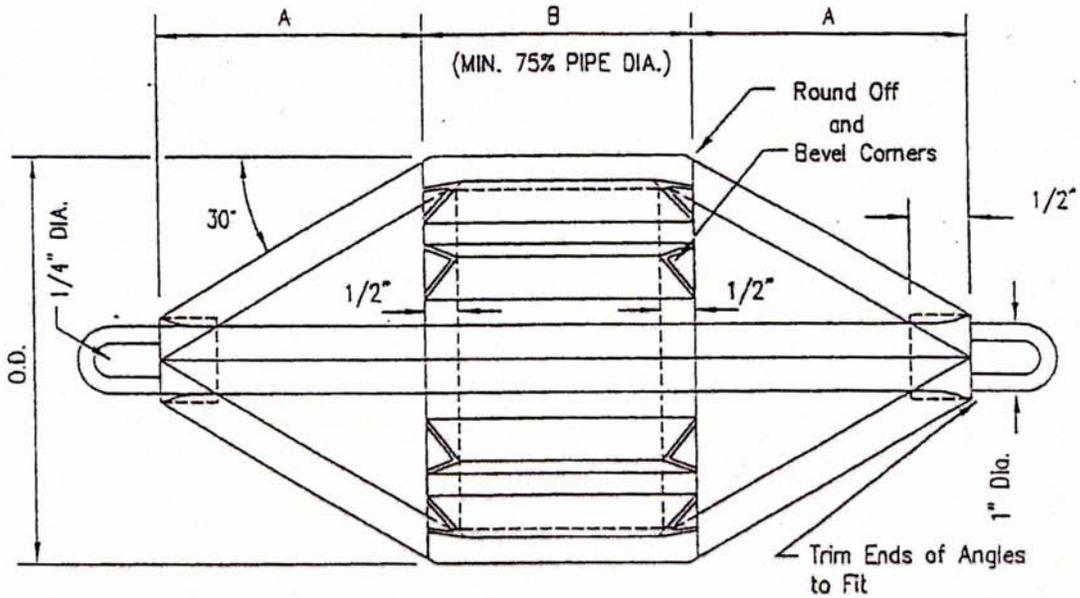
2. Placement: The Contractor shall grout abandoned lines as indicated on the drawings. Temporary pumping and venting ports shall be placed as required to provide complete filling of the abandoned line and proper placement of the grout. If segregation or “sand packing” is experienced during pumping, the Contractor

shall reduce water content of mix or obtain other soil source, as required. Any damage resulting from pumping operation shall be repaired at the Contractor’s expense.

D. Measurement & Payment:

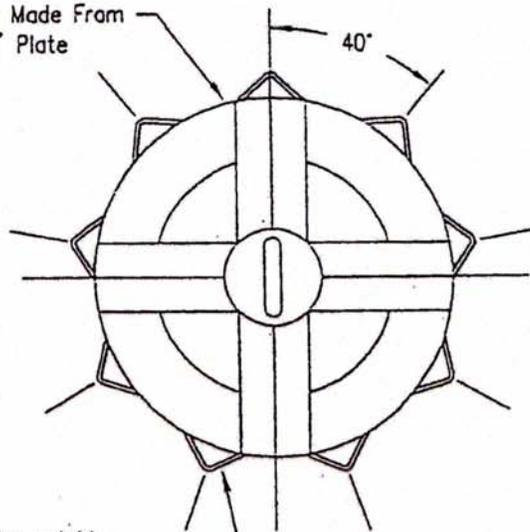
Unless indicated otherwise in the Proposal, Grouting Abandoned Utility Lines shall be measured by the linear foot. Payment shall include all equipment, materials and incidentals required to mix, transport, and place the grout and restore surface at pump ports.

TYPICAL
GO, NO-GO DEFLECTION TESTING MANDREL
CONSTRUCTED FROM 1/2-INCH ANGLE IRON



SIZE	A (inches)	B (inches)
4	3.0	4
6	4.0	4.5
8	5.3	6
10	6.7	7.5
12	8.0	9
15	10.0	11.5

Ring Made From
1/2" Plate



NOTE:

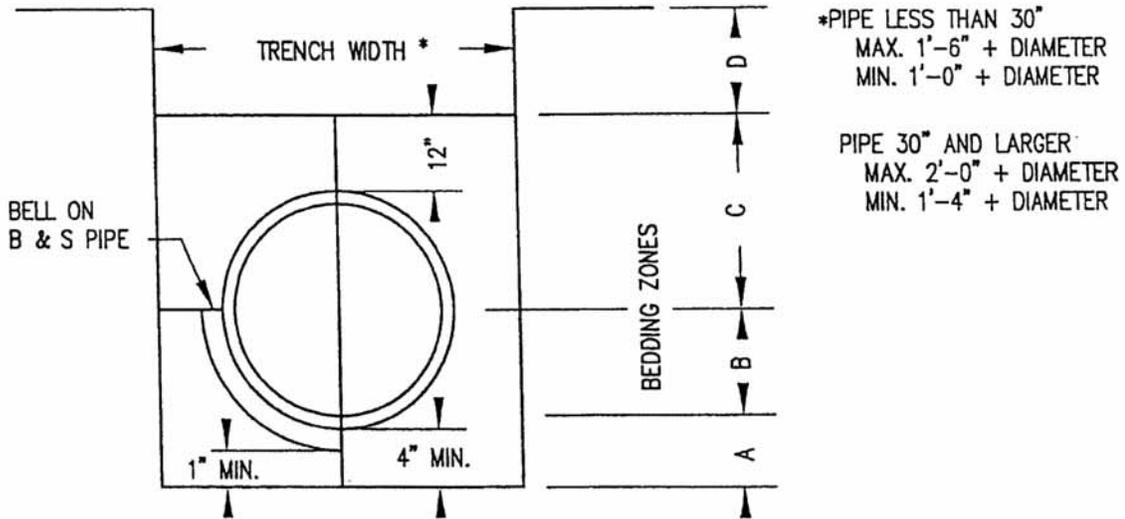
After welding is completed, true the outside diameter dimension for the full length of "B" to $95\% \pm 0.010"$ of original inside diameter of pipe being tested.

RUNNERS: Min. number to be 9; total must be odd number (i.e. 9, 11, 13, ...).

MANDREL
NOT TO SCALE

PIPE MATERIAL	BEDDING ZONES			
	A	B	C	D
CONCRETE STEEL CYLINDER	BS	BS	ES	EF
CORRUGATED METAL PIPE	BS	BS	BS	EF
REINFORCED CONCRETE PIPE	BS	BS	ES	EF
CAST IRON	BS	BS	BS	EF
DUCTILE IRON (PRESSURE)	BS	BS	BS	EF
DUCTILE IRON (GRAVITY)	CS	CS	CS	EF
VITRIFIED CLAY (ASTM C-12)	CS	CS	CS	EF
PVC (PRESSURE PIPE)	BS	BS	BS	EF
PVC (GRAVITY PIPE)	CS	CS	CS	EF
STEEL	BS	BS	BS	EF
CENTRIFUGALLY CAST FIBERGLASS (FRP)	CS	CS	CS	EF

BS- BANKSAND.
 AB- AGGREGATE BEDDING.
 ES- SELECT EARTH FILL PLACED SAME DAY AS PIPE IS LAID.
 EF- EARTH FILL PLACED NEXT DAY (OR LATER) AFTER PIPE IS LAID.
 CS- CEMENT STABILIZED SAND.



ORDINARY TRENCH
EMBEDMENT & BACKFILL DETAIL

N.T.S.

ITEM 2227

WASTE MATERIAL DISPOSAL

I. GENERAL

- A. Scope: Waste material disposal consist of disposal of trees, stumps, logs, brush, roots, grass, vegetation, humus, rubbish and other objectionable matter from operations such as clearing and grubbing, excavation, grading and sanitary sewer cleaning. Unless otherwise specified, the Contractor is responsible for removal and disposal of waste material.
- B. Payment: No separate payment will be made. Include cost of work in contract bid prices.
- C. Related Work (if utilized in this project)
 - 1. Item 2102 - Clearing and Grubbing
 - 2. Item 2221 - Excavation, Trenching and Backfilling for Utilities

II. MATERIALS

Specific materials are not required. Use equipment and materials necessary to properly complete disposal of waste materials.

III. EXECUTION

Disposal Area: Waste materials must be removed from the work site and disposed of in a manner not to damage the Owner or other persons. All waste materials become the property of the Contractor.

ITEM 2234

FLEXIBLE BASE

I. GENERAL

This Item shall consist of a foundation course for surface course or for other base courses; shall be composed of either caliche, (Argillaceous limestone, calcareous clay particles, with or without stone, conglomerate, gravel, sand, or other granular materials), crushed stone, gravel, iron ore topsoil, shell, etc.; and shall be constructed as herein specified in one or more courses in conformity with the typical sections shown on Plans and/or Exhibits and to the lines and grades as established by the Engineer.

II. MATERIALS

A. Type A material shall consist of crushed or broken aggregate (Excluding gravel aggregate). Type B material shall consist of gravel aggregate. Type C material shall consist of iron ore topsoil. Type D material shall consist of shell aggregate with sand admixture. Type E material shall consist of caliche. Unless the type of material to be used is specified on the Plans and/or Exhibits, the Contractor may use any one of these types, provided the material proposed for use by the Contractor meets the requirements set forth in the specification test limits tabulation.

B. Grades: It is the intent of this specification that unless otherwise indicated on the Plans and/or Exhibits, the final course of the base material shall consist of Grades 1 or 2 and other base courses or subbase materials may consist of Grades 1, 2, 3, or 4. All grades shall, when tested by standard Department laboratory test procedures, meet the physical requirements as set forth in the specification test limits tabulation.

When pilot grading is required in the Plans and/or Exhibits, the Engineer will designate the grading and allowable tolerances to govern during production. The flexible base produced shall not vary from the designated pilot grading by more than the tolerances specified by the Engineer. The pilot grading may be varied the Engineer as necessary to insure that the base material produced will meet the physical requirements specified.

Testing of flexible base materials shall be in accordance with The State Department of Highways and Public Transportation standard laboratory test procedures.

(Latest Revision):

Preparation for Soil	
Constants and Sieve Analysis	Tex-101-E
Liquid Limit.....	Tex-104-E
Plastic Limit.....	Tex-105-E
Plasticity Index	Tex-106-E
Sieve Analysis	Tex-110-E
Wet Ball Mill	Tex-116-E
Triaxial Test	Tex-117-E(Part I or II)

Unless otherwise specified on the Plans and/or Exhibits, samples for testing the material for Soil Constants. Gradation and West Ball Mill shall be taken prior to the compaction operations.

Unless otherwise specified on the Plans and/or Exhibits, samples for triaxial tests shall be taken from the stockpile or from production, as directed by the Engineer, where temporary stockpiling is required and from production where temporary stockpiling is not required.

**PHYSICAL REQUIREMENTS FOR FLEXIBLE BASE
MATERIALS & GRADES**

TYPES:

Grade 1: (Triaxial Class 1)	Grade 2: (Triaxial Class 1 to 2.3)	Grade 3: (Unspecified Triaxial Class)	Grade 4:
Min. compressive strength, psi: 45 at 0 psi lateral pressure and 175 at 15 psi lateral pressure	Min. compressive strength, psi: 35 at 0 psi lateral pressure and 175 at 15 psi lateral pressure		

TYPE A

Retained on Sq. Sieve %	Retained on Sq. Sieve %	Retained on Sq. Sieve %	
1 3/4".....0	1 3/4".....0-10	1 3/4"0-10	
7/8".....10-35	No. 445-75	No. 4060-85	As
3/8".....30-50	No. 4060-85	Max LL45	Shown
No.445-65	Max LL40	Max PI15	on
No.4070-85	Max PI12	Wet	Plans
Max LL.....35	Wet	Ball Mill	
Max PI10	Ball Mill	Max. Amt55	
Wet	Max. Amt50	Max. Increase	
Ball Mill	Max Increase	in Passing	
Max. Amt...40	in Passing	No. 4020	
Max. Increase	No. 4020		

in Passing
No. 4020

TYPE B

Gravel Aggregate	Retained on Sq. Sieve % 1¾"0-10 No. 430-75 No. 4070-85 Max LL.....35 Max PI12	Retained on Sq. Sieve % 1¾"0-5 No. 430-75 No. 40.....65-85 Max LL35 Max PI12	As Shown on Plans
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TYPE C

Iron Ore Topsoil	Retained on Sq. Sieve % 2½"0 No. 40 ...50-85 Max LL35 Max PI12	Retained on Sq. Sieve % 2½"0 No. 40....45-85 Max LL.....35 Max PL.....12	As Shown on Plans
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TYPE D

Sand - Shell	Retained on Sq. Sieve % 1¾"0-10 No.445-65 No. 4050-70 Max LL.....35 Max PI12	Retained on Sq. Sieve % 1¾"0-10 No. 40....40-65 Max LL.....35 Max PI12	As Shown on Plans
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TYPE E

Shell w/Sand & Caliche Admixture	Retained on Sq. Sieve % 1¾"0 No. 40 ...45-65 Max LL.....35 Max PI10	Retained on Sq. Sieve % 1¾"0 No.4045-65 Max LL.....35 Max PI12	As Shown on Plans
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TYPE F

Caliche	Retained on Sq. Sieve % 1¾"0 No. 447-75 No. 40 ...50-85 Max LL.....40 Max PI12	Retained on Sq. Sieve % 1¾"0 No. 40.. .50-85 Max LL.....40 Max PI12	As Shown on Plans
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Tolerance: When Tolerances are permitted by the Plans and/or Exhibits, the limits establishing reasonably close conformity with the specified gradation and plasticity index are defined by the following:

The Engineer may accept the material, providing not more than 2 out of 10 consecutive gradation tests performed are outside the specified limit on any individual or combination of sieves by no more than 5% and where no two consecutive tests are outside the specified limit.

The Engineer may accept the material providing not more than 2 out of 10 consecutive plasticity index samples tested are outside the specified limit by no more than 2 points and where no two consecutive tests are outside the specified limit.

III. EXECUTION

- A. Preparation of Subgrade. The roadbed shall be excavated and shaped in conformity with the typical sections shown on Plans and/or Exhibits and to the lines and grades as established by the Engineer. All unstable or otherwise objectionable material shall be removed from the subgrade and replaced with approved material. All holes, ruts and depressions shall be filled with approved material and, if required, the subgrade shall be thoroughly wetted with water and reshaped and rolled to the extent directed in order to place the subgrade in an acceptable condition to receive the base material. The surface of the subgrade shall be finished to line and grade as established and in conformity with the typical section shown on Plans and/or Exhibits, and any deviation in excess of ½-inch in cross section and in a length of 16-feet measured longitudinally shall be corrected by loosening, adding, or removing material, reshaping and recompacting by sprinkling and rolling. Sufficient subgrade shall be prepared in advance to insure satisfactory prosecution of the work. Material excavated in the preparation of the subgrade shall be utilized in the construction of adjacent shoulders and slopes or otherwise disposed of as directed, and any additional material required for the completion of the shoulders and slopes shall be secured from sources indicated on Plans and/or Exhibits or designed by the Engineer.
- B. Application: The material shall be delivered in approved vehicles of a uniform capacity, and it shall be the charge of the Contractor that the required amount of specified material shall be delivered in each 100-foot station. Material deposited upon the subgrade shall be spread and shaped the same day unless otherwise directed by the Engineer in writing. In the event inclement weather or other unforeseen circumstances render impractical the spreading of the material during the first 24-hour period, the material shall be scarified and spread as directed by the Engineer. The material shall be sprinkled, if directed, and shall then be bladed, dragged, and shaped to conform to typical sections as shown on Plans and/or Exhibits. All areas and “nests” of segregated coarse or fine material shall be corrected or removed and replaced with well graded material, as directed by the Engineer. If additional binder is considered desirable or necessary after the material is spread and shaped, it shall be furnished and applied in the amount

directed by the Engineer. Such binder material shall be carefully and evenly incorporated with the material in place by scarifying, harrowing, brooming, or by other approved methods.

The course shall be compacted by the method of compaction hereinafter specified as the "Ordinary Compaction" method or the "Density Control" method of compaction as indicated on the Plans and/or Exhibits.

When the Plans and/or Exhibits indicate that the "Ordinary Compaction" method is to be used, the following provisions shall apply:

The course shall be sprinkled as required and rolled as directed until a uniform compaction is secured. Throughout this entire operation, the shape of the course shall be maintained by blading and the surface upon completion shall be smooth and in conformity with the typical sections shown on Plans and/or Exhibits and to the established lines and grades. In that area on which pavement to be placed, any deviation in excess of ¼-inch in cross section and in a length of 16-feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling. All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling.

When the Plans and/or Exhibits indicate that the "Density Control" method of compaction to be used, the following provisions shall apply:

The course shall be sprinkled as required and compacted to the extent necessary to provide not less than the percent density as hereinafter specified under "Density." In addition to the requirements specified for density, the full depth of flexible base shown on Plans and/or Exhibits shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section of flexible base is completed, tests as necessary will be made by the Engineer. If the material fails to meet the density requirements, it shall be reworked as necessary to meet these requirements. Throughout this entire operation the shape of the course shall be maintained by blading, and the surface upon completion shall be smooth and in conformity with the typical sections shown on the Plans and/or Exhibits and to the established lines and grades. In that area on which pavement is to be placed, any deviation in excess of ¼-inch in cross section and in length of 16-feet measured longitudinally shall be corrected by loosening, adding, or removing material, reshaping and recompacting by sprinkling and rolling. All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling. Should the base course, due to any reason or cause, lose the required stability, density or finish before the surfacing is

complete, it shall be recompact and refinished at the sole expense of the Contractor.

ITEM 2242

CEMENT STABILIZED SUBGRADE

I. GENERAL

This Item consists of spreading Portland cement upon subgrade, mixing, and compacting to required density, lines, grades, and cross-sections when required by soil conditions and approved by Engineer.

II. MATERIALS

A. Cement: Portland cement to be Type I, standard brand conforming to the requirements of ASTM C150-77. One sack (cubic foot) to weigh 94 pounds; one barrel to weigh 376 pounds. Bulk cement may be used provided weighing and handling is approved.

B. Aggregate: Use sand containing deleterious materials not to exceed the following requirements by weight.

Material Removed by Decantation	5.0%
Clay Lumps	0.5%
Other Deleterious Substances such as Coal, Shale, or Coated Grains of Soft Flaky Particles	2.0%
Gradation Requirements	
Retained on $\frac{1}{8}$ -Inch Sieve	0%
Retained on $\frac{1}{4}$ -Inch Sieve	0% - 5%
Retained on 20 Mesh Sieve	15% - 50%
Retained on 100 Mesh Sieve	80% - 100%

Color Test ASTM C40-73 - color of darker than standard color.

- C. Water: Fresh and clean.

III. EXECUTION

- A. Proportioning: Ratio of cement to soil will be based on dry material weight and will be established by Engineer in field to provide desired stability. Normal operational range is 6 percent to 10 percent by weight. Percentage of moisture in soil, at time of cement application, not to exceed the quantity that will permit uniform and intimate mixture of soil and cement during dry mixing operations, and not to exceed the specified optimum moisture content for the soil-cement mixture, as determined from ASTM D588.
- B. Spreading and Mixing: Spread cement with approved equipment. Do not spread with maintainer or motor grader, or during windy weather. Immediately after spreading, thoroughly mix soil and cement to depth specified, using approved pulver-type road mixer. Distribute cement only on area that can be completed, ready for curing before initial setting of the mixture. Do not mix or place cement when the air temperature is below 40 degrees F and is falling, the temperature being taken in the shade and away from artificial heat, or when weather conditions, in the opinion of the Engineer, are not suitable.
- C. Compaction: The material shall be compacted to not less than the density shown on the Plans and/or Exhibits. At the start of compaction, the percentage of moisture in the mixture and in unpulverized soil lumps, based on oven-dry weights, shall not be below or more than two percentage points above the specified optimum moisture content, and shall be less than that quantity which will cause the Portland cement treatment mixture to become unstable during compaction and finishing. When the uncompacted mixture is wetted by rain so that the average moisture content exceeds the tolerance given at the time of final compaction, the entire section shall be reconstructed in accordance with this specification at the sole expense of the Contractor.

Prior to the beginning of compaction, the mixture shall be in loose condition for its full depth. The loose mixture then shall be uniformly compacted to the specified density within 2 hours.

After the base or subbase material and cement mixture, excepting the top mulch, is compacted, water shall be uniformly applied as needed and thoroughly mixed in with as a spiketooth harrow or equal. The surface shall then be scarified to loosen any imprint left by compacting or shaping equipment.

The resulting surface shall be thoroughly rolled with a pneumatic tire roller and "clipped," "skinned," or "tight bladed" by a power grader to a depth of approximately 1/4-inch, removing all loosened soil and cement from the section.

The surface shall then be thoroughly compacted with pneumatic tire roller, adding small increments of moisture as needed during rolling. If plus No. 4 aggregate is present in the mixture, one complete coverage of the section with the flat wheel roller shall be made immediately after the “clipping” operation. When directed by the Engineer, surface finishing methods may be varied from this procedure provided a dense, uniform surface, free of surface compaction planes, is produced. The moisture content of the surface material must be maintained at its specified optimum during all finishing operations. Surface compaction and finishing shall proceed in such a manner as to produce, in not more than 2 hours, a smooth, closely knit surface, free of cracks, ridges or loose material conforming to the crown, grade, and line shown on the Plans and/or Exhibits.

D. Curing

1. Protection and Cover: After the Portland cement treatment for base or subbase course has been finished as specified herein, the surface shall be protected against rapid drying by either of the following curing methods for a period as shown on Plans and/or Exhibits but in no case less than 3 days or until the surface or an additional base course is placed:
 - a. Maintain in a thorough and continuously moist condition by sprinkling.
 - b. Apply a 2-inch layer of earth on the completed course and maintain in a moist condition.
 - c. Apply an asphalt membrane to the course, immediately after same is completed. Unless otherwise shown on the Plans and/or Exhibits, the asphalt shall be RC-250, in accordance with the Item, “Asphalt, Oils, and Emulsions.” The asphalt shall completely cover and seal the total surface of the base and fill all voids. If the Contractor elects to use this method, it shall be his responsibility to protect the asphalt membrane from being picked up by traffic by either sanding or dusting the surface of same. The asphalt membrane may remain in place when the proposed surface or other base courses are placed.
2. Surface: The surface or other base courses may be applied on the finished section as soon after completion as operations will permit.

- E. Construction Joints: At the end of each day’s construction a straight transverse construction joint shall be formed by cutting back into the total width of completed work to form a true vertical face free of loose and shattered material.

Portland cement treatment for base or subbase for large, wide areas shall be built in a series of parallel lanes of convenient length and width meeting the approval of the Engineer.

- F. Traffic: Completed sections of Portland cement treatment may be opened immediately to local traffic and to construction equipment, and to all traffic after the curing period, provided the mixture has hardened sufficiently to prevent marring or distorting the surface by equipment or traffic.
- G. Maintenance: The Contractor shall be required, within the limits of his contract, to maintain the Portland cement treatment in good condition until all work has been completed and accepted. Maintenance shall include immediate repairs of any defects that may occur. This work shall be done by the Contractor at his own expense and repeated as often as may be necessary to keep the area continuously intact. Faulty work shall be replaced for the full depth of treatment. It is the intent of this specification that the Contractor construct the plan depth of cement treated base in one homogeneous mass. The addition of thin stabilized layers to provide the minimum specified depth will not be permitted.
- H. Penalty for Deficient Subgrade Thickness: It is the intent of this specification that the cement stabilized base be constructed in strict conformity with the thickness and typical sections shown on Plans and/or Exhibits. Where any such subgrade is found not so constructed, the following rules relative to adjustment of payment for acceptable stabilized subgrade and to replacement of faulty stabilized subgrade shall govern.
 - 1. Subgrade Thickness: The cement stabilized Subgrade will be core drilled by a Testing Lab prior to application of base material or concrete surface.

The thickness of the subgrade will be determined by measurement of the cores. At such points as the Engineer may select in each unit, one core will be taken for each 1000 square yards of cement stabilized subgrade or fraction thereof, in the unit. If the core so taken is not deficient more than 0.5-inch from the plan thickness, full payment will be made. If the core is deficient in thickness by more than 0.5-inch but not more than 1.50-inches from the plan thickness, two additional cores will be taken from the area represented and the average of the three cores determined. If the average measurement of these three cores is not deficient more than 0.5-inch from the plan thickness, full payment will be made. If the average thickness of the three cores is deficient more than 0.5-inch, the sections having such deficiencies shall be removed and the subgrade shall be replaced to the specified plan depth.
 - 2. No additional payment over Contract unit price to be made for pavement of thickness exceeding that required by Plans and/or Exhibits.

3. Additional cores required to determine areas of deficient thickness to be paid for by Contractor.

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ITEM 2245

LIME-STABILIZED SUBGRADE

I. GENERAL

Consists of treating subgrade by pulverizing, adding lime, mixing, and compacting to required lines, grades, and cross-sections. Applies to natural ground, cuts, embankments, or existing pavement sections.

II. MATERIALS

- A. Type A - Hydrated Lime: To conform to requirements of the Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, 1993 Edition, Item 264.
- B. Type B - Commercial Lime Slurry: To conform to requirements of Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, 1993 Edition, Item 264.

III. EXECUTION

- A. Preparation: Properly prepare subgrade prior to beginning lime treatment. Scarify or excavate to depth shown. Provide machine that will cut and scarify to indicated depth. Unstable material below indicated depth to be corrected by proper compaction. Distribute lime uniformly over subgrade at required rate. Do not place lime that cannot completely receive first mixing during same working day.
- B. Placing: Place lime by either one of the following methods:
 - 1. Dry Placing: Place lime using approved spreader or by bag distribution. Do not spread with maintainer or motor grader. Do not place lime during windy or other adverse weather conditions. Sprinkle until proper moisture content has been secured.
 - 2. Slurry Placing: Mix Lime with water in trucks and place, using approved distributor. Make successive passes over measured section of roadway until proper lime and moisture content has been secured. Furnish truck with approved agitator which will keep lime and water uniformly mixed. Do not

change grade of slurry without prior approval.

- C. Mixing: Mixing procedure to be the same for either “dry placing” or “slurry placing.” Obtain uniform mixture and moisture content.
1. First Mixing: Thoroughly mix soil and lime to required depth, using approved pulver-type road mixer. Mix until homogeneous, friable mixture of lime and soil is obtained, free of clods or lumps. Add proper moisture and cure from 1 to 2 days as required. Keep moist during curing period.
 2. Final Mixing: Uniform mix, after proper curing, using approved pulver-type road mixer. All clods or lumps to be reduced in size by pulverization methods. When all nonslaking aggregates (sound or firm particles) retained on No. 4 sieve are removed, remainder of material to meet following requirements when tested dry by laboratory sieves:

Percent

Minimum Passing 1¾-Inch Sieve	100
Minimum Passing No. 4 Sieve	60

Hydrated lime exposed to open air for period of 6 hours or more, or to excessive loss due to washing or blowing between time of application and mixing, will not be accepted for payment.

- D. Compaction: Begin compaction immediately after final mixing. Provide optimum moisture during compaction. Begin at bottom and compact, using approved tamping rollers, until entire required depth is uniformly compacted. Compact treated material in such manner that it will not be mixed with underlying subgrade material. All irregularities or weak spots to be corrected immediately by replacing material and recompacting. Maintain surface in smooth condition until base course is placed. Acquire density of at least 95 percent of maximum dry density at optimum moisture content of treated material as determined by AASHTO Standard Method T-99-74 Density. Use approved pneumatic-type roller for final surface rolling. Moist-cure completed subgrade section for minimum of 4 days before placing pavement.

IV. QUALITY ASSURANCE

- A. Store lime in weatherproof containers, bins or buildings. Protect lime from any dampness or moisture.
- B. Weigh lime furnished in trucks on approved scales.
- C. Lime furnished in bags to bear manufacturer’s certified weight.

ITEM 2401

DEWATERING AND DRAINAGE OF EXCAVATION

I. GENERAL

A. Scope

This section provides for furnishing all labor, materials, equipment, power, incidentals and for performing all operations necessary to dewater, drain, and maintain excavations and foundation beds as described herein and as necessary for construction of structures and appurtenances. Included are construction, maintenance, and removal of cofferdams; installing, maintaining, operating, and removing well point systems and other approved devices for lowering water table within an excavation; removal of standing water, surface drainage, and seepage from excavation or other work and protecting work against rising waters and floods and repair of any resulting damage.

B. Contractor's Responsibility

Contractor shall have sole responsibility for dewatering systems and for all loss or damage resulting from partial or complete failure of protective measures, except as otherwise provided in the general and supplementary conditions of this manual.

C. Submittals

Submit shop drawings and manufacturers data as specified in Division 1, General Requirements. Do not start dewatering or other foundation drainage until the following required data has been submitted and reviewed.

1. Submit shop drawings of the proposed cofferdam required for the construction of the diversion structure in the CIWA Canal. The shop drawings must show the sequence of excavation and the locations and construction details of the temporary cofferdam required to protect the canal and to permit continual flow of water in the canal. In addition to the requirements of Division 1, General Requirements, an additional set of shop drawings must be provided to the engineer for submittal to CIWA for their approval.

2. Submit shop drawings and details of construction for any additional proposed cofferdams.
3. Submit shop drawings of the proposed methods of dewatering, foundation drainage, and diversion of water for review. The drawings shall show the well point system in clear detail, including the pump capacity or other proposed method for lowering the water table within the areas where the siphon pipe, concrete structures, compacted fill, and backfill are to be constructed.
4. Equipment Supplier: Provide the name of the supplier of well point or other foundation drainage equipment.

D. Related Work (if utilized in this project)

1. Division 2, Site Work
 - a. Item 1541 - Trench Safety Systems
 - b. Item 2220 - Structural Excavation and Backfill

II. MATERIALS

The necessary equipment and material for the cofferdams, dewatering, and drainage systems shall be selected by contractor and submitted to the engineer for review.

III. EXECUTION

A. Dewatering Excavations

1. Furnish, install, operate, and maintain all necessary pumping for dewatering the various parts of the work and for maintaining free of water the foundations and such other parts of the work as required for construction operations and as required for inspections and safety.
2. Continue dewatering in all required areas until the concrete structure, the embankment, and scour protection have been completed to the top of the slopes of the excavation or to another designated level.
3. Provide a uniform diameter for each pipe drain run constructed for dewatering. Remove the pipe drain when it has served its purpose. If

removal of the pipe is impractical, provide grout connections at 50-foot intervals and fill the pipe with clay grout or cement and sand grout when the pipe has served its purpose.

4. After completion of construction at the site, remove the cofferdams and dispose of the material.
5. Replace any excavation performed for convenience in the foundation beds with materials as impermeable as the original foundation material and compacted to not less than 95 percent maximum density.

B. Drainage of Foundation Beds

1. Dewater foundation beds for concrete structures by using well points or another approved method. If well points are used, maintain the saturation line at least 2-feet below the lowest elevations where concrete or embankment is to be placed. Dewater foundation beds for embankments, so that the surface on which the materials are to be placed will be dry and firm. Drain foundations in areas where concrete is to be placed before placing reinforcing steel. Keep foundation beds free from water for 3 days after concrete is placed.

C. Requirements for Well Points

1. Well points, where used, must be furnished, installed, and operated by a reputable contractor regularly engaged in this business and approved.
2. Submit the design of the well point system for review. Pre-drain by well point vacuum method.
3. Install sufficient piezometers to show that all trench excavation in sandy material is pre-drained prior to excavation.
4. Well points may be omitted for portions of underdrains or other trenches, only where auger borings and piezometers show that the soil is pre-drained by an exterior system.

D. Duration of Drainage

1. In areas where concrete is to be placed, carry out the foundation drainage, so that the required lowering of the water table will be effected prior to placing reinforcing steel. Keep foundation beds free from water to be same levels for 3 days after pouring concrete.

2. Operate pumps to keep each underdrain system drained to the approximate level of the top of the lowest pipe of the system until the removal or flooding of cofferdams.

E. Cofferdam Requirements

1. Provide a suitable cofferdam for each excavation where necessary to control water, so the foundation can be placed dry. Also, provide a suitable cofferdam to prevent sliding and caving of walls of the excavation.
 - a. Where no ground or surface water is encountered, the cofferdam only need be sufficient to protect workmen and to avoid having cave-ins or slides extend beyond the limits of the excavation as drawn.
 - b. Provide cofferdams with enough clearance for the construction and removal of any required forms, for the inspection of their exteriors, and to permit pumping outside the forms.
2. Extend sheet piling cofferdams well below the bottom of footings. Brace the piling well and make as watertight as possible.

F. Flooding and Removal of Cofferdams

1. Provide for admitting water gradually behind the cofferdam to equalize the water level on the two sides of the cofferdam before it is flooded or breached.
2. Use this feature before the cofferdam is removed and in the event of a flood that could overtop the cofferdam.
3. Do not breach cofferdams where the water level differential is more than 2-feet between the two sides of the cofferdam, unless the water depth on the high side is no more than 3-feet at the point of breaching.

G. Protection of Structures

Provide adequate protection for all structures to avoid damage to concrete.

H. Repair of Damage

Contractor shall have full responsibility for all loss and damage due to flood, rising water, or seepage in any part of the work. Repair any damage to partially completed work from these or other causes, including the removal of slides, repair of foundation beds, and performance of any other work necessitated by failure or slippage of cofferdams or lack of adequate dewatering or drainage facilities.

ITEM 2500

STORM SEWERS

I. GENERAL

A. Scope

The work to be performed under the specifications shall consist of the furnishing and installation of pipe sewer mains, laterals, stubs, and leads for storm sewer inlets. The type or types of pipe to be furnished and installed under the contract will conform to the type or types designated on the Plans and/or Exhibits and as set out on the bid proposal sheet.

B. Related Work (if utilized in this project)

Site Work

1. Item 2102 - Clearing and Grubbing
2. Item 2221 - Excavation, Trenching and Backfilling for Utilities
3. Item 2224 - Encasing, Augering and Tunneling Pipe
4. Item 2227 - Waste Material Disposal

C. Measurement and Payment

See Item 1400 - Measurement and Payment

II. MATERIALS

- A. Reinforced Concrete Pipe:** Provide reinforced concrete pipe which conforms with ASTM C-76, of size and class shown or, with the following additional requirements. For circular pipe with elliptical reinforcing, apply a readily visible stripe at least 12-inches long painted or otherwise applied on the inside and outside of the pipe at each end so that when the pipe is laid in the proper position the line will be at the center of the top of the pipe.

- B. Non-Reinforced Concrete Pipe: Provide non-reinforced concrete pipe which conforms to ASTM C-14 of size and class specified.
- C. Corrugated Metal Pipe: Provide corrugated metal pipe fabricated from corrugated sheet metals which shall comply with the requirements of AASHTO Designation: M36. The minimum gauge number of the galvanized sheet shall be as designated on the Plans and/or Exhibits.

Where specified, the pipe shall be coated inside and out with a bituminous coating which shall be 99.5 percent form thickness of 0.05-inch, measured on the crest of the corrugations; shall adhere to the metal tenaciously; shall not chip off in handling; and shall protect the pipe from deterioration as evidenced by samples prepared therefrom successfully meeting the Shock Test and Flow Test.

- D. Pipe Joints: Unless otherwise specified, joints in non-reinforced concrete pipe, reinforced concrete pipe, and clay sewer pipe shall be cold compound joints or neoprene joints as hereinafter described. Cold Compound joints shall be used on non-reinforced concrete pipe only.

- 1. Bell and Spigot Pipe-Cold Compound Joints: The inside of the pipe bells and the outside of the spigot ends shall, while dry be completely coated with joint primer. The coating shall be applied sufficiently in advance so that the primer will be thoroughly dry when the pipe is laid. Pipe 24-inches and larger shall be primed at the point of manufacture. Apply a fillet of Compound on the bottom half of the inside of the bell, press enough dry twisted jute into the compound to pass the pipe and lap at the top and shove home the spigot of the pipe. Bring the jute around the pipe and firmly caulk into place. The jute should be sufficient to fill one fourth the depth of the bell. Fill the remaining three-fourths of the depth of the bell with compound taking care to leave no voids and provide sufficient compound to form a fillet sloping 45° from the outer end of the bell to the barrel of the next pipe.

Compound used for these joints shall be a well known brand of material of proven worth, uniform in consistency and approved by the Engineer as being equal to Talcote No. 0.52 or Gulf States No. GS 702 or 722. Primer shall be of the type recommended by the manufacturer of the compound used.

- 2. Tongue and Groove Pipe--Cold Compound Joints: Unless otherwise specified, this type of joint shall be used for tongue and groove pipe joints not made with approved neoprene or rubber gaskets. The compound and primer shall be the same as described herein for use with bell and spigot

pipe.

Both ends of the pipe shall, while clean and dry, be coated with primer on all surfaces that will be in contact with the compound. The primer, shall be allowed to dry before the pipe is laid. 24-Inch and larger pipe shall be primed at the factory. After pipe has been set to proper line and grade in the trench a ½- inch thick layer of the compound shall be troweled or otherwise placed on the groove end of the pipe covering about ¼ of the joint face around the entire circumference. Next the tongue end of the next pipe shall be shoved home with sufficient pressure to make a tight joint. Care shall be taken to avoid leaving ridges of the compound projecting into the pipe in a manner that would obstruct the flow. The Engineer will make the necessary adjustment in the quality and consistency of the compound as the work progresses.

An outside band of the joint compound shall be installed completely around the circumference of the pipe at the joint. This will necessitate digging “bell holes” at each joint. The band shall have a thickness at the center of at least ¾-inch tapering uniformly to nothing approximately 3-inches each side of the center.

Where Class A bedding is used, the band may be omitted on portions of the joint that will be embedded in the cement stabilized sand bedding.

3. Neoprene or Rubber Gasket Joints: Joints made with neoprene, rubber, or other similar materials that has been approved by the Engineer will be acceptable for use with reinforced or non- reinforced concrete pipe, either tongue and groove or bell and spigot. The ends of the pipe must be accurately made and designed for use with the gaskets. The type of joint and the gasket must have the approval of the Engineer and may be submitted to the Director of Public Works for approval prior to submitting bids for work on which its use is intended. The joint materials and workmanship shall be such as to provide a water-tight joint. Joints shall, unless otherwise specified, be pointed on the outside with cement mortar.

III. EXECUTION

A. Pipe Handling

1. Pipe shipped to the job shall be properly protected against normal forces during transit from manufacturing site to project site.

2. Contractor shall provide and employ slings, lifting cables, strong backs, etc. as recommended by manufacturer in handling pipe, fittings and appurtenances on the job. Proper care against damage from rough handling shall be exercised at all times. Under no circumstances will pipe be dropped, nor will pipe be allowed to slam together.
3. Pipe is to be strung only on street right-of-way and easements; pipe is never to be strung in drainage ditches. Strung pipe shall not be placed so as to prevent or unreasonably obstruct access of people or vehicles to residences or to businesses. Loose items are not to be left in street right-of-way. Delivery of piping materials is to be scheduled so that pipe is strung a maximum of two (2) weeks prior to pipe laying.
4. Pipe will be strung so bells or tongue face in the direction of laying advancement.

B. Pipe Laying General

1. Use specified piping materials corresponding to the material, size, type, etc. indicated on Plans and/or Exhibits.
2. Do not lay pipe in water, or when trench or weather are unsuitable for work, except with permission of the Engineer. Keep water out of trench until jointing is complete. When work is not in progress, close ends of pipe and fittings securely so that no trench water, earth or other substances will enter pipes or storm sewer structures.
3. Keep the inside of the pipe free from foreign matter during operations by plugging or other approved method.
4. Place pipe so that the full length of each section rests solidly upon the pipe bed, with recesses excavated to accommodate joints. Take up and relay pipe when the grade or joint is disturbed after laying.
5. Where pipe ends are left for future connections, install brick and mortar, plugs or caps, as shown.
6. Handle pipe and accessories so that all pipe placed in the trench is sound and undamaged.
7. Before installation, inspect pipe for defects. Replace sections of pipe found to be defective, damaged or unsound.

8. Pipe barrels to be clean at time of joining. Swab as required to remove dirt, mud and other foreign matter.

C. Bedding and Pipe Placement

Refer to Item 2221 - Excavation, Trenching and Backfilling for Utilities and details on drawing.

D. Joints

1. Make of joints generally to be in accordance with manufacturers directions and reference standards.
2. For pipe using a compressed elastomeric gasket joints, bell and spigot surfaces and gasket shall be clean. Area adjacent to gasket and gasket groove to be free of foreign particles. Spigot beveled as required. Gasket or spigot end lubricated per manufacturers directions. The two pieces to be joined are to be in axial alignment and restrained from rotation around the axis, until the pipe is "home." The position of the gasket is to be checked all around with a feeler gauge when so recommended, or other recommended checks made to insure proper gasket positioning, and/or pipe end gap. Pipe ends are not to be butted. The force necessary to push the pipe "home" shall be closely controlled, applied in such a manner as not to displace nor damage piping being joined.

ITEM 2513

HOT-MIX ASPHALTIC CONCRETE PAVEMENT

I. GENERAL

This Item governs for hot-mix asphaltic concrete surfacing consisting of a base course, a leveling-up course, a surface course, or any combination of these courses; each course composed of a compacted mixture of mineral aggregate and asphaltic material and constructed on an approved subgrade, a subbase course, a base course, or in case of a bridge, on prepared floor slab. Construct in accordance with these specifications and in conformity with lines, grades, compacted thickness, and typical cross-sections shown on Plans and/or Exhibits or described in preceding special provision.

II. MATERIALS

- A. Mineral Aggregate: Composed of a coarse aggregate, a fine aggregate, and a mineral filler, and if approved by an Engineer a suitable mineral admixture which may or may not increase or decrease the quantity of asphaltic cement in mixture. Exact proportion of admixture, if approved to be determined by Engineer. Submit samples of coarse aggregate, fine aggregate, and mineral filler and test in accordance with prescribed methods. Approval of both materials and source of supply must be obtained prior to delivery of any material.
- B. Coarse Aggregate: Consists of shell (max. 40% by weight), slag, or limestone, or a mixture therefore as hereinafter specified, of uniform quality throughout and free from dirt, organic, or other injurious matter occurring either freely in material or as a coating on aggregate. Abrasion of slag or limestone from which coarse aggregate is made of not more than 35 when subjected to Los Angeles Abrasion Test (AASHTO-96). Los Angeles Abrasion Test for shell, not more than 50 (AASHTO, T-96).
- C. Fine Aggregate: Consists of sand or a combination of sand and stone, shell screenings, or slag screenings. Sand composed of sound, durable stone particles, free from loam or other injurious foreign matter. Screenings of same or similar materials as specified for coarse aggregate. Sand or combination of sand and screenings to meet the following requirements when tested by standard laboratory methods:

Percent by Weight

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Passing No. Sieve	100
Passing No. 200 Sieve	10-30

The plasticity index of that part of the fine aggregate passing the No. 40 sieve to be not more than 6.

- D. Mineral Filler: Consists of thoroughly dry stone dust, slate dust, oyster shell dust, Portland cement, or other mineral dust approved in writing. Free from foreign, deleterious, and other injurious matter. Meet following grading requirements when tested by standard laboratory methods.

<u>Percent by Weight</u>	
Passing a No. 30 Sieve	95-100%
Passing a No. 80 Sieve	75%
Passing a No. 200 Sieve	55%

- E. Asphalt: Grade of asphalt as designated by Engineer. If more than one type of asphaltic concrete mixture is specified for project, only one grade of asphalt will be required for all types of mixtures. Unless otherwise noted in the plans/exhibits asphaltic placement and or repair will consist of 8-inch thick asphalt base, Grade 2, PG-64 per TXDOT Standard Specification 292. Surface course asphaltic placement and or repair will consist of 2-inch thick surface course Type “D” per TXDOT Standard Specification 340.

Asphaltic materials, including tack coat, to meet requirements of the Item, “Asphalt, Oils, and Emulsions,” of the Texas Highway Department Standard Specifications for Construction of Highways, Streets and Bridges, 2004 Edition or most current.

- F. Paving Mixture: To consist of a uniform mixture of coarse aggregate, fine aggregate, asphaltic material and mineral filler if required.

Grading of each constituent such as to produce, when properly proportioned, a mixture conforming to limitations for grading for type specified. Exact proportions of each constituent producing total aggregate within these limits to be directed, and to conform to the requirements of Article 340.3, “Paving Mixtures,” of the Texas Highway Department Standard Specifications for Construction of Highways, Streets and Bridges, 2004 Edition or most current.

- G. Variation of percentage of bitumen in any mixture not more than one-half of one percent from proportion established by Engineer.

When required samples of hot mixture may be taken from trucks or from finished pavement. Determine minimum weight of test specimen in grams by multiplying 3,000 by maximum size aggregate in inches. Variation of specimen from grading

proportions specified for mix, when tested by standard methods (in which benzol may be used as solvent), of not more than 5 percent.

III. EXECUTION

- A. Proportions of various materials entering into asphaltic mixture as directed and in accordance with these specifications. Engineer or his authorized representative to have access at any time to all parts of paving plant. Use satisfactory equipment and construction methods as hereinafter specified.
- B. Store or stockpile separately various sizes of mineral aggregate as received. Feed various sizes of mineral aggregate to dryer by means of mechanical device that will give a uniform and constant feed of each size incorporated to control temperature and grading of mineral aggregate.
- C. Dry mineral aggregate in such manner that finer particles will not escape with furnace gases. Heat aggregate in a suitable apparatus which provides continuous agitation during heating. Provide efficient and positive control of temperature so that aggregate is not damaged and mixture produced has a temperature between 250 degrees F and 375 degrees F. Provide recording thermometer which will record temperature of aggregate as it leaves dryer. Equip recording thermometer with a double-pen in order to record both temperature of rock and temperature of asphalt incorporated in batch. Record temperatures on 24-hour charts. Furnish dryer or dryers of sufficient size to dry and heat amount of aggregate required to keep plant in continuous operation.
- D. Bin sizes and screening capacity sufficient to screen and store amount of aggregate required to properly operate plant and keep plant in continuous operation at full capacity. Bins to continuous operation at full capacity. Bins to contain sizes of aggregate as specified in Article 340.4. "Equipment." Sub-article, "Screening and Proportioning," of the Texas Highway Department Standard Specifications for construction of Highways, Streets and Bridges, 2004 Edition or most current.

Provide bins with tight cut-off gates so that there is no leakage of mineral aggregate or mineral filler into weigh box. Weigh box for mineral aggregate of sufficient capacity to hold a complete batch of aggregate and mineral filler without wasting or leveling by hand, and so designed with opening in top that, if in charging, an excess of one size of mineral aggregate is introduced into box, it may be removed by operator. Provide weigh box with a close fitting and quick operating cut-off gate so that there is no leakage of mineral aggregate into mixer.
- E. Scales: Scales for weighing mineral aggregate and asphaltic material shall equal the weighing equipment used at stationary commercial asphaltic concrete plants as approved by the Engineer.

Scales of multi-beam type to have sufficient weighing beams to weigh each grade of aggregate separately and also filter dust separately. Furnish scales with tare beam for balancing. Equip beam scales with a tell-tale dial indicator of springless dial type indicating over and under load of at least 50 pounds. Scales that are not accurate within 4 pounds per 1,000 pounds net load will be considered unsatisfactory. In case vibration of plant interferes with accurate weighing, insulate scales satisfactorily against shock or vibration.

- F. Provide ample asphalt cement storage to meet requirements of Plans and/or Exhibits. Heat asphalt cement in storage by steam coils, absolutely tight to prevent leakage of moisture into asphalt. Temperature of steam for heating not in excess of 400 degrees F. No direct fire heating of asphalt permitted. Agitation of asphalt with steam or air not permitted.

Provide steam heating system of type and capacity as to insure maintaining asphalt cement at a uniform draw-off temperature at asphalt cement bucket of between 275 degrees F to 375 degrees F. Maintain temperature with an efficient and positive control of heat at all times. Any asphalt cement heated above 375 degrees F, either before or during mixing with mineral aggregate, will be rejected.

Use quick cut-off type draw-off valve at asphalt cement bucket that will not leak any asphalt into bucket after required weight of asphalt cement has been drawn. Asphalt supply line of circulating type, and equipped with recording thermometer indicating temperature of asphalt a draw-off valve. Recording thermometer may be combined with recording thermometer used in recording temperature of aggregate by using a double-pen recorder.

Asphalt cement weigh bucket of type from which asphalt will flow into mixer for approximately full width of mixer so as not to deposit asphalt cement in one place in mixer. Scales for weighing asphaltic cement of springless dial type arranged for quick adjustment at zero to provide for change in tare. Provide pointer to indicate weight of asphalt cement required in one batch.

- G. Mixer of twin-pug-mill type and capacity of not less than 3,000 pounds in single batch. Number and position of blades such as to give a uniform and complete circulation of batch in mixer from center to four ends of mixer arms and back to center. Mixers which tend to segregate mineral aggregate or fail to secure thorough and uniform mixing with asphalt cement and filler dust will not be used. Determination of thorough and uniform mixing will be made by mixing standard batch for required time and then dumping batch and taking samples from different parts of batch is uniform throughout, or otherwise mixer will be rejected.

Provide mixers with an automatic time lock on discharge gates of mixer and weight box and lock for a period of 45 seconds after all of mineral aggregate has

been introduced into mixer. When discharged, mixture to have a temperature of 300 degrees F to 375 degrees F. Dump door or doors of mixer to be tight to dry mineral aggregate or dust so that there is no spilling from pug mill. In introducing batch into mixer, introduce mineral aggregate first, then thoroughly mix for a period of five to ten seconds before asphaltic cement is added. Continue mixing for required time, or longer if necessary to produce a mixture of uniform consistency.

H. Tack Coat: Thoroughly clean surface of base or surface of concrete bridge, as applicable, by brooming with wire brushes before asphaltic surface mixture is laid, when tack coat is shown, or if directed, give base an application of cut back asphalt applied as directed with an approved sprayer and at rate of application of 0.05 to 0.15 gallons per square yard. Cut-back asphalt as specified under Article II, Paragraph E, or made by combining 50 percent material (as specified) and 50 percent gasoline.

I. Laying Materials

1. Construct pavement on previously completed and approved subgrade, base, existing pavement, bituminous surface or in case of a bridge, on prepared floor slab.
2. Place no asphaltic mixture or tack coat when air temperature is below 45 degrees F and is falling. Asphaltic mixture or tack coat may be placed after air temperature is above 40 degrees F and is rising, provided temperature is taken in shade away from artificial heat. Place no asphaltic mixture or tack coat when weather conditions, in opinion of Engineer, are unsuitable.
3. Haul asphaltic concrete mixture, heated and prepared as specified, to site of work in tight vehicles previously cleaned of all foreign materials and, if considered necessary, covered with canvas of sufficient size to protect entire load. Arrange dispatching of vehicle so that all material delivered may be placed and receive its initial rolling in daylight. Lay mixture only on approved base course, which has been tack coated as previously specified and free from all foreign materials. Paint contact surfaces of curbs and structures and all joints with thin uniform coating of cut-back or emulsified asphalt as required for tack coating. Lay mixture at temperature of 250 degrees F to 375 degrees F and spread and compact, using an approved finishing machine. Use finishing machine capable of producing finished surface that conforms to required typical sections and surfaces tests. Areas nor accessible for finishing machine may be hand spread and shaped when approved.

4. Use approved finishing machine of screeding and troweling type. Forms adequate to control lateral thrust due to rolling. If a finishing machine designed to run on forms is used, operate it on header curb, steel forms, or rigid steel faced forms approved by Engineer. Set forms to line and grade.
5. Oil or saturated solution of hydrated lime may be used for lubricating shovels and trucks to facilitate handling of asphaltic materials. Use of an excessive amount of either material not permitted.
6. Adjacent to flush curbs, gutters, liners, and structures, finish mix uniformly high so that when compacted it will be slightly above edge of curb or flush structure.
7. When Plans and/or Exhibits require application of a non-skid surface of asphaltic concrete pavement, spread Type "B", "Type "C", "Type "D" or Type "E" mix, as specified, so that after lightly rolling, it has a finished thickness of approximately 3/8-inch less than completed thickness of pavement shown. After this course has been laid, spread mixture specified as Type "F" with sufficient thickness so that, after receiving ultimate compression, compacted pavement complies with requirements of typical cross-sections shown, but in no case will weight of Type "F" mixture be less than 35 pounds nor more than 50 pounds per square yard of surfacing.
8. While still hot, and as soon as it will bear roller without undue displacement or hair cracking, compress surface thoroughly and uniformly with an acceptable power-driven 3-wheel roller weighing not less than 10 tons. Weight on two rear wheels of roller obtained by power-driven tandem roller weighing not less than eight tons.

Rolling shall start longitudinally at the sides and proceed toward the center of the pavement, overlapping on successive trips by at least one-half of the width of the rear wheels. Alternate trips of the roller shall be slightly different in length. If necessary, the pavement shall then be subject to diagonal rolling in each direction with a tandem roller, the second diagonal crossing the lines of the first.

Rolling shall be continued until no further compression can be obtained and all roller marks are eliminated, and at a rate of not more than 20-tons of mixture per hour for each roller used.

The motion of the roller shall at all times be slow enough to avoid displacement of the hot mixture. Any displacement occurring as a result of reversing the direction of the roller, or by any other cause, shall at once be corrected by the use of rakes and of fresh mixture where required. The roller must not stand on the completed pavement which has not cooled to

normal atmospheric temperature. To prevent adhesion of the surfacing mixture to the roller, the wheels shall be kept properly moistened with water but an excess of water will not be permitted.

The roller's drive wheel shall be ahead of the tiller wheel at all times during compaction. If a vibratory roller is used for compaction, a very low amplitude is to be used and the roller should be vibrating only when it is moving.

9. Time Limit vs Temperature

**Cessation Requirements
Recommended Minimum Laydown Temperature**

Base Temp Degrees F	1/2"	3/4"	1"	1 1/2"	2"	3" & Greater
20-32	---	---	---	---	---	285*
+32-40	---	---	---	305	295	280
+40-50	---	---	310	300	285	275
+50-60	---	310	300	295	280	270
+60-70	310	300	290	285	275	265
+70-80	300	290	285	280	270	265
+80-90	290	280	275	270	265	260
+90	280	275	270	265	260	255
Rolling time, Minutes	4	6	8	12	15	15

* Increase by 15 degrees when placement is on base or subbase containing moisture.

Base temperature is the temperature of the layer (Previous mat or base) on which the mat is placed.

The above chart gives a time limit in which the mat needs to be completely rolled for density before the mat cools to 175 degrees F. This temperature was selected as about the temperature below which rolling produces little compaction. The recommendations are, in effect, the "worst" conditions. These are only minimum requirements.

10. Along curbs, headers, and similar structures, and at places not accessible to roller, or in such positions as will not allow thorough compaction with roller, compact mixture thoroughly with lightly oiled tamps.
11. Surface of pavement after compression to be smooth and true and conform to line, grade and typical cross-sections shown. No deviation in excess of

1/8-inch per foot from nearest point of contact when surface is tested with a standard 10-foot straight-edge laid parallel to center line of roadway. Maximum ordinate measured from face of straight-edge not in excess of 1/4-inch at any point. Immediately correct any areas of surface not meeting these requirements. Roll mixtures until course is unyielding and true to established grade and cross-section.

12. Place surface course as nearly continuous as possible. Allow roller to pass over unprotected end of freshly laid mixture only when laying of course is discontinued for such length of time as to permit mixture to become chilled. In such cases, when work is resumed, material laid must be either cut back so as to produce a slightly beveled edge for full thickness of course or make a suitable lap joint.

Remove old material which has been cut away and lay new mix against fresh cut. If desired, a stout rope may be stretched across pavement where joint is to be made. When work is resumed, cut materials laid back to rope. Remove altogether with surplus material, and lay fresh mix against joint thus formed.

Hot smoothing irons may be used for sealing joints, but in such cases exercise extreme care to avoid burning surface.

13. Except in an emergency, or where shown, open no portion of finished wearing course to traffic until twelve hours after completion of rolling.

ITEM 2515

CONCRETE PAVEMENT

I. GENERAL

- A. This Item governs for construction of concrete pavement for roadways, driveways, turnouts, and concrete curbing. Unless specified otherwise in proceeding Special Provision or on Plans and/or Exhibits, pavement to conform to residential requirements.
- B. Related Work (if utilized in this project)
 - 1. Item 3310 - Concrete
 - 2. Item 3200 - Concrete Reinforcement

II. MATERIALS

- A. Concrete: Item 3310 - Concrete: Class as shown on Plans and/or Exhibits or in Proposal.
- B. Reinforcing Steel: Item 3200 - Concrete Reinforcement: Bar size and type as shown on Plans and/or Exhibits.
- C. Expansion Joint Material: To be in accordance with section and location as shown on Plans and/or Exhibits.
 - 1. Fillers
 - a. Pre-molded
 - 1) Asphalt filler board per ASTM D994-71.
 - 2) Premolded joint material per ASTM D1751-73.
 - b. Wood
 - 1) Redwood: Boards shall be heartwood and shall be free from sapwood, knots, clustered birdseye, checks & splits.

Maximum weight per cubic foot when oven dried to constant weight to be 30 pounds.

- 2) Other Woods: Cypress, Gum, Southern Yellow Pine, or Douglas Fir Timber may be used with prior approval of the Engineer. With the exception of Cypress, all boards shall have a creosote or penta chlorophenol treatment of 6 pounds per cubic foot. Maximum weight per cubic foot when oven dried shall not be greater than 30 pounds per cubic foot.

c. Joint Sealing Material

- 1) Per ASTM D1190-74. Also to be used in other types of joints as required.
- 2) Load Transmission Devices: To be of type and size as shown on Plans and/or Exhibits.
- 3) Metal Installing Devices: Such as welded wire bar chairs, bar stakes, marker channels, channel caps, deformed metal strips, etc. shall be as shown on Plans and/or Exhibits.

D. Forms

1. Pavement

- a. Wood Forms: (Used only in residential construction to be 2X material, free from warps, bends, and kinks, and sufficiently true to provide a straight edge on concrete). Use precautionary methods to prevent leakage of mortar through or under side forms. Top of each form section, when tested with a straight edge, to conform to the requirements specified for the surface of completed pavement.
- b. Metal Forms: Use metal forms of approved shape and section. Preferred depth of form to be equal to required edge thickness of pavement. Forms with depths greater or less than 1-inch of pavement thickness may be used. Forms with less depth than pavement thickness to be brought to required depth by securely attaching wooden planks of approved section and size to bottom of form. Use form section at least 10-feet in length, and provide for staking in position with not less than 3 pins. Use forms of adequate strength to withstand machine loads without visible springing or settlement. Use forms free from warps, bends and kinks, and sufficiently true to provide a straight edge on concrete.

Top of each form section, when tested with a straight edge, to conform to the requirements specified for the surface of the completed pavement. Use flexible or curved forms of wood or metal of proper radius for curves of 200-foot radius or less.

- c. Slip Forms: Slip form equipment to be equipped with a longitudinal transangular finishing float adjustable to crown and grade. Float to extend across pavement to the side forms and/or slab.

2. Curbs

- a. Wood or Metal: Wood or metal curb forms to be of approved section, straight and free of warp. Outside curb forms to have a depth at least ½- inch greater than height of curb. Rigidly attach inside curb forms (if desired) to outside forms.
- b. Machine Laid: Equipment to conform to the requirements as specified under Article 111 Execution. Use flexible or curved forms of wood or metal of proper radius for curves but not to exceed radius recommended by curb machine manufacturer.

E. Metal Supports: Supports for reinforcing steel to be metal of approved shape and size, and spacing to conform to details shown on Plans and/or Exhibits.

F. Materials for Curing

- 1. Burlap: Mats to be in good condition, clean, and free of any substance which would have deleterious effect on concrete.
- 2. Cotton Mats: Mats to be in good, clean, and free of any substance which would have deleterious effect on concrete.
- 3. Waterproof Paper: Per ASTM C171-69.
- 4. Membrane Curing Compounds: Conform to ASTM C309-74.
- 5. White Polyethylene Sheeting: Sheet having thickness not less than 4 mils (.004-inch).

G. Grouting

- 1. Material and mixtures for grouting curb dowels.
 - a. Proportion by weight.

- b. One part Portland cement, Type I or Type II.
 - c. One part clean, sharp sand.
 - d. Seven-tenths part nonshrinking grout aggregate.
 - e. No more than 5½ gals. water per sack cement.
2. Other: Use mixture by weight of one part Portland cement and two parts sand for general purposes. If space to be grouted is less than one inch and is impossible to tamp grout, use one-to-one mix. Where space to be filled with grout is large, use original concrete mixture. Use stiff mixture for grout to be tamped, produced by prolonged mixing. To obtain stiff grout, mix mortar using amount of water required to thoroughly mix ingredients, then continue mixing without additional water until grout is stiff enough to be compacted by tamping when placed. For grouting blockouts for embedded pipes and similar items, use grout to which 5 pounds of nonshrinking grout aggregate per sack of cement has been added.

III. EXECUTION

- A. Subgrade: Excavate, shape, and compact subgrade to grades, sections and densities shown on Plans and/or Exhibits. Maintain drainage of subgrade at all times. Test subgrade section with an approved template, operated and maintained by Contractor. Wet down subgrade sufficiently in advance of placing pavement. No pavers, batch trucks, or other equipment to be permitted between forms during paving operations.
- B. Wood and Steel Forms
1. Setting: Set forms on compacted subgrade, cut true to grade on that entire form section is supported by subgrade. Stake metal form sections with at least 3 pins per section, with a pin on each side of every joint. Adequately stake wood form sections to prevent bows in form and to keep form sections to grade. Join form sections to prevent displacement. Clean and oil forms with form oil each time they are used. Set forms to line and grade for at least 200-feet ahead of mixer. Check conformity of alignment and grade immediately prior to placing concrete.
2. Removal: Leave forms in place for at least 12 hours. Remove forms without injury to concrete. Immediately repair damage resulting from form removal. Point up all exposed honeycombed areas with approved mortar. As soon as curb forms are removed, backfill behind curbs with approved material and compact to 90 percent Standard Proctor density.

- C. Slip Forms: Equipment to be provided with traveling side forms of sufficient dimensions, shape and strength to support concrete laterally for sufficient length of time during placement to produce pavement of required cross-section. Concrete to be distributed uniformly into final position by slip form paver and horizontal deviation in alignment of edges not to exceed 1¼-inches from established alignment.
- D. Concrete Placing and Handling - Wood and Steel Forms
1. Deposit concrete on subgrade in such manner as to require as little rehandling as possible. Use shovels for hand spreading of concrete. Use of rakes will not be permitted. Place concrete in a rapid, continuous operation.
 2. Consolidate all concrete placed for pavement by an approved mechanical vibratory unit designed to vibrate the concrete internally. A vibratory member equipped with synchronized vibratory units to extend across pavement practically to, but not to come in contact with, side forms. Space separate vibratory units at sufficiently close intervals to provide uniform vibration and consolidation to entire width of pavement. Mount mechanically operated with vibrators in such manner as not to come in contact with forms or reinforcement and not to interfere with transverse or longitudinal joints.
 3. Furnish hand-manipulated mechanical vibrators in number required for provision of proper consolidation of concrete along forms, at joints, and in areas not covered by mechanically controlled vibrators.
- E. Concrete Placing and Handling - Slip Forms
1. Concrete, for full paving width, to be effectively consolidated by internal vibration, with transverse vibrating units, or with a series of longitudinal vibrating units. Internal vibration to mean vibration by means of vibrating units loaded within the specified thickness of pavements section and at a minimum distance ahead of screed equal to pavement thickness.
 2. When concrete is being placed adjacent to an existing pavement, that part of the equipment which is supported on the existing pavement to be equipped with protective pads on crawler tracks or rubber-tired wheels, offset to run a sufficient distant from edge of pavement to avoid breaking or cracking pavement edge.
 3. After concrete has been given a preliminary finish by finishing devices incorporated in the slip-form paving equipment, surface of the fresh concrete to be checked with a straightedge to tolerances and finish required.

F. Concrete Placing and Handling - Wood or Metal Formed Curb: Curbing may be poured monolithic with pavement or may be added to pavement surface at a latter time. Place curb dowel bars while pavement is plastic. Provide expansion joint and contraction in curb opposite each expansion joint or contraction joint in pavement and at each curb inlet. Use same expansion joint material as used in pavement. Cut weakened plane joints with an approved grooving tool opposite each joint in pavement, as required. Apply finish coat of mortar on exposed surfaces of curb. Mortar composed of one part Portland cement and two parts sand. Apply mortar with a template or "mule" conforming to plan curb dimensions. Steel trowel finish all exposed surfaces of curb and brush to a smooth, uniform surface.

G. Concrete Placing and Handling - Machine-Laid Curb

1. Lay curbs by an extrusion-type machine. Immediately prior to placing of the curb, thoroughly clean the previously approved foundation.
2. Grade and alignment for top of curb to be as shown on Plans and/or Exhibits. The forming tube of the extrusion machine to be readily adjustable vertically during the forward motion of the machine, to provide required variable height of curb necessary to conform to the established grade line.
3. Feed concrete into machine in such a manner and at such consistency that the finished curb will present a well-compacted mass with a surface free from voids and honeycomb and true to established shape, line, and grade.
4. Perform any additional surface finishings specified and/or required immediately after extrusion. Construct joints as specified or as shown on Plans and/or Exhibits.

H. Finishing

1. Nonresidential Pavements: Finish concrete pavement by power-driven transverse finishing machines and longitudinal finishing machines. Provide transverse finishing machine with two screeds accurately adjusted to crown of pavement. Ride transverse finishing machine on forms, so designed and operated as to strike off and consolidate concrete. Make at least two trips over each area, or more if necessary. Provide longitudinal finishing machine with a longitudinal float not less than 10-feet in length, adjusted to a true plane. Ride longitudinal finishing machine on forms, so designed and operated as to finish pavement to required grade. Equip finishing machines with rubber tires to roll on concrete pavement. Just before concrete becomes non plastic, belt pavement surface with a canvas

or canvas-rubber composition belt of two-ply or four-ply construction, not less than 6-inches nor more than 10-inches wide, and at least 2-feet longer than width of pavement. Use short transverse strokes and rapid advance longitudinally to produce uniform surface of gritty texture.

2. Residential Pavements: Concrete pavement may be finished by machine or by hand. If by machine see Paragraph H1 above. If finished by hand thoroughly vibrate concrete around reinforcement and embedded fixtures. Tamp concrete with a tamping template made of 4-inch by 10-inch lumber or equivalent metal section at least 2-feet longer than width of pavement to conform to crown section of pavement. If wood tamping template is used it is to have a steel face not less than 3/8-inch in thickness. Strike off concrete with a strike-off screed made of 4-inch by 10-inch lumber or equivalent metal section at least 2-feet longer than width of pavement and conforming to crown section of pavement. Move strike-off screed forward with combined transverse and longitudinal motion in direction work is progressing, maintaining screed in contact with forms, and maintaining slight excess of materials in front of cutting edge. Use a longitudinal float not less 10-feet in length to level surface. Prior to concrete becoming nonplastic, belt pavement surface with canvas or canvas-rubber composition belt of two-ply or four-ply construction not less than 6 inches or more than 10-inches wide and at least 2-feet longer than width of pavement. Use short transverse strokes and rapid advance longitudinally to produce uniform surface of gritty texture.
3. Slip Form: If this method of construction is used all requirements of this Technical Specification in regard to subgrade and pavement tolerances, pavement depth, alignment, consolidation, finishing, workmanship, etc. to be met. Equip "slip form paver" with longitudinal triangular finishing float adjustable to crown and grade. Extend float across the pavement almost to the side form and/or the edge of slab.

I. Surface Tests

1. Test entire surface before initial set and correct irregularities or undulations to bring surface within requirements of following test, then finish.
2. Place approved 10-foot straight edge parallel to center of roadway so as to bridge any depressions and touch all high spots. Ordinates measured from face of straight edge to surface of pavement not to exceed 1/16-inch per foot from nearest point of contact, and in any case maximum ordinate to 10-foot straight edge to be no greater than 1/8-inch.

- J. Joints: Place joints of types shown on Plans and/or Exhibits at required locations and at spacing shown.
1. Construction Joints: Place transverse construction joint when necessary to stop concrete placement for period of more than 30 minutes. Length of slab to be not less than 10-feet from nearest joint of complete slab. If closer than 10-feet Contractor to remove concrete from between forms back to nearest normal joint and place construction joint at bulkhead. Use longitudinal keyed construction joints at pavement edges where required.
 2. Expansion Joints: Place expansion joint at radius points of curb returns for cross-street intersections, or as shown on Plans and/or Exhibits. Do not use boards less than 6-feet in length. When pavement is 24-feet or less in width, use not more than two lengths of board. Secure pieces to form straight joint. Shape board filler accurately to cross-section of concrete slab. Use premolded joint filler, accurately shaped, in curb section. Load transmission devices to be of type and size shown on Plans and/or Exhibits. Use joint sealing compound as required.
 3. Contraction Joints: Make straight and place at spacings shown on Plans and/or Exhibits. Place asphalt-coated smooth dowels accurately and normal to joint. Tool edges of groove and seal with joint sealing compound.
 4. Longitudinal Weakened Plane Joints: Form longitudinal weakened plane joint by an approved continuous metal shield or an asphalt impregnated felt strip placed continuously behind longitudinal float by a machine of the flex plane type.
- K. Protection and Curing: Following requirements apply on alternate methods of curing. Cover concrete with burlap or cotton mats when concrete has hardened sufficiently to prevent marring of surfaces and keep wet continuously for 72 hours. Apply curing compound immediately after free water has disappeared and at rate specified. Keep polyethylene sheets or membrane curing film in place and intact for five days in lieu of 72 hours of curing. Cure concrete curbs and gutters to prevent checking while setting. After each day's run barricade street. No wheeling will be allowed on concrete during curing period. Do not open pavement to traffic until concrete is at least 7 days old. Clean off pavement and seal joints before opening pavement to any traffic.
- L. Penalty for Deficient Concrete Pavement Thickness: It is the intent of this specification that the concrete pavement be constructed in strict conformity with the thickness and typical sections shown on the Plans and/or Exhibits. Where any such pavement is found not so constructed, the following rules relative to adjustment of payment for acceptable concrete pavement and to the replacement of faulty concrete pavement shall govern.

1. Pavement Thickness: The concrete pavement will be core drilled by a testing lab prior to final acceptance. The thickness of the pavement will be determined by measurement of the cores. At such points as the Engineer may select in each unit, one core will be taken for each 1000 square yards of concrete pavement, or fraction thereof, in the unit. However, a minimum of four cores are required for any pavement area. If the core so taken is not deficient more than 0.25-inch, full payment shall be made and the cores will be paid for by the Owner. If the core is deficient in thickness by more than 0.25-inch but not more than 0.5-inch, two additional cores will be taken from the area represented and the average of the three cores determined. If the average measurement of these three cores is not deficient more than 0.25-inch from the plan thickness, full payment will be made. If the average thickness of the three cores is deficient more than 0.25-inch, the sections having such deficiencies shall be removed and the concrete pavement shall be replaced to the specified plan depth.
2. No additional payment over Contract unit price to be made for pavement of thickness exceeding that required by Plans and/or Exhibits.
3. Additional 6-inch cores required to determine area of deficient thickness to be paid for by Contractor.

ITEM 2526

CONCRETE CURB, GUTTER, CURB AND GUTTER

I. GENERAL

- A. This Item shall govern for curb, gutter, combined curb and gutter, with or without reinforcing steel, composed of Portland cement concrete constructed on approved subgrade, foundation material or finished surface in accordance with the lines and grades established by the Engineer and in conformance with details shown in Plans and/or Exhibits.

As used in this Item, the word "curb" refers to concrete curb, concrete gutter, and combined concrete curb and gutter.

- B. Related Work (if utilized in this project)
1. Item 3310 – Concrete
 2. Item 3200 – Concrete Reinforcement

II. MATERIALS

- A. Item 3310 – Concrete: Class as shown on Plans and/or Exhibits or in proposal.

- B. Reinforcing Steel

Item 3200 – Concrete Reinforcement: Bar size and type as shown on Plans and/or Exhibits.

- C. Expansion Joint Material

To be in accordance with section and location as shown on Plans and/or Exhibits.

1. Fillers
Pre-molded
2. Asphalt filler board per ASTM D994-71.
3. Pre-molded joint material per ASTM D17151-73.
4. Wood:

- a. Redwood: Boards shall be heartwood and shall be free from sapwood, knots, clustered birds-eye, checks, and splits. Maximum weight per cubic foot when oven dried to constant weight to be 30 pounds.
- b. Other Woods: Cypress, Gum, Southern Yellow Pine, or Douglas Fir Timber may be used with prior approval of the Engineer. With the exception of Cypress, all boards shall have a creosote or penta chlorophenol treatment of 6 pounds per cubic foot. Maximum weight per cubic foot when oven dried shall not be greater than 30 pounds per cubic foot.

D. Forms

1. Curbs

- a. Wood or Metal: Wood or metal curb forms to be of approved section, straight and free of warp. Outside curb forms to have a depth at least ½-inch greater than height of curb. Rigidly attach inside curb forms (if desired) to outside forms.
- b. Machine Laid: Equipment to conform to the requirements as specified under ARTICLE III EXECUTE. Use flexible or curved forms of wood or metal of proper radius for curves but not to exceed radius recommended by curb machine manufacturer.

E. Materials for Curbing

1. Burlap: Mats to be in good condition, clean and free of any substance which would have deleterious effect on concrete.
2. Cotton Mats: Mats to be in good, clean and free of any substance which would have deleterious effect on concrete.
3. Waterproof Paper: Per ASTM C171-69
4. Membrane Curing Compounds: Conform to ASTM C309-74.
5. White Polyethylene Sheeting: Sheet having thickness not less than 4 mils (.004-inch).

F. Grouting

1. Material and mixtures for grouting curb dowels.
 - a. Proportion by weight.
 - b. One part Portland cement, Type I or Type II.
 - c. One part clean, sharp sand.

- d. Seven-tenths part non-shrinking grout aggregate.
 - e. No more than 5½ gals. water per sack cement.
- 2 Other: Use mixture by weight of one part Portland cement and two parts sand for general purposes. If space to be grouted is less than 1-inch and is impossible to tamp grout, use one-to-one mix. Where space to be filled with grout is large, use original concrete mixture. Use stiff mixture for grout to be tamped, produced by prolonged mixing. To obtain stiff grout, mix mortar using amount of water required to thoroughly mix ingredients, then, continue mixing without additional water until grout is stiff enough to be compacted by tamping when placed. For grouting blockouts for embedded pipes and similar items, use grout to which 5 pounds of non-shrinking grout aggregate per sack of cement has been added.

III. EXECUTION

A. Subgrade

Excavate, shape and compact subgrade to grades, section, and densities shown on Plans and/or Exhibits. Maintain drainage of subgrade at all times. Test subgrade section with an approved template, operated and maintained by Contractor. Wet down subgrade sufficiently in advance of placing pavement. No pavers, batch trucks, or other equipment to be permitted between forms during paving operations.

B. Concrete Placing and Handling – Wood or Metal Formed Curb

Curbing may be poured monolithic with pavement or may be added to pavement surface at a later time. Place curb dowel bars while pavement is plastic. Provide expansion joint and contraction in curb opposite each expansion joint or contraction joint in pavement and at each curb inlet. Use same expansion joint material as used in pavement. Cut weakened plane joints with an approved grooving tool opposite each joint in pavement, as required. Apply finish coat of mortar on exposed surfaces of curb. Mortar composed of one part Portland cement and two parts sand. Apply mortar with a template or “mule” conforming to plan curb dimensions. Steel trowel finish all exposed surfaces of curb and brush to a smooth, uniform surface.

C. Concrete Placing and Handling – Machine-Laid Curb

1. Lay curbs by an extrusion-type machine. Immediately prior to placing of the curb, thoroughly clean the previously approved foundation.
2. Grade and alignment for top of curb to be as shown on Plans and/or Exhibits. The forming tube of the extrusion machine to be readily adjustable vertically during the forward motion of the machine, to

provide required variable height of curb necessary to conform to the established grade line.

3. Feed concrete into machine in such a manner and at such consistency that the finished curb will present a well-compacted mass with a surface free from voids and honeycomb and true to established shape, line, and grade.
4. Perform any additional surface finishings specified and/or required immediately after extrusion. Construct joints as specified or as shown on Plans and/or Exhibits.

D. Finishing

After the concrete has been struck off and after it has become sufficiently set, the exposed surfaces shall be thoroughly worked with a wooden float. The exposed edges shall be rounded by the use of an edging tool to the radius indicated on Plans and/or Exhibits. Unless otherwise specified on the Plans and/or Exhibits, when the concrete has become sufficiently set, the inside form for curbs shall be carefully removed and surface shall be plastered with a mortar consisting of one part of Portland cement and two parts fine aggregate. The mortar shall be applied with a template made to conform to the dimensions as shown on Plans and/or Exhibits. All exposed surfaces shall be brushed to a smooth and uniform surface.

For extruded concrete construction, the concrete shall be placed by an extrusion machine approved by the Engineer. When placement is directly on subgrade or foundation materials the foundation shall be hand-tamped and sprinkled if considered necessary by the Engineer. If the concrete is placed directly on the surface material or pavement, such surface shall then be coated with an approved adhesive or other coating as specified at the rate of application shown.

E. Surface Tests

1. Test entire surface before initial set and correct irregularities or undulations to bring surface within requirements of following test, then finish.
2. Place approved 10-foot straight edge parallel to center of curb so as to bridge any depressions and touch all high spots. Ordinates measured from face to straight edge to surface of pavement not to exceed $\frac{1}{16}$ -inch per foot from nearest point of contact, and in any case maximum ordinate to 10-foot straight edge to be no greater than $\frac{c}{4}$ -inch.

F. Joints

Curbs, gutters, and curb and gutters shall be placed in sections of 50-foot maximum length unless otherwise shown on the Plans and/or Exhibits.

Joints shall be constructed at such locations and of the type as directed and specified on the Plans and/or Exhibits.

- G. Protection and Curing: Following requirements apply on alternate methods of curing. Cover concrete with burlap or cotton mats when concrete has hardened sufficiently to prevent marring of surfaces, and keep wet continuously for 72 hours. Apply curing compound immediately after free water has disappeared and at rate specified. Keep polyethylene sheets or membrane curing film in place and intact for five days, in lieu of 72 hours of curing. Cure concrete curbs and gutters to prevent checking while setting. After each day's run, barricade street. No wheeling will be allowed on concrete during curing period. Do not open pavement to traffic until concrete is at least 7 days old. Clean off curb and seal joints before opening pavement and curb to any traffic.

ITEM 2613

PRECAST REINFORCED CONCRETE BOX SEWERS

I. GENERAL

Description: This specification shall govern for the furnishing and placing of precast reinforced concrete box sewers of the size, type and configuration installed to the lines and grades established by the Plans and/or Exhibits.

II. MATERIALS

A. Manufacturer

Precast reinforced concrete box sewers shall be manufactured in accordance with the latest revisions published by the American Society for Testing Materials of the following specifications:

1. ASTM C789 - Precast Reinforced Concrete Box Sections for Culverts, Storm Drains and Sewers.
2. ASTM C850 - Precast Reinforced Concrete Box Sections for Culverts, Storm Drains and Sewers with less than Two Feet of Cover and Subjected to Highway Loadings.

In the manufacture of concrete box sewers, the supplier has the option of using Portland cement or Portland cement plus fly ash, as defined herein. Cement plus fly ash shall be composed of Portland cement and 20-30 percent fly ash, by absolute volume. Fly ash shall be Class C, conforming to the requirements of ASTM C618, titled "Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement." Fly ash shall have a minimum CaO content of 20 percent.

B. Joints

Unless otherwise specified, all boxes furnished under this specification shall be fabricated with tongue and groove joint.

Joints in concrete boxes shall be made watertight by the methods described herein.

The Contractor shall be fully responsible for choosing methods, using workmanship and materials and such other precautions as may be necessary to secure the required water tightness.

C. Joint Seal

Joints shall be made with a pliable joint sealer supplies in performed strips of uniform size manufactured by Henry Company such as “Ramnek” or joint seals may be “Omni-Flex Rubber Gaskets” as manufactured by CSR Delta Pipe Products or an approved equal to “Ramnek” or “Omni-Flex Rubber Gaskets.”

These seals shall be of tubular cross-section manufactured from extruded closed cellular rubber, the base polymer being a blend of nitrile and vinyl meeting the physical requirements of ASTM D1056, Class 2CL, and meeting the chemical resistance requirements of AASHTO M198.

Each gasket shall be a single, continuous part conforming to the joint shape and the outer surface shall be completely covered with a natural skin.

Gasket cross-sectional diameters and installation practices shall be in accordance with the manufacturer’s recommendations.

D. Construction Fabric

Construction fabric shall be a woven or spun fabric consisting only of long-chain polymeric filaments or yarns such as polypropylene, polyethylene, polyester, polyamide or polyvinylidene-chloride formed into a stable network such that the filaments or yarns retain their relative position to each other. High modulus is the essential characteristic for this application, hence nonwoven fabrics have been excluded. The fabric shall be inert to commonly encountered chemicals and conform to the properties in the following table:

Fabric
Requirements

Fabric Property	Test Method	Minimum Shipment Averages
I. Resistance to Installation Stresses		
a. Grab Tensile Strength, lbs.	ASTM D1682	200
b. Grab Tensile Elongation, %	ASTM D 1682	20
c. Burst Strength, psi	ASTM D 751 (Diaphragm Method)	375
d. Trapezoid Tear Strength, lbs.	ASTM D 2263	100
II. Performance Criteria During Service Life		
a. Equivalent Opening Size, U.S. Standard Sieve	CW 002215	70 - 100
b. Water Flor Rate Gal/min/ft ²	H, 20 cm to 1020 cm	
c. Water Permeability, K, cm/sec	CFMC-FFET-2	0.005
d. Modulus (Load at 10% Elongation), lbs.	ASTM D1682	110

Fabric Requirements

	Fabric Property	Test Method	Minimum Shipment Averages
III.	Resistance to Environmental Factors		
a.	Mildew, Rot Resistance, % Strength Retention	AATCC-30	100
b.	Insect, Rodent Resistance, % Strength Retention	AATC-24	100

III. EXECUTION

Trenches shall be excavated with suitable type equipment such as ladder type trenching machines or trench hoes or other equipment that may be approved by the Engineer. Trenches for precast box sewers shall have a width below the top of the box of not less than the outside width of the box plus 18-inches and shall be wide enough to permit making up the joints.

After the trench has been excavated to the bottom, the trench shall be fine graded to the established grade. Any over excavation of the grade shall be filled with 1.5 sack per ton of cement stabilized sand. The Contractor shall establish the grade line in the trench from grade stakes. The Contractor shall maintain this grade control a minimum of 100 feet behind and ahead of the box laying operation. The Contractor shall, at his expense, furnish and place in position all necessary stakes, grade and batter boards for locating the work.

The precast box sections shall be so laid in the trench that after the sewer is completely installed, the interior surface shall conform accurately to the grade and alignment as shown on the Plans and/or Exhibits or as established and given by the Engineer. All box sections must be laid in a straight line with the tongue end of the box section pointed downstream entering the grooved end of the previously laid box section, to full depth. Caution shall be taken to not drag cement stabilized sand or earth into the annular space. Box sections shall be fitted together and matched to achieve a finished sewer with a smooth and uniform invert.

In preparing the tongue and groove joints with Ramnek type joint sealer, use a suitable primer as recommended by the manufacturer, only when conditions are wet. When

using Omni-Flex Rubber Gasket Joint Sealer, a primer is not necessary.

Before laying the box section in the trench, the plastic gasket sealer shall be attached around the tapered tongue or tapered groove near the shoulder or hub of each box section joint. The paper wrapper shall be removed from one side only of the two-piece wrapper on the gasket and pressed firmly to the clean, dry box section joint surface.

The outside wrapper shall not be removed until immediately before pushing each box section into its final position.

When the tongue is correctly aligned with the flare of the groove, the outside wrapper on the gasket shall be removed and the box section shall be pulled or pushed home with sufficient force and power (using tuggers) to cause evidence of squeeze-out of the gasket material on the inside or outside around the complete box section joint circumference. In no case shall a joint be wider than one inch, after having been pulled or pushed home. Any joint material pushed out into the interior of the box section that would tend to obstruct the flow shall be removed. Each box section shall be pulled home in a straight line with all parts of the box section on line and grade at all times.

When the atmospheric temperature is below 60°F, plastic joint seal gaskets shall either be stored in an area warmed to above 70°F, or artificially warmed to this temperature in a manner satisfactory to the Engineer. Gaskets shall then be applied to box section joints immediately prior to placing each box section in the trench, followed by connection to previously laid box section.

No box sewer shall be laid in a trench in the presence of water. All water shall be removed from the trench sufficiently ahead of the sewer placing operation to insure a dry, firm bed on which to place the sewer, and if necessary, the trench will continue to be dewatered until after the sewer is bedded and backfilled as directed by the Engineer. Removal of water may be accomplished by pumping, or pumping in connection with the well point installation as the particular situation may warrant. The Contractor shall satisfy himself as to the soil conditions to be encountered and make any investigation necessary in order to determine the need for and the type of dewatering system necessary for safe and stable pipe installation. Where available, Owner will provide the Contractor with soils data; however, Owner does not guarantee the adequacy or accuracy of the information as compared to actual field conditions at the time of construction. The Contractor may elect to do soil borings on his own, if he so desires.

Where necessary, to comply with OSHA Regulation 1926.650, the side of the trench or other excavation shall be braced and rendered secure. The bracing shall be in accordance with the Item 1541 - Trench Safety Systems.

Following excavation of the trench to the established subgrade, the Contractor shall place a minimum of a 6-inch thickness cement stabilized sand bedding in such a manner that once the box sections are laid, the invert elevation in the box section shall conform to the drawing elevations. No voids in the bedding material shall be permitted by the Engineer. Cement stabilized sand shall be composed of a minimum of 1.5 sacks of cement per ton of sand.

When installing concrete boxes in a trench condition, backfill shall consist of material excavated on the site, and deemed adequate by the Engineer, or materials obtained from a suitable borrow site, at no additional expense to Owner. Suitable materials shall be CL/CH materials as determined by the Uniform Soil Classification System that are cohesive in nature, free of debris and organic materials and acceptable to the Engineer. Backfill shall be installed in accordance with Plans and/or Exhibits. Moisture content shall be so controlled that the required moisture content to three percent above optimum moisture content. The filter fabric, 24-inches wide shall be installed in accordance with the Plans and/or Exhibits referenced above.

Backfill over box sections will be permitted as installation proceeds. Prior to backfilling, the Contractor shall remove all steel sheeting and/or cut off all timber sheeting a minimum of 3 feet below finished grade as shown by the Plans and/or Exhibits.

Backfill shall consist of material excavated on the site and deemed adequate by the Engineer or materials obtained from a suitable borrow site.

In the event that excavation cannot be dewatered to the point where the precast box sewer subgrade is free of mud, excessive wet soil, sandy silt or clay with water, a seal slab shall be used in the trench bottom. The seal slab shall be Class "D", 4 sacks of cement per cubic yard with a minimum compressive strength of 1,750 P.S.I. at 7 days and 2,500 P.S.I. at 28 days. A precast seal slab may be used, provided that the joints of the seal slab do not occur at the joint of the precast box sewer.

Laboratory tests will be performed as the backfill proceeds. All backfill not meeting this specification shall be removed and recompacted to the satisfaction of the Engineer at no cost to the Owner.

All surplus excavated material shall be disposed of by the Contractor.

The angles in box type sewers shall be built in accordance with the Plans and/or Exhibits and specifications. The cost of making these angles and all cost incidental to them shall be included in the unit price bid for box sewer. Where junction with sewers are to be made, openings may be left in the walls the size of which shall be the outside dimensions of the connecting sewer. A bond length of each reinforcing bar shall be left in the opening for connecting with the concrete collar or future sewer. Where a stub sewer is to be built, the end of the concrete of the stub sewer at the box sewer shall be at the inside

face of the sewer box wall. All openings shall be closed with a 12-inch thick brick bulkhead. The cost of providing bulkheads shall be included in the unit price for the box sewer.

IV. QUALITY ASSISTANCE

A. Manufacturer

The Engineer shall witness the manufacture of precast reinforced concrete box sewers. When the Engineer does witness this production, tests using concrete cylinders in accordance with ASTM Designation C39, titled "Test Method for Compressive Strength of Cylindrical Concrete Specimens", shall be acceptable.

In the event that production of boxes is not witnessed by the Engineer, select boxes shall be cored in accordance with ASTM Designation 850, part 10.3 and tested in accordance with ASTM Method C42, (wet method). All test specimens and testing shall be done by the producer of the concrete pipe.

Boxes previously approved and stamped by the Texas Department of Transportation will be accepted.

The Engineer will determine the moisture density relationship in accordance with ASTM D698 on material secured from the trench excavation. Samples secured from the cement stabilized sand supplier shall be blended with Portland cement in accordance with the Item "Cement Stabilized Sand Bedding and Backfill," and the moisture density relationship will be determined in accordance with ASTM D558.

B. Acceptance Requirements

The average compressive strength of all cylinders tested shall be equal to or greater than the design concrete strength and no cylinder tested shall have a compressive strength less than eighty percent of the design concrete strength. Any lot which complies with all of these requirements will be considered acceptable with regard to concrete strength. Any lot which does not meet all of these requirements will be subject to further testing by cores of hardened concrete in accordance with ASTM C850 or C789.

Conduit which meet all the dimensional tolerances given in the appropriate ASTM C850 or C789 specifications or further defined in this specification will be considered acceptable provided that the conduit has met the compressive strength requirement outlined above. Repaired pipe will only be acceptable if the

repaired portions are visible and areas repaired were within the limitations given in this specification and ASTM C850 or C789.

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ITEM 3200

CONCRETE REINFORCEMENT

I. GENERAL

- A. Scope: This section gives requirements for concrete reinforcement. Coordinate the requirements of this section with all other items dealing with concrete and concrete construction.
- B. Reference Standards: The latest editions of reference standards listed below form a part of this specification and are applicable to this project.
1. American Society for Testing and Materials

ASTM A 615, "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement"

ASTM A 185, "Specification for Welded Steel Wire Fabric for Concrete Reinforcement"

ASTM A 306, "Specification for Carbon Steel Bars Subject to Mechanical Property Requirements"
 2. American Concrete Institute

ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures"

ACI 318, "Building Code Requirements for Reinforced Concrete"
 3. Concrete Reinforcing Steel Institute

CRSI 163, "Recommended Practice for Placing Reinforcing Bars"

CRSI 165, "Recommended Practice for Placing Bar Supports, Specifications and Nomenclature"

C. Submittals

1. Certificates: Submit the manufacturer's certificates giving the properties of steel proposed for use. List the manufacturer's test number and heat number, chemical analysis, yield point, tensile strength and percent elongation. Also identify on the certificates the proposed location of the steel in the work.
2. Bill of Materials: Submit bills of materials to be reviewed with shop drawings.
3. Shop Drawings
 - a. Submit shop drawings according to the General Conditions. Show reinforcement fabrication, bar placement, location splices, spacing and bar designation, bar type, length, size, bedding, number of bars, location of bars to accommodate post-tensioning tendons and other pertinent information, including dimension. Information must correspond directly to data listed on the bill of materials.
 - b. Provide sufficient detail to permit placement of reinforcement without use of design Plans and/or Exhibits. Reproduction of design Plans and/or Exhibits for use as shop drawings will not be allowed. Begin fabrication of reinforcing steel after shop drawings have been reviewed by the Engineer.
 - c. Refer to ACI reference standards for detailing, location, placing, splicing, etc. of reinforcing steel to be shown on shop drawings.
 - d. Scheduling: Schedule materials for delivery to the site so that items may be installed immediately upon delivery. Plan the schedule to accommodate other work especially post-tensioning. Place items in the proper sequence so that removal and replacement to accommodate other work is avoided.
 - e. Handling and Storage: Store steel reinforcement above the ground on platforms, skids or other supports. Protect reinforcing, as far as practicable, from mechanical injury, surface deterioration and rusting caused by exposure to the weather.
 - f. Inspection: Make storage and fabrication facilities of the supplier and fabricator available for inspection by the Engineer prior to and during fabrication.

- g. Measurement and Payment: No separate payment. Include cost of work in applicable contract price.

II. MATERIALS

A. Reinforcement

1. Deformed Bars: Use deformed bars conforming to ASTM A 615, grade as specified on Plans and/or Exhibits, for all bars except column spirals and those shown on Plans and/or Exhibits to be smooth bars. Where grade is not specified on Plans and/or Exhibits, use Grade 60.
2. Smooth Bars: Use bars conforming to ASTM A 306, Grade 70, for all smooth bars including column spirals.
3. Marking: Clearly mark all bars with waterproof tags showing the number of bars, size, mark, length and yield strength. Mark steel with the same designation as the number in which it occurs. Key marks to be the concrete placement number as designated in the concrete placement sequence shown on the Plans and/or Exhibits.
4. Welded Wire Fabric: ASTM A 185, electrically-welded wire fabric of cold-drawn wire. Provide gauge and mesh size as shown.

B. Mechanical Bar Splices

1. G-Loc Splices: As manufactured by Gateway building Products, 3233 W. Grand Avenue, Chicago, Illinois, or approved equal.
2. Cadweld Splices: As manufactured by Erico Products, Inc., 2070 East 61st Place, Cleveland, Ohio, or approved equal.

C. Tie Wire: Use 18 gauge annealed steel for tie wire.

D. Accessories: Provide chairs, riser bars, ties and other accessories made of plastic or metal, except as otherwise specified. Where concrete surfaces are exposed to the weather in finished work, provide plastic accessories only. Use of galvanized or plastic tipped metal is not permitted in these locations. Use plastic accessories manufactured by W.H.C. Products, Inc., Houston, Texas, or approved equal.

E. Precast Concrete Bar Supports: Provide bar supports 3-inches wide, 6-inches long, and thick enough to allow the required cover. Embed tie wires in the 3-inch sides.

III. EXECUTION

- A. Notification: Notify the Engineer at least 24 hours before concrete placement so that reinforcement may be inspected and errors corrected without delaying the work.
- B. Fabrication
1. Cold Form Bent Bars: Fabricate cold-form bent bars to the shapes shown on the Plans and/or Exhibits. Do not straighten or rebend bars without specific approval. On the job, cut bars by shearing or sawing.
 2. Splices: Use a minimum number of splices. Lap splices in strict accord with ACI 318 or as shown. Where it is necessary to splice reinforcement other than shown, the Engineer will determine the character of the splice. Do not make splices at points of maximum stress. Stagger splices in adjacent bars.
 3. Fabrication Tolerances: Bars used for concrete reinforcement must conform to the following fabrication tolerances:

<u>Measurement</u>	<u>Tolerance in Inches</u>
Sheared length	+ - 1
Depth of truss bars to 8-Inch Depth	+ 0, - 1/4
Depth of truss bars over 8-Inch Depth	+ 0, - 1/2
Stirrups, ties, and spirals	+ - 1/4
All other bends	+ - 1

ITEM 3310

CONCRETE

I. GENERAL

- A. Scope: This Item governs for materials used; for storing, measuring, and handling of materials; and for proportioning and mixing of concrete. Use either ready-mixed concrete conforming to ASTM C94 or site mixed concrete. Contractor to assume responsibility for design of concrete mixtures. Furnish statement giving proportions of materials that will be used in each class of concrete that is to be incorporated into project. Furnish commercial laboratory reports showing that proportions and materials selected will produce laboratory mixed concrete of specified quality and having strengths twenty (20) percent greater than strengths specified herein.
- B. Related Work (if utilized in this project)
 - 1. Item 3200 - Concrete Reinforcement

II. MATERIALS

- A. Cement: In accordance with ASTM C150 or C175. Conform to applicable ASTM Specifications for weight variations and length of storage. Cement which has become caked or lumped not permitted. Deliver in bags for site- mixed concrete. No Fly Ash Allowed.
- B. Water: Clean and free of deleterious amounts of acid, alkali or organic matter. Water which is suitable for drinking or for ordinary household use may be accepted for use without being tested. Other water must be tested and determined to be in accordance with current "Standard Method of Test for Quality of Water to be Used in Concrete."
- C. Coarse Aggregate: Consist of gravel or crushed stone.
 - 1. Gravel: Consist of durable particles of gravel, crushed or uncrushed, having a wear of not more than forty (40) percent.
 - 2. Crushed Stone: Consist of durable particles of rock of reasonably uniform quality throughout and having a wear of not more than forty (40) percent.

3. Deleterious Substances: Maximum permissible percentages of deleterious substances not to exceed following percentages by weight.

Material removed by decantation, ASTM C117	1.0%
Shale, slate, or similar materials	1.0%
Clay lumps	.25%
Soft fragments	3.0%
Others, including friable, thin, elongated or laminated pieces	3.0%

Sum of all deleterious ingredients, exclusive of material removed by decantation, not to exceed five (5) percent by weight. Aggregate to be free from an excess of salt, alkali, vegetable matter, or other objectionable materials either free or as adherent coating.

4. Graduation: Conform to following grading requirements. Screens are construed to have circular openings.

Class A Concrete and Class E Concrete:

Retained on 1½" screen	0 to 5%
Retained on ¾" screen	25 to 60%
Retained on ¼" screen	95 to 100%

Class B Concrete:

Retained on 2½" screen	0 to 5%
Retained on 1¼" screen	25 to 60%
Retained on ¾" screen	40 to 75%
Retained on ¼" screen	95 to 100%

Class C Concrete:

Retained on 3" screen	0 to 5%
Retained on 1½" screen	25 to 60%
Retained on 1" screen	40 to 75%
Retained on ¼" screen	95 to 100%

Class D Concrete:

Retained on 1" screen	0 to 5%
Retained on ½" screen	25 to 75%
Retained on ¼" screen	95 to 100%

- D. Fine Aggregate: Consist of sand or a combination of sand and not more than fifty (50) percent of stone screenings.

1. Sand: Composed of cleaned, hard, durable, uncoated grains.

2. Stone Screenings: Consist of clean, hard durable, uncoated fragments resulting from crushing of stone.
3. Mineral Filler: Mineral filler may be combined with sand or sand and stone screenings specified above if such combination is necessary to meet grading requirement for fine aggregate. Filler consist of stone dust, clean crushed shell, crushed sand or other approved inert material. When subject to calorimetric test for organic impurities (ASTM C40), mixture of mineral filler and fine aggregate to be used in Portland Cement Concrete mixed in proportions proposed for use shall not show a color darker than standard color. Conform to following grading requirements (sieves are construed to have square opening).

Retained on 20 mesh sieve 0%
 Retained on 30 mesh sieve 0 to 5%
 Retained on 100 mesh sieve0 to 30%

E. Concrete Admixtures

1. Air-Entraining: Air-entraining agent required. Conform to ASTM C260. Use between three (3) and five (5) percent for Classes A, B, D, and E concrete. Determine air content by ASTM C138 or C173. No air-entraining agent required for seal slabs.
2. Others: Contractor may, at his option, use Possolith (Type VIII) or Plastiment admixture to reduce water and cement content of Classes A, B, D, and E concrete. If admixture is used, maximum reduction in cement content not to exceed “one- quarter” bag per cubic yard; compressive strength laboratory reports, as required hereinabove, to include admixture. No additional compensation allowed for concrete containing mixture.

F. Storage of Materials

1. Cement: Unless otherwise provided, store cement in well ventilated, weather proof buildings which protect cement from dampness. Support cement clear from floor or ground to prevent absorption of moisture. Engineer may permit storage of cement in open for short periods of time (maximum of forty-eight (48) hours) if raised storage platform and adequate waterproof covering are provided.
2. Aggregate: Handling and storage of concrete aggregate such as to prevent mixing with foreign materials. When contract requires use of two (2) or more sizes of aggregate, store in such manner as to prevent intermixing. Handle materials in stockpiles of all weeds and grass.

Bottom layer of aggregate not to be used without recleaning. Stockpile all fine aggregate for at least twenty-four (24) hours prior to use in order to reduce free moisture content.

- G. **Measurement of Materials by Weight:** Measure materials, except water, used in batches of concrete by weight, as outlined herein. Weigh fine aggregate, course aggregate, and mineral filler separately. Make allowances for water content when moist aggregates are used. Determine quantities of each component material of batch, as set forth, and make no change without approval. Base quantities of material per batch upon using full bags of cement. Batches involving use of fractional bags not permitted.
- H. **Weighing and Measuring Equipment:** Capacity of weighing equipment adequate to permit required weighing of materials without delaying production of mixer. Following general requirements apply to all types of weighing equipment contemplated:
1. **Weighing Container:** Use weighing container of suitable size, shape, and tight enough to hold materials. Design and construct weighing container and its appurtenances such as to eliminate retentions of varying tare materials on any of its parts. Container capable of being fully and quickly discharged without shaking or jarring scales.
 2. **Scales:** Provide scales, that is, balance or weighing mechanism of beam or springless dial type. Use product of nationally known and established manufacturer for this type of equipment. Scales of simple rugged design with minimum number of adjustments consistent with accuracy required and suited for supporting weighing containers. Maintain a maximum tolerance of one (1) percent of net load being weighted. Design and construct parts of weighing mechanism, such as beam, levers, pivots, connections, etc., of such materials as will be consistent with conditions of use and accuracy required. Mount scales on a firm foundation and keep level. Unless scale is equipped with multiple weight beam which permits weighing of more than one kind of material on same scale without changing settings on weight beams, furnish separate scale units for each kind of material.
- I. **Water:** Provide device for measuring quantity of water which indicates in gallons and fractions thereof. Operating mechanism regulates quantity of water required for any given batch within one percent (1%). Cut-off supply inlet automatically when water is discharged into mixer.

- J. Classification and Proportions: Proportion as determined by laboratory design reports, using methods outlined in Texas State Highway Bulletin C-1 for design of mixes by absolute volumes and in accordance with requirements hereinafter set forth. Minimum cement content, maximum allowable water content and maximum slump for various classes of mixes follows:

Class Type	Minimum Cement Bags Per Cubic Yard	Maximum Water Gallons Per Bags (net)	Maximum Slump Inches
A. Structural	5.25	6.25	2½ to 4½
B. Fill	4.25	8.00	2½ to 4
C. Pipe Blocking	3.00	10.5	3 to 5
D. Seal Slab	4.00	-----	6 to 8
E. Paving	5.50	6.25	1 to 3

During progress of work, Contractor will maintain a careful check of the quantity of cement used in each structural unit. Make such adjustments, with approval, in mix design to correct for any variations of more than two (2) percent from theoretical cement content when such variations are attributable to mix design. In calculations for theoretical quantity of cement required, make allowances for embedded reinforcing steel, embedded structural steel and all paneling or chambers more than 3-inches in width.

- K. Consistency: In general, consistency of concrete mixtures as follows:
1. Mortar clings to coarse aggregate.
 2. Concrete is not sufficiently fluid to segregate when transported to place of deposit.
 3. Mortar shows no free water when removed from mixer.
 4. Concrete settles into place when deposited in forms. When transported in metal chutes at an angle of thirty (30) degrees with horizontal, concrete slides (not flows) into place.

Any mix failing to meet above outlined consistency requirements, although meeting slump requirements, is unsatisfactory. Change mix, upon approval, to correct such unsatisfactory conditions. In cases when characteristics of aggregate furnished are such that, with maximum allowable amount of water, specified slumps and consistency requirements are not met, Contractor may provide aggregate of an improved grading, or modify mix design to meet the slump and consistency requirements by adding either mineral filler or cement, or both as may be necessary. In

case mineral filler is used, combined total quantity of mineral filler and fine aggregate passing 100 mesh sieve may not exceed twenty (20) percent of weight of fine aggregate. Perform slump test in accordance with methods outlined in ASTM C143.

L. Quality of Concrete

1. General: Concrete made of acceptable materials, of proportions specified, meeting strength requirements, and in complete accordance with requirements of construction methods and details specified will be considered as of satisfactory quality.
2. Test Cylinders: Engineer will cast test cylinders or beams of the number and type desired for testing to maintain a check on compressive and flexural strength of concrete actually being placed. Contractor provides curing facilities for purpose of curing concrete test specimens. Include cost of all materials used in test specimens. Include cost of all materials used in test specimens and cost of providing and maintaining curing facilities in Contract prices bid.

M. Mixing Conditions: Mix concrete in quantities required for immediate use. Do not use any concrete which is not placed within thirty (30) minutes after being discharged from mixer. Retempering of concrete not permitted. In threatening weather, which may result in conditions that will adversely affect quality of concrete to be placed, Engineer may order postponement of concrete placement. Where work has been started and changes in weather conditions required protective measures to be used, furnish adequate shelter to protect concrete against damage from rainfall or damage due to freezing temperatures. In case it is necessary to continue mixing operations during rainfall, provide protective coverings for material stock piles only to extent necessary to control moisture conditions in aggregates so as to maintain adequate control of consistency of concrete mix. Do not mix concrete, without approval when air temperature is at or below 40E F (taken in shade away from artificial heat) and falling. If authorized, concrete may be mixed when air temperature is at 35E F and rising. When permission is given for mixing at temperatures below 40E F, conform to following requirements:

Heat water used for mixing to a temperature of at least 70E F but not over 150E F. Heat aggregate by either steam or by dry heat to temperatures of at least 70E F but not over 150E F. Heating apparatus such as to heat mass of aggregates uniformly and preclude occurrence of hot spots which burn materials. Temperature of mixed concrete not to be less than 60E at time of placing in forms.

III. EXECUTION

A. Mixing and Mixing Equipment

1. Mix in batch mixer of approved type and size which insures uniform distribution of material throughout mass so that mixture is uniform in color and smooth in appearance. Use mixer of minimum rated size of five (5) cubic foot batch capacity for continuous placement of concrete involving fifteen cubic yards or less. For larger concrete placements, use mixer of at least fourteen cubic feet batch capacity. Use of two or more small mixers, operating simultaneously and continuously may be used in lieu of larger mixer. Size of mixer(s) governed by volume of concrete to be placed in one continuous pour.
2. Mix, after all ingredients are assembled in drum, for minimum time of one and one-half minutes for fourteen cubic foot mixers and smaller, and for minimum time of one minute for twenty-one cubic foot mixers and larger. Drum speed during mixing between fourteen and twenty revolutions per minute. Equip mixer with speed regulator to hold mixer to its normal speed of revolutions.
3. Discharge entire contents of drum before any materials for succeeding batch are placed therein. For first batch of concrete materials placed in mixer provide sufficient extra quantities of cement, sand, and water to coat inside surface of drum without diminishing mortar content of mix. Upon cessation of mixing for any considerable length of time, thoroughly clean and wash mixer out.
4. Equip concrete mixer with automatic timing device which is actuated when skip is raised to its full height and dumped. Arrange device to lock discharge mechanism to prevent emptying of mixer until all materials have been mixed together for minimum time required. Device to ring bell after specified time of mixing.
5. Arrange water tank so that amount of water can be accurately measured. Automatically shut-off inlet supply while tank is discharging.
6. Remove any concrete mixer from site of work which is not adequate or suitable for work or not in satisfactory state of repair. Provide suitable replacement mixer. Improperly mixed concrete not permitted.

- B. Transit or Ready Mix Concrete: Proportion and prepare in accordance with requirements set forth hereinbefore. If central-mixed completely mix at central plant and then transport in agitator trucks; mixing time as specified hereinbefore. If transit-mix concrete is used, use truck mixer which is water-tight when closed.

Mix each batch of transit-mix concrete for one hundred (100) revolutions at mixing speed as specified by mixer manufacturer. Perform any additional mixing or agitation at rate specified for agitation.

1. Equip truck mixers with water tanks and measuring devices which permit positive measurement of mixing water.
 2. Concrete delivered by truck mixers to be of consistency specified hereinbefore. Place transit or ready-mix concrete within one and one-half (1½) hours after introduction of cement into mixer. Placement of concrete over one and one-half (1½) hours of age not permitted.
- C. Hand-Mixed Concrete: Hand mixing permitted only for small placements or in case of an emergency and then only on authorization. Perform mixing in water tight mixing box. Mix fine aggregate and cement thoroughly until mixture is uniform in color, then spread over bottom of mixing box in thin layer. Saturate coarse aggregate with water spread over whole mass of additional water is added. After all ingredients have been added, turn entire mass at least six times or more if necessary, so that mixture is uniform in color and smooth in appearance. Hand mixed batches not to exceed two (2) bag batch in volume.

ITEM 3312

CEMENT-STABILIZED SAND BACKFILL

I. GENERAL

Description: Furnish all plant, labor, equipment, supervision, and tools for the furnishing and installation of Cement-Stabilized Sand Backfill as shown on Plans and/or Exhibits or as indicated in other items of the Technical Specifications.

II. MATERIALS

A. Aggregate: Use sand containing deleterious materials not to exceed the following requirements by weight.

Material removed by decantation 5.0%

Clay lumps 0.5%

Other deleterious substances such as coal, shale, or coated grains of soft flaky particles 2.0%

Gradation Requirements:

Retained on d-Inch Sieve 0%

Retained on ¼-Inch Sieve 0% - 5%

Retained on 20-Mesh Sieve 15% - 50%

Retained on 100-Mesh Sieve 80% - 100%

Color Test ASTM C40-73 - Color to be Darker than Standard Color.

B. Cement: ASTM C150-77, Type 1.

C. Water: Fresh and Clean.

III. EXECUTION

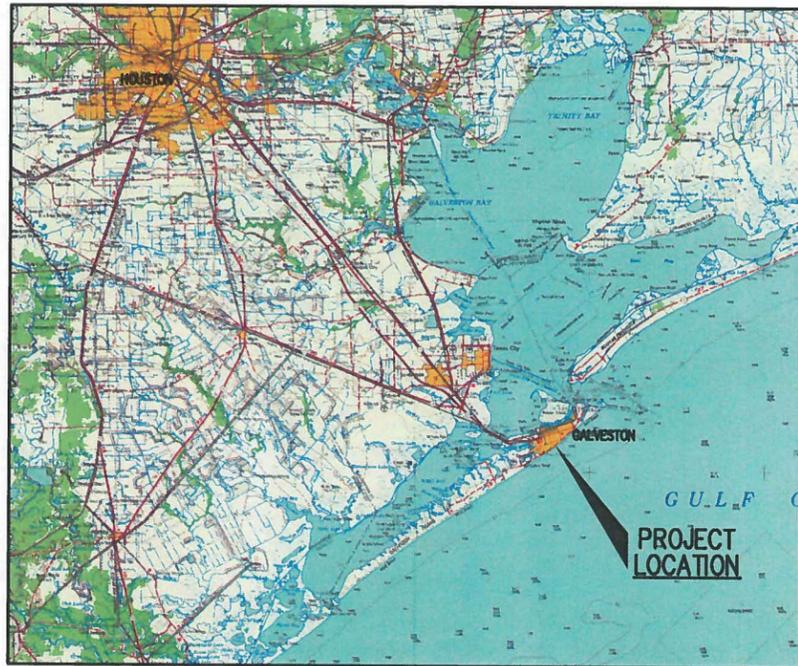
A. Mixing

Use not less than 1 - ½ sacks of cement per cubic yard of mixture or amount specified in proposal. Use amount of water required to provide mix suitable for mechanical hand tamping and mix in approved mixer. Material not in place within one and one-half hours after mixing or that has obtained an initial set will be rejected and removed from the site.

- B. Placing: Place in 4-inch layers and compact each layer with approved power-driven hand tampers. Compact to dry density of 102 pounds per cubic foot.

GALVESTON COUNTY, TEXAS

CONSTRUCTION PLANS FOR: GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT



VICINITY MAP
N.T.S.



MARK HENRY
GALVESTON COUNTY JUDGE

RYAN DENNARD
COMMISSIONER, PCT. 1

JOE GIUSTI
COMMISSIONER, PCT. 2

STEPHEN HOLMES
COMMISSIONER, PCT. 3

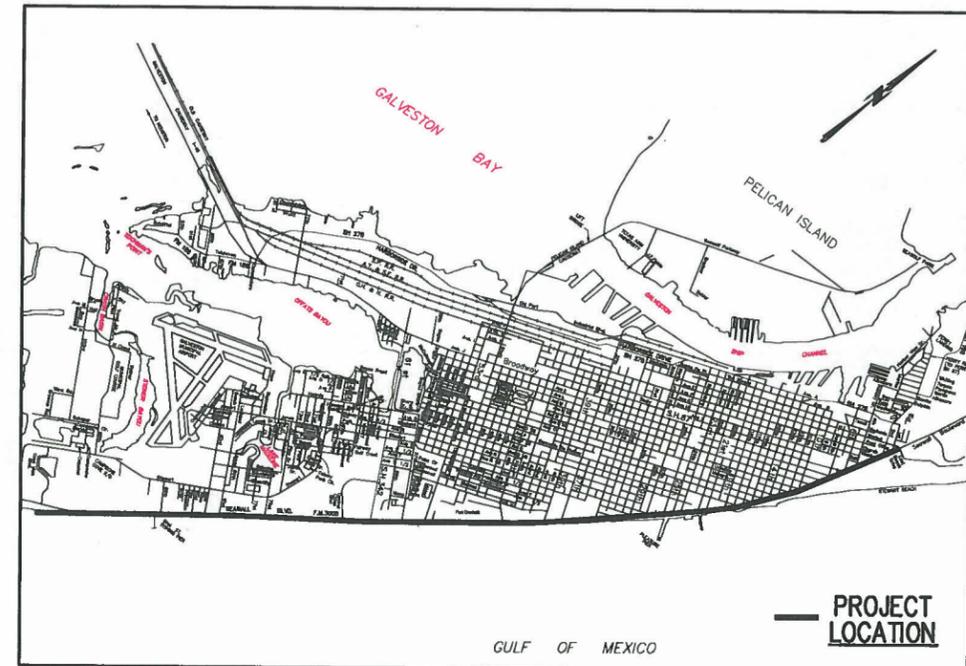
KEN CLARK
COMMISSIONER, PCT. 4

MICHAEL C. SHANNON, P.E.
COUNTY ENGINEER

LJA Engineering, Inc.
11821 East Freeway Suite 360 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

OCTOBER, 2015

LJA PROJECT No. 0384-1502 & 0384-1503



LOCATION MAP
SCALE: N.T.S.

DRAWING LIST

1 COVER SHEET	24A PROJECT LAYOUT 20 - PHOTOS
2 GENERAL NOTES	25 PROJECT LAYOUT 21 - PHOTOS
3 OVERALL PROJECT LAYOUT - 1 OF 2	25A PROJECT LAYOUT 21 - PHOTOS
4 OVERALL PROJECT LAYOUT - 2 OF 2	26 PROJECT LAYOUT 22
4A LOCATION SQUARE YARDAGE SCHEDULE	26A PROJECT LAYOUT 22 - PHOTOS
5 PROJECT LAYOUT 1	27 PROJECT LAYOUT 23
6 PROJECT LAYOUT 2	27A PROJECT LAYOUT 23 - PHOTOS
7 PROJECT LAYOUT 3	28 PROJECT LAYOUT 24
8 PROJECT LAYOUT 4	29 PROJECT LAYOUT 25
9 PROJECT LAYOUT 5	29A PROJECT LAYOUT 25 - PHOTOS
10 PROJECT LAYOUT 6	30 PROJECT LAYOUT 26
11 PROJECT LAYOUT 7	30A PROJECT LAYOUT 26 - PHOTOS
12 PROJECT LAYOUT 8	31 PROJECT LAYOUT 27
13 PROJECT LAYOUT 9	31A PROJECT LAYOUT 27 - PHOTOS
14 PROJECT LAYOUT 10	32 PROJECT LAYOUT 28
14A PROJECT LAYOUT 10 - PHOTOS	32A PROJECT LAYOUT 28 - PHOTOS
15 PROJECT LAYOUT 11	33 PROJECT LAYOUT 29
16 PROJECT LAYOUT 12	34 PROJECT LAYOUT 30
17 PROJECT LAYOUT 13	35 PROJECT LAYOUT 31
18 PROJECT LAYOUT 14	36 PROJECT LAYOUT 32
18A PROJECT LAYOUT 14 - PHOTOS	37 SIDEWALK DETAILS - 1 OF 2
19 PROJECT LAYOUT 15	38 SIDEWALK DETAILS - 2 OF 2
19A PROJECT LAYOUT 15 - PHOTOS	39 MISCELLANEOUS DETAILS - 1 OF 2
20 PROJECT LAYOUT 16	40 MISCELLANEOUS DETAILS - 2 OF 2
21 PROJECT LAYOUT 17	41 SIGN MOUNTING DETAILS
22 PROJECT LAYOUT 18	42 SEAWALL DETAILS
23 PROJECT LAYOUT 19	43 TRAFFIC CONTROL PLAN - 1 OF 2
24 PROJECT LAYOUT 20	44 TRAFFIC CONTROL PLAN - 2 OF 2



GENERAL NOTES:

- CONTRACTOR SHALL CONTACT LJA ENGINEERING, MR. LES DODSON AT (713) 450-1300 AT LEAST 24 HOURS PRIOR TO CONSTRUCTION FOR NOTIFICATION OF COMMENCEMENT.
- LOCATION OF EXISTING UNDERGROUND UTILITIES AND SERVICE LINES (WATER, SEWER, GAS, TELEPHONE, ELECTRICAL, ETC.) IF SHOWN ARE DETERMINED FROM AVAILABLE RECORDS AND ARE APPROXIMATE. CONTRACTOR TO LOCATE LINES AND/OR OBSTRUCTIONS AHEAD OF EXCAVATION.
- CONTRACTOR TO MAKE ARRANGEMENTS WITH THE APPROPRIATE UTILITY COMPANY FOR SECURING POLES, IF NECESSARY, WHILE CONSTRUCTION PASSES BY POLES. COST OF SECURING POLES WILL BE PAID FOR BY THE CONTRACTOR.
- CONSTRUCTION STAKING (ALIGNMENT AND GRADE) TO BE PROVIDED BY THE CONTRACTOR AT NO SEPARATE PAY.
- CONTRACTOR TO USE CAUTION WHEN CROSSING ALL EXISTING FACILITIES. ANY DAMAGE TO BE REPAIRED AT THE CONTRACTORS EXPENSE WITH NO SEPARATE PAY.
- SURPLUS EXCAVATED MATERIAL SHALL BE REMOVED AND DISPOSED OFF SITE AS DIRECTED BY THE ENGINEER. IF THE ENGINEER NOTIFIES THE CONTRACTOR THAT THE OWNER DOES NOT HAVE USE FOR THIS MATERIAL, THE SURPLUS MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND HIS RESPONSIBILITY TO DISPOSE OF THE MATERIAL.
- WHERE CONTRACTOR'S WORK AND/OR EQUIPMENT CAUSES AN OBSTRUCTION TO TRAFFIC, CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH PART IX OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (TEXAS M.U.T.C.D., MOST RECENT EDITION AS REVISED) DURING CONSTRUCTION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE LOCAL REQUIREMENTS.
- CONTRACTOR SHALL PROTECT EXISTING FACILITIES DURING INSTALLATION OF PROPOSED WORK.
- ALL WORK IN THE TEXAS DEPARTMENT OF TRANSPORTATION AND COUNTY RIGHT-OF-WAYS SHALL CONFORM TO THE STANDARDS OF THOSE GOVERNMENTAL ENTITIES. CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT AND/OR REPAIR OF ANY DAMAGE TO TxDOT MARKERS.
- CONTRACTOR SHALL MAINTAIN DRAINAGE TO ORIGINAL OR BETTER CONDITION THROUGHOUT THE CONSTRUCTION OF THE PROJECT. NO SEPARATE PAY.
- PAVED SURFACES SHALL BE PROTECTED FROM DAMAGE FROM TRACKED EQUIPMENT.
- OBTAIN ALL PERMITS, NOT PROVIDED BY OWNER, PRIOR TO STARTING CONSTRUCTION.
- CONTRACTOR TO MAINTAIN ACCESS FOR PROPERTY OWNERS AND EMERGENCY VEHICLES AT ALL TIMES.
- NOTIFY ALL PROPERTY OWNERS A MINIMUM OF TWENTY FOUR (24) HOURS PRIOR TO BLOCKAGE OF DRIVEWAYS OR ENTERING OF UTILITY EASEMENTS.
- CONTRACTOR SHALL CONTACT GALVESTON COUNTY, MR. MICHAEL SHANNON, P.E., 409-770-5552 AND MS. NANCY BAHER, P.E. 409-770-5552 AT LEAST FORTY EIGHT (48) HOURS PRIOR TO CONSTRUCTION FOR NOTIFICATION OF COMMENCEMENT.
- PROPERTY OWNERS SHALL BE NOTIFIED, IN WRITING, BY CONTRACTOR, WITH DOOR HANGERS 3 WEEKS BEFORE CONSTRUCTION BEGINS. (PROPERTY OWNER SHALL BE PROVIDED THE MINIMUM FOLLOWING INFORMATION: WORK TO BE PERFORMED, STARTING AND ENDING DATES, AND THE NAME AND NUMBER OF CONTRACTOR'S REPRESENTATIVE, GALVESTON COUNTY OFFICIAL TO BE CONTACTED FOR QUESTIONS. WRITTEN NOTICES SHALL BE APPROVED PRIOR TO DISTRIBUTION).
- CONTRACTOR SHALL PROVIDE ALL WEATHER ACCESS TO BUSINESSES & RESIDENTS AT ALL TIMES, EXCEPT FOR SHORT PERIODS OF TIME.
- ALL ITEMS OF WORK REQUIRED UNDER THIS CONTRACT NOT SPECIFICALLY CALLED FOR IN THE PROPOSAL AS PAY ITEMS SHALL BE CONSIDERED INCIDENTAL TO VARIOUS BID ITEMS AND NO SEPARATE PAYMENT SHALL BE MADE FOR SAME.
- ADJUST MANHOLE RINGS, VALVE BOXES, GRATES, ETC. AS REQUIRED FOR NEW PAVEMENT, AND/OR TO FINISHED GRADE OUTSIDE PAVEMENT.
- ALL TRAFFIC SIGNS AND STRIPING SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- IT IS IMPERATIVE THAT CONSTRUCTION IN PROJECT AREA INCONVENIENCE BUSINESSES AS LITTLE AS POSSIBLE. COMPLETE CLEAN-UP NOT GREATER THAN ONE BLOCK BEHIND ACTIVE CONSTRUCTION AREA. CLEAN-UP INCLUDES COMPACTION OF BACKFILL, SURFACE RESTORATION, REMOVAL OF ALL EXCESS EXCAVATED MATERIAL, REMOVAL OF EQUIPMENT AND CONSTRUCTION MATERIALS, AND SWEEPING OF STREETS.
- CONTRACTOR SHALL NOTIFY CITY OF GALVESTON AMBULANCE, POLICE, FIRE AND OTHER EMERGENCY SERVICE AGENCIES AT LEAST 48 HOURS PRIOR TO CLOSURE OF ANY STREET, INTERSECTION, OR LANE OF TRAFFIC. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO ALLOW ACCESS TO EMERGENCY VEHICLES AT ALL TIMES.
- CONTRACTOR TO CONTACT "DIG-TESS" AT 1-800-344-8377 AT LEAST 48 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION FOR LOCATION AND MARKING OF UNDERGROUND CABLE.
- CONTRACTOR SHALL COORDINATE WITH THE CITY OF GALVESTON TO REPLACE BROKEN UTILITY BOXES WITHIN SIDEWALK LIMITS. CONTRACTOR SHALL CONTACT MR. ROBERT DIAZ, SUPERINTENDENT OF DISTRIBUTION AND COLLECTION, 409-797-3963.
- CONTRACTOR AT NO TIME SHALL HAVE ANY EQUIPMENT ON SEAWALL STRUCTURE. NO WORK SHALL BE PERFORMED ON SEAWALL STRUCTURE AT ANY TIME.

SIDEWALK NOTES:

- THE PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS AS SHOWN IN THE CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 3,000 PSI AT 28 DAYS.
- ALL REINFORCEMENT STEEL SHALL BE GRADE 60.
- CONTRACTOR TO COORDINATE ALL STREET CLOSURES AND TEMPORARY DETOURS WITH THE CITY OF GALVESTON.
- CONTRACTOR TO MAINTAIN ACCESS FOR PROPERTY OWNERS AND EMERGENCY VEHICLES AT ALL TIMES.
- CONTRACTOR SHALL PROTECT WATER, SEWER, AND DRAINAGE FACILITIES; AND WILL REPLACE AT HIS EXPENSE ANY FACILITIES DAMAGED DURING SIDEWALK OPERATIONS. ALL MANHOLES AND VALVES FALLING WITHIN SIDEWALK AREA SHALL BE ADJUSTED TO FINISHED GRADE BY PAVING CONTRACTOR WITHOUT THE USE OF BLOCKOUTS WHEN DIRECTED BY OWNER (WITH NO SEPARATE PAY).
- EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO COUNTY STANDARDS.
- CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK.
- CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL AMERICAN DISABILITY ACT STANDARDS AND GUIDELINES AT NO EXTRA PAY. ANYTHING PLACED AND DEEMED NOT ACCEPTABLE BY TEXAS DEPARTMENT OF LICENSING AND REGULATIONS INSPECTION SHALL BE FIXED BEFORE CONTRACTOR CAN CLOSE OUT THE JOB AT NO EXTRA PAY.
- FOR ALL CONCRETE TO BE REMOVED, A MINIMUM TWO (2) INCH DEEP SAW-CUT SHALL BE PROVIDED PRIOR TO REMOVAL (NO EXTRA PAY).
- CONTRACTOR IS RESPONSIBLE FOR CLEARING THE LIMITS OF THE SIDEWALK FROM ALL DEBRIS IN ORDER TO LOCATE ALL FAILURES. THIS INCLUDES BUT IS NOT LIMITED TO SAND, BRUSH, TRASH, EARTH, ETC.

UTILITY NOTES

- LOCATION OF EXISTING UNDERGROUND UTILITY SERVICE LINES (WATER, SEWER, GAS, TELEPHONE, ELECTRICAL, ETC.) IF SHOWN ARE DETERMINED FROM AVAILABLE RECORDS AND ARE APPROXIMATE. CONTRACTOR TO LOCATE LINES AND/OR OBSTRUCTIONS AHEAD OF EXCAVATION.
- CONTRACTOR TO MAKE ARRANGEMENTS WITH APPROPRIATE UTILITY COMPANY FOR SECURING POLES, IF NECESSARY, WHILE CONSTRUCTION PASSES BY POLES. COSTS OF SECURING POLES WILL BE PAID FOR BY THE UTILITY COMPANIES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. DURING THE COURSE OF ANY AND ALL CLEARING, GRUBBING, FILL GRADING, EXCAVATION, OR OTHER CONSTRUCTION, CONTRACTOR SHALL ENSURE THAT STORM DRAINAGE PATHWAYS ARE MAINTAINED AND REMAIN OPEN TO ENSURE POSITIVE DRAINAGE AND THAT SUCH CONVEYANCE ARE NOT IMPEDED OR BLOCKED IN ANY WAY. STORM SEWER INLETS SHALL BE PROTECTED FROM ENTRY OF SALT, TRASH, DEBRIS, AND ANY OTHER SUBSTANCES DELETERIOUS TO THE STORM SEWER SYSTEM AND/OR WATERWAYS RECEIVING STORM SEWER RUNOFF. CONTRACTOR SHALL, AT COMPLETION OF WORK, FILL LOW SPOTS AND GRADE ALL RIGHT OF WAY AND UTILITY EASEMENTS AND RE-GRADE/ RESTORE DITCHES AS NECESSARY TO MAINTAIN AND/OR ESTABLISH POSITIVE DRAINAGE.

WARNING: UNDERGROUND TELEPHONE FACILITIES

OVERHEAD VERIZON LINES MAY EXIST ON THE PROPERTY. WE HAVE NOT ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. CONTACT 1-800-344-8377 FOR LOCATING VERIZON UNDERGROUND UTILITIES 48 HOURS IN ADVANCE.

CAUTION: UNDERGROUND GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE CENTERPOINT ENERGY, INTRASTATE PIPELINE, LLC, WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567 OR 1-800-669-8344 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY PIPELINE MARKINGS ARE NOT VISIBLE, CALL (713) 967-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.

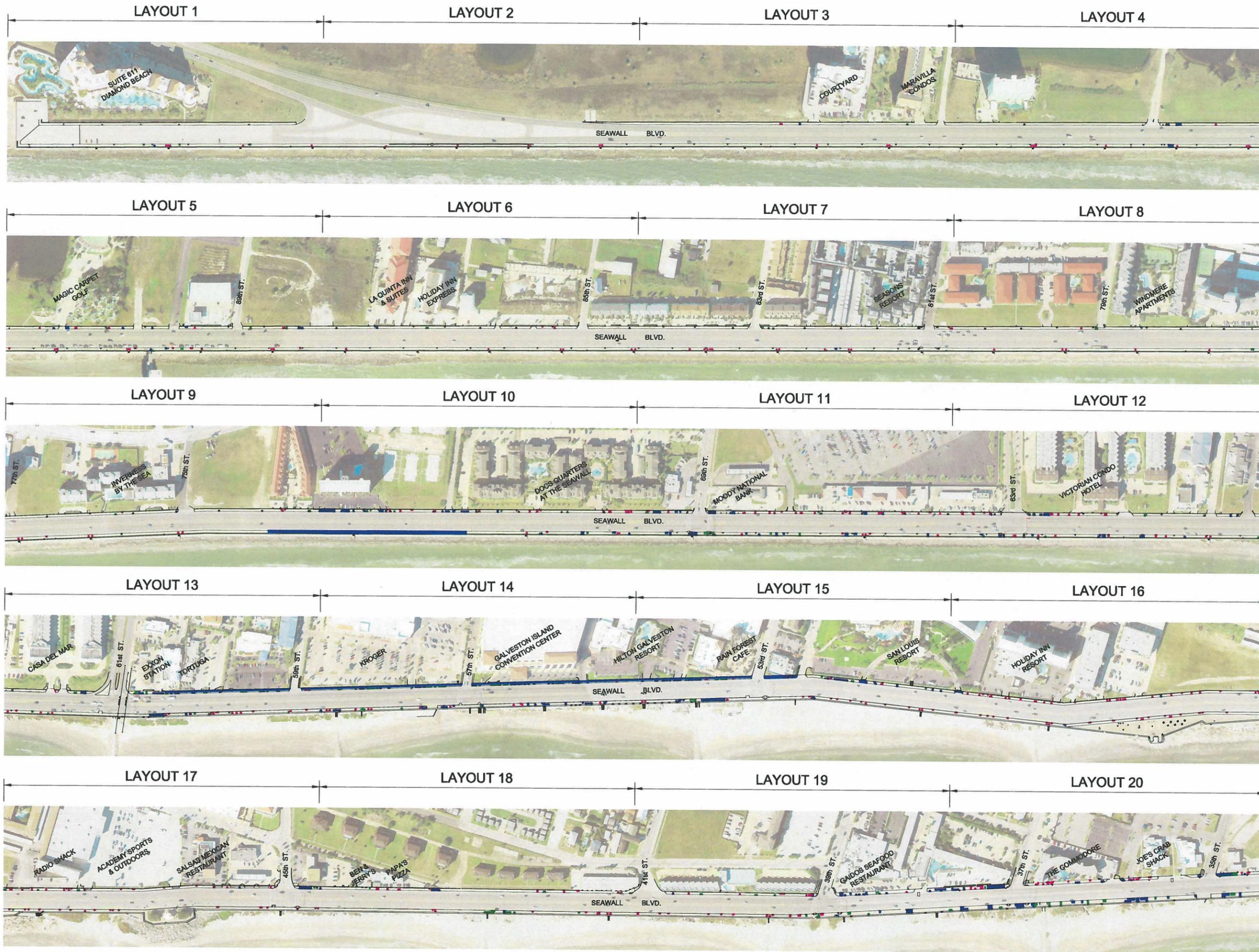
THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRIC FACILITIES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE NOT ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713) 207-2222.



Revision	By	Chk.	Appr.	Date
GALVESTON COUNTY GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT				
GENERAL NOTES				
LJA Engineering, Inc.				
11821 East Freeway Suite 360 Houston, Texas 77029		Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388		
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503			
DRAWN: B.D.	DATE: OCTOBER, 2015			
CHECKED:	SCALE: N.T.S.			
APPROVED:	SHEET No. 02 Of 44			



Mark E. Havran
 MARK E. HAVRAN
 11881D
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT
 1 OF 2**

LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: N.T.S.
APPROVED:	SHEET No. 03 Of 44



Mark E. Havran
 MARK E. HAVRAN
 118810
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT
 2 OF 2**

LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: N.T.S.
APPROVED:	SHEET No. 04 Of 44

Location No.	Panel's Replaced	Approx. S.Y.	Location No.	Panel's Replaced	Approx. S.Y.	Location No.	Panel's Replaced	Approx. S.Y.	Location No.	Panel's Replaced	Approx. S.Y.	Location No.	Panel's Replaced	Approx. S.Y.	Location No.	Panel's Replaced	Approx. S.Y.	Location No.	Panel's Replaced	Approx. S.Y.
21	1	3	259	8	24	1403	3	9	1140	3	9	1116	1	3	1295	1	3	793	2	6
30	8	24	256	8	24	485	2	6	1141	18	55	1117	11	34	1296	2	6	815	4	12
64	2	6	253	6	18	481	4	12	1142	3	9	1118	3	9	1299	4	12	816	5	15
72	1	3	250	12	37	480	5	15	1144	1	3	1119	1	3	1300	4	12	817	2	6
91	1	3	1398	3	9	474	2	6	1147	4	12	1120	10	31	1302	7	21	818	1	3
90	4	12	1399	2	6	473	3	9	1148	7	21	1121	12	37	1303	2	6	1384	1	3
87	2	6	355	1	3	471	2	6	1149	13	40	1122	14	43	1306	1	3	1385	1	3
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79	8	24	345	1	3	437	2	6	1157	1	3	1130	2	6	1321	1	3	844-1	4	12
76	1	3	344	1	3	525	1	3	1158	2	6	1131	15	46	1322	3	9	845	14	43
150	1	3	343	7	21	624	3	9	1161	2	6	1132	21	64	1326	1	3	846	1	3
149	1	3	341	2	6	614	5	15	1162	101	309	1133	21	64	1329	23	70	847	2	6
146	2	6	340	19	58	598	4	12	1163	27	83	1134	42	128	1330	4	12	728	11	34
145	1	3	334	2	6	599	4	12	1164	2	6	1135	18	55	1397	1	3	746	3	9
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139	2	6	325	3	9	602	4	12	1167	2	6	1137	6	18	1340	2	6	753	6	18
136	2	6	322	3	9	604	4	12	1168	9	28	1138	6	18	1342	3	9	754	1	3
133	1	3	317	5	15	605	4	12	1169	10	31	1058	2	6	1239	36	110	755	3	9
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131	1	3	426	1	3	607	4	12	1171	24	73	1060	2	6	1245	6	18	764	4	12
128	1	3	424	1	3	608	4	12	1174	2	6	1061	1	3	1246	8	24	765	7	21
127	1	3	415	8	24	609	4	12	1175	5	15	1062	1	3	1247	4	12	770	3	9
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123	4	12	411	6	18	611	4	12	1177	3	9	1065	2	6	1257	5	15	772	13	40
119	5	15	410	1	3	612	4	12	1178	63	193	1067	2	6	1258	11	34	773	26	79
116	1	3	408	3	9	613	4	12	1180	8	24	1068	1	3	1396	1	3	780	1	3
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156	2	6	491	1	3	1207	1	3	1098	1	3	1352	1	3	1013	1	3			
155	2	6	380	2	6	1208	6	18	1099	13	40	1354	4	12	1014	1	3			
154	13	40	378	6	18	1210	17	52	1101	8	24	1357	5	15	1016	12	37	Depressed Mudjacking Area	341	1,041
1388	1	3	374	6	18	1214	2	6	1102	29	89	1360	7	21	1019	11	34			
153	4	12	1406	2	6	1218	5	15	1103	11	34	1368	6	18	1020	1	3	61st to IHOP	566	1,729
310	5	15	371	2	6	1219	5	15	1104	1	3	1369	3	9	1389	1	3			
309	1	3	366	3	9	1222	5	15	1105	6	18	1370	2	6	901	9	28			
307	28	86	1406	3	9	1223	3	9	1109	5	15	1371	2	6	903	2	6	25th to 21st	366	1,119
293	5	15	364	7	21	1225	7	21	1110	4	12	1284	1	3	904	3	9			
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1395	1	3	359	1	3	1229	12	37	1113	6	18	1401	1	3	790	3	9			
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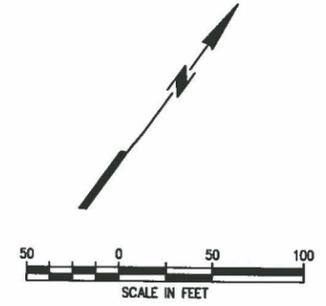


Revision	By	Chk.	Appr.	Date
GALVESTON COUNTY GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT				
LOCATION SQUARE YARDAGE SCHEDULE				
LJA Engineering, Inc.				
11821 East Freeway Suite 360 Houston, Texas 77029		Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386		
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503			
DRAWN: B.D.	DATE: OCTOBER, 2015			
CHECKED:	SCALE: NONE			
APPROVED:	SHEET No. 04A Of 44			

BEGINNING OF PROJECT



SEE SHEET 06 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



21



Revision	By	Chk.	Appr.	Date

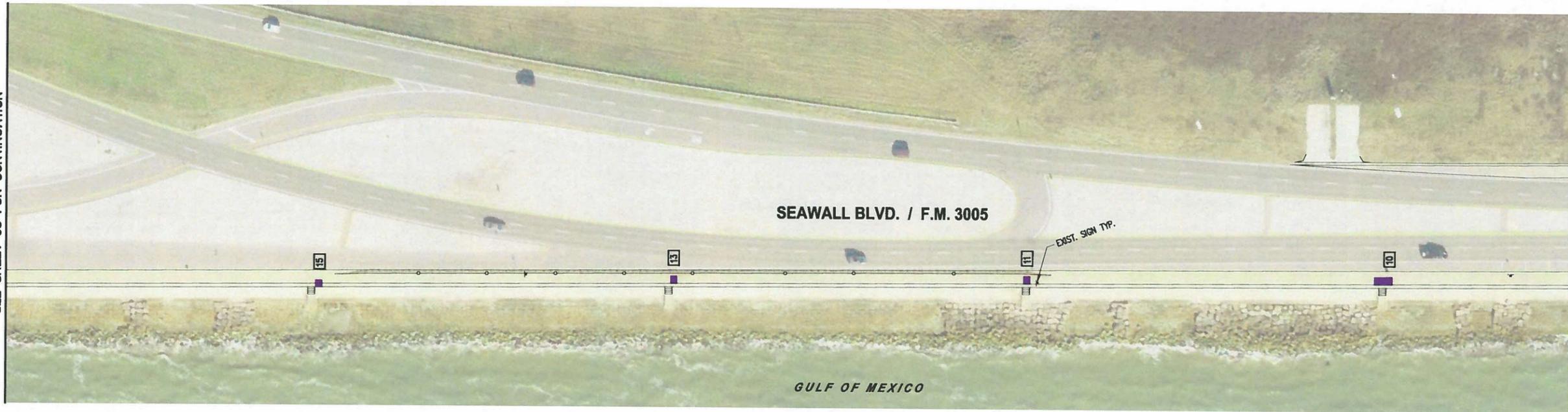
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 1

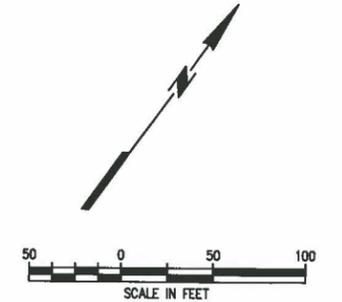
LJA Engineering, Inc.
 11821 East Freeway Phone 713.450.1300
 Suite 380 Fax 713.450.1385
 Houston, Texas 77029 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 05 Of 44

SEE SHEET 05 FOR CONTINUATION



SEE SHEET 07 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 2

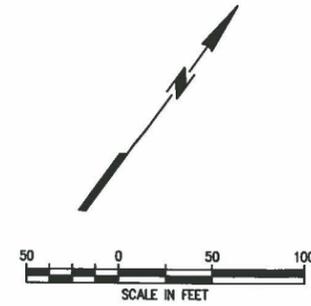
LJA Engineering, Inc.
 11821 East Freeway Phone 713.450.1300
 Suite 360 Fax 713.450.1385
 Houston, Texas 77029 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 08 Of 44

SEE SHEET 06 FOR CONTINUATION



SEE SHEET 08 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



674



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 3

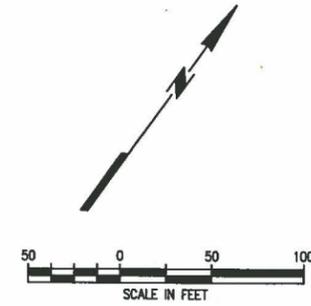
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 07 of 44

SEE SHEET 07 FOR CONTINUATION



SEE SHEET 09 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



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661



661



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Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 4

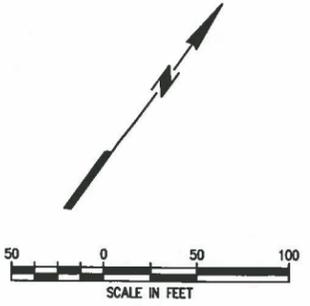
LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 08 Of 44

SEE SHEET 08 FOR CONTINUATION



SEE SHEET 10 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



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693



706



1373



1374



1375



1376



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

PROJECT LAYOUT 5

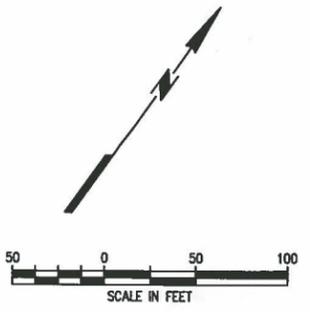
LJA Engineering, Inc.
11821 East Freeway Suite 360 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 09 Of 44

SEE SHEET 09 FOR CONTINUATION



SEE SHEET 11 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



691



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 6

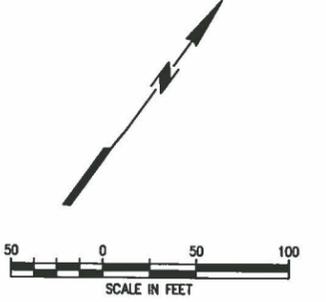
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 10 Of 44

SEE SHEET 10 FOR CONTINUATION



SEE SHEET 12 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



72



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 7

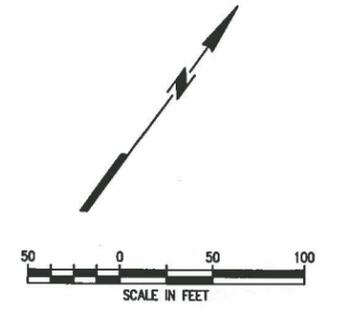
LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 11 Of 44

SEE SHEET 11 FOR CONTINUATION



SEE SHEET 13 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



711



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 8

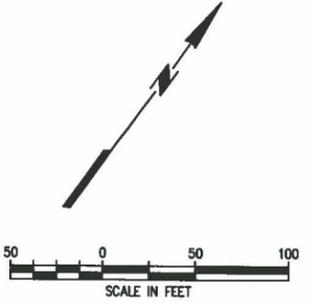
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 12 Of 44

SEE SHEET 12 FOR CONTINUATION



SEE SHEET 14 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



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780



780



Revision	By	Chk.	Appr.	Date

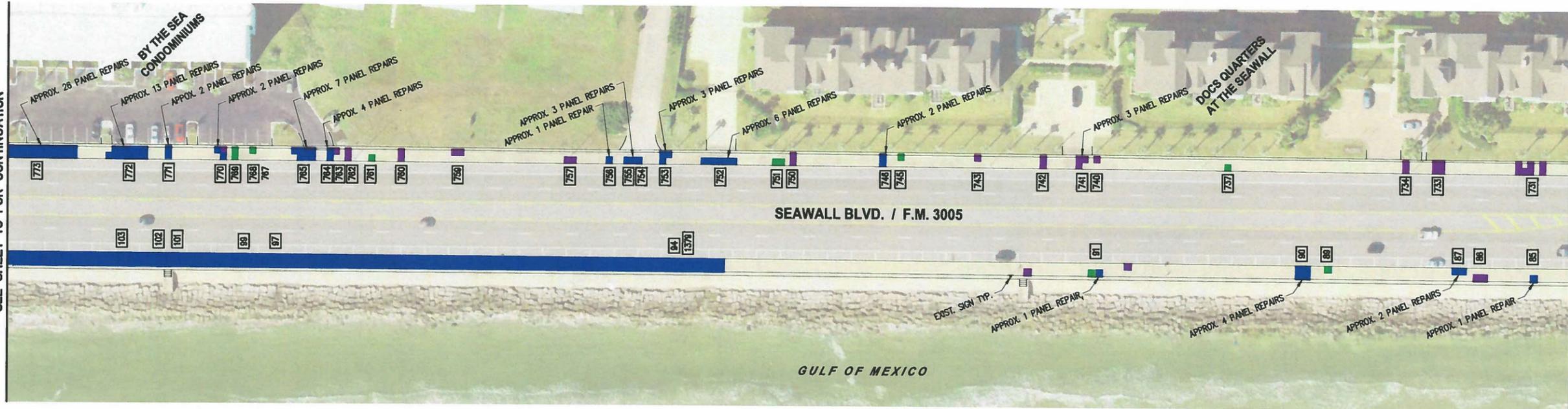
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 9

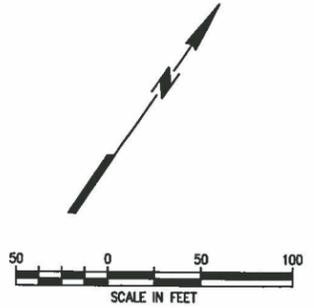
LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 13 Of 44

SEE SHEET 13 FOR CONTINUATION



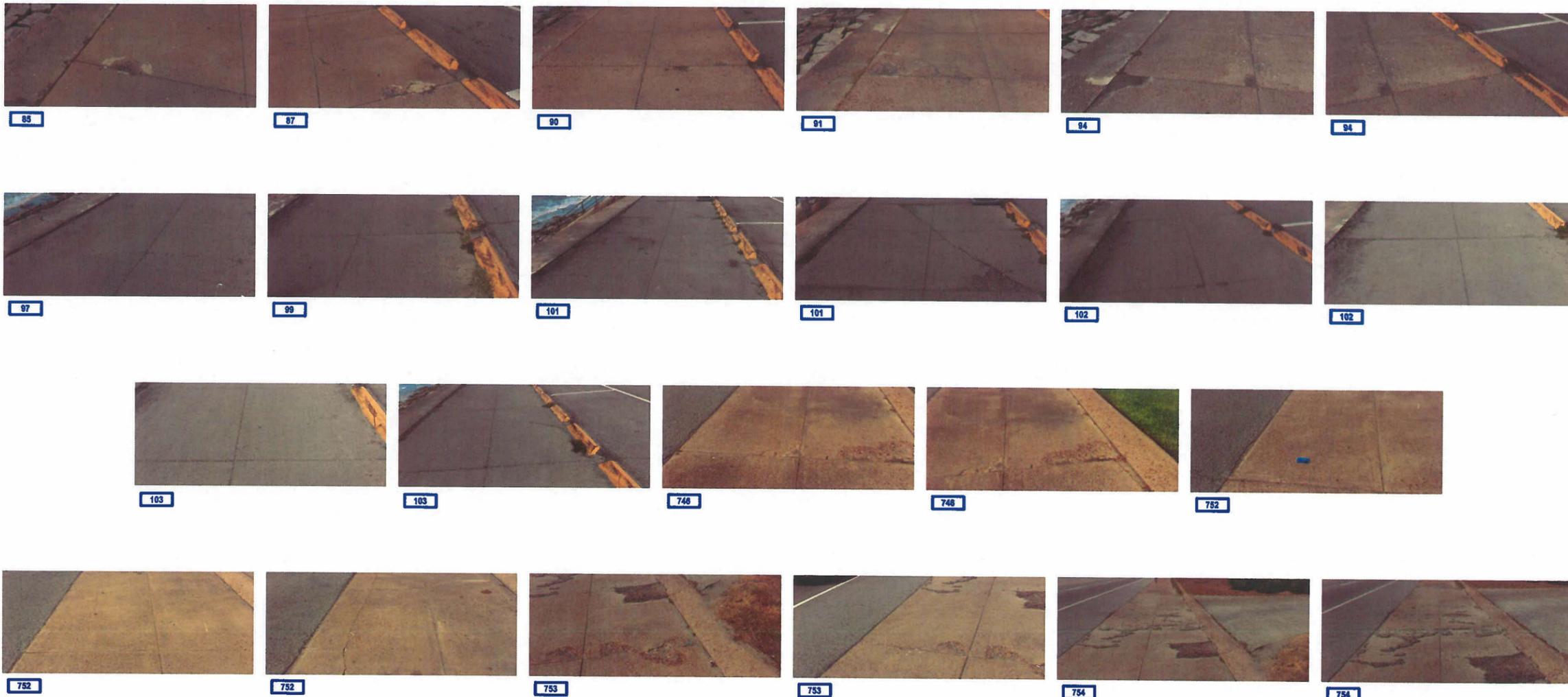
SEE SHEET 15 FOR CONTINUATION



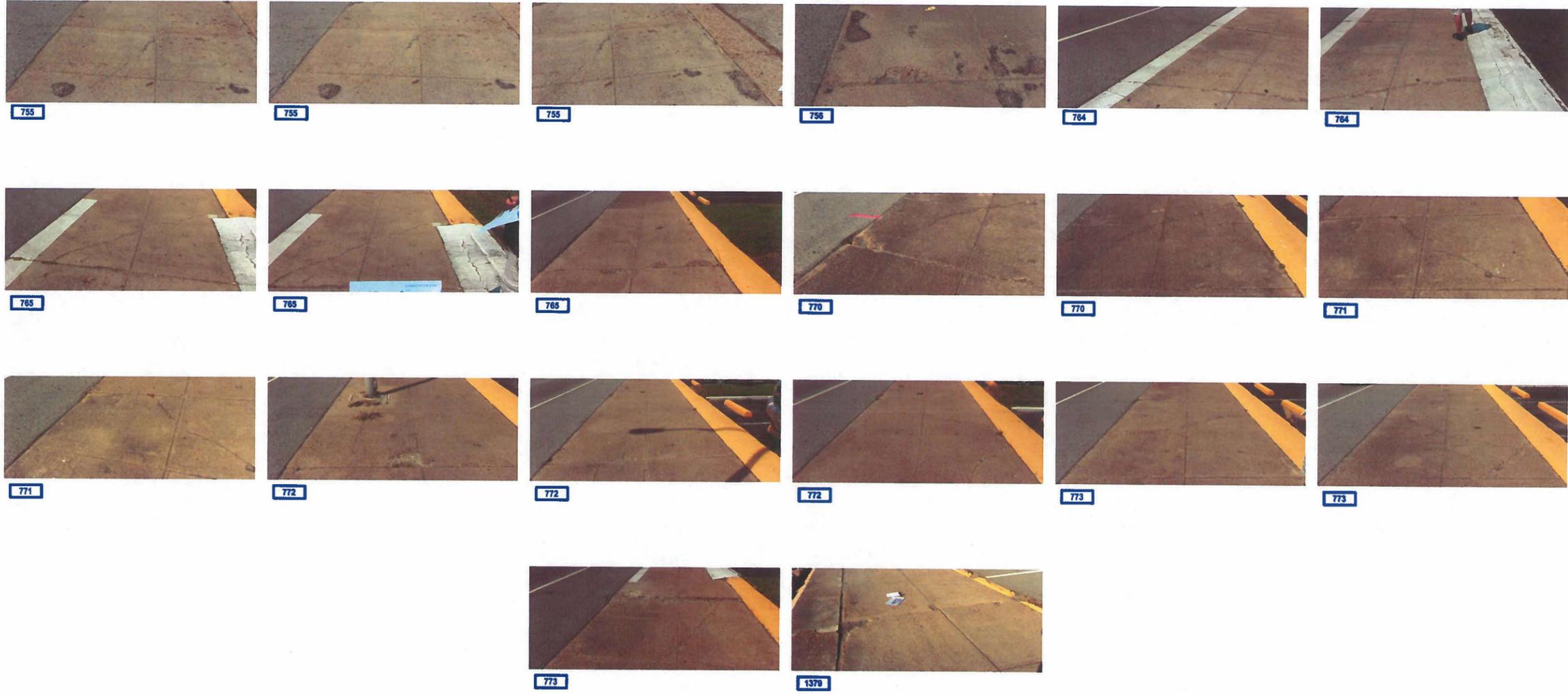
LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date
GALVESTON COUNTY GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT				
PROJECT LAYOUT 10				
LJA Engineering, Inc.				
11821 East Freeway Suite 380 Houston, Texas 77029		Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386		
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503			
DRAWN: B.D.	DATE: OCTOBER, 2015			
CHECKED:	SCALE: 1"=50'			
APPROVED:	SHEET No. 14 Of 44			



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

**PROJECT LAYOUT 10
PHOTOS**

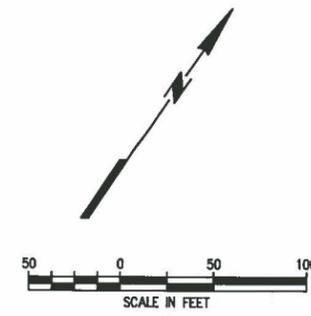
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 14A Of 44

SEE SHEET 14 FOR CONTINUATION



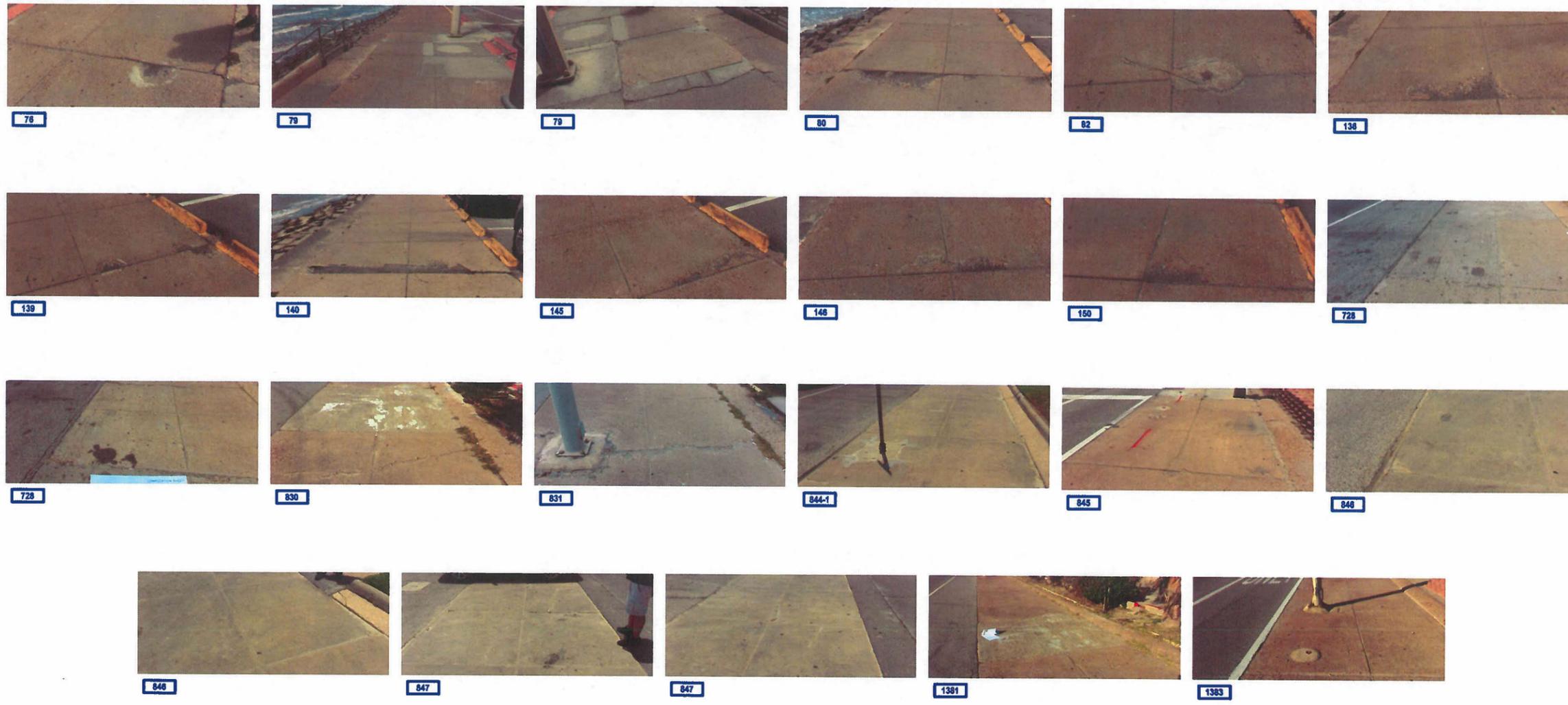
SEE SHEET 16 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

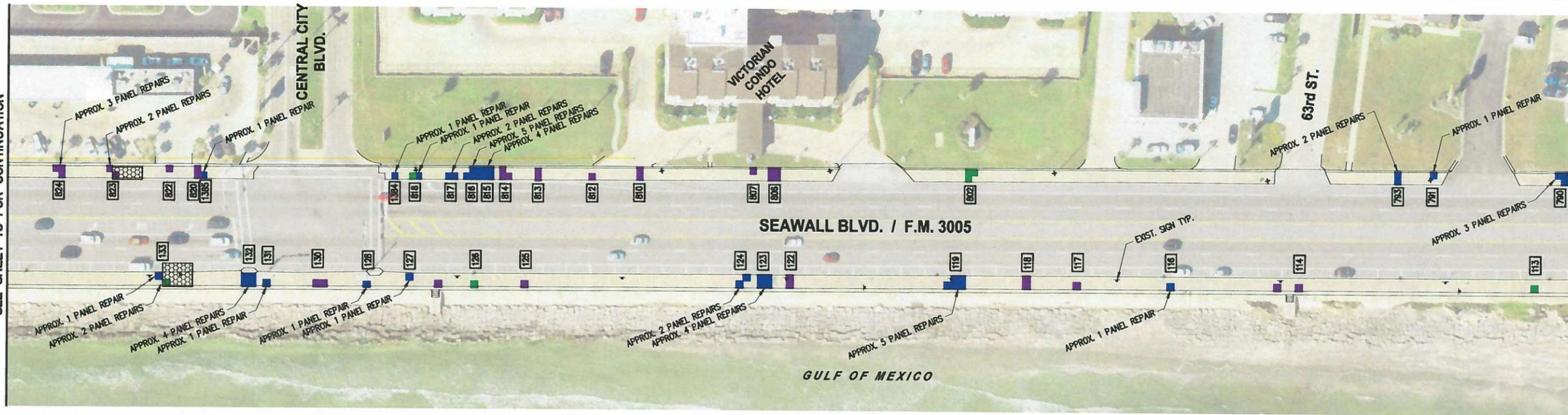
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 11

LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 15 Of 44

SEE SHEET 15 FOR CONTINUATION

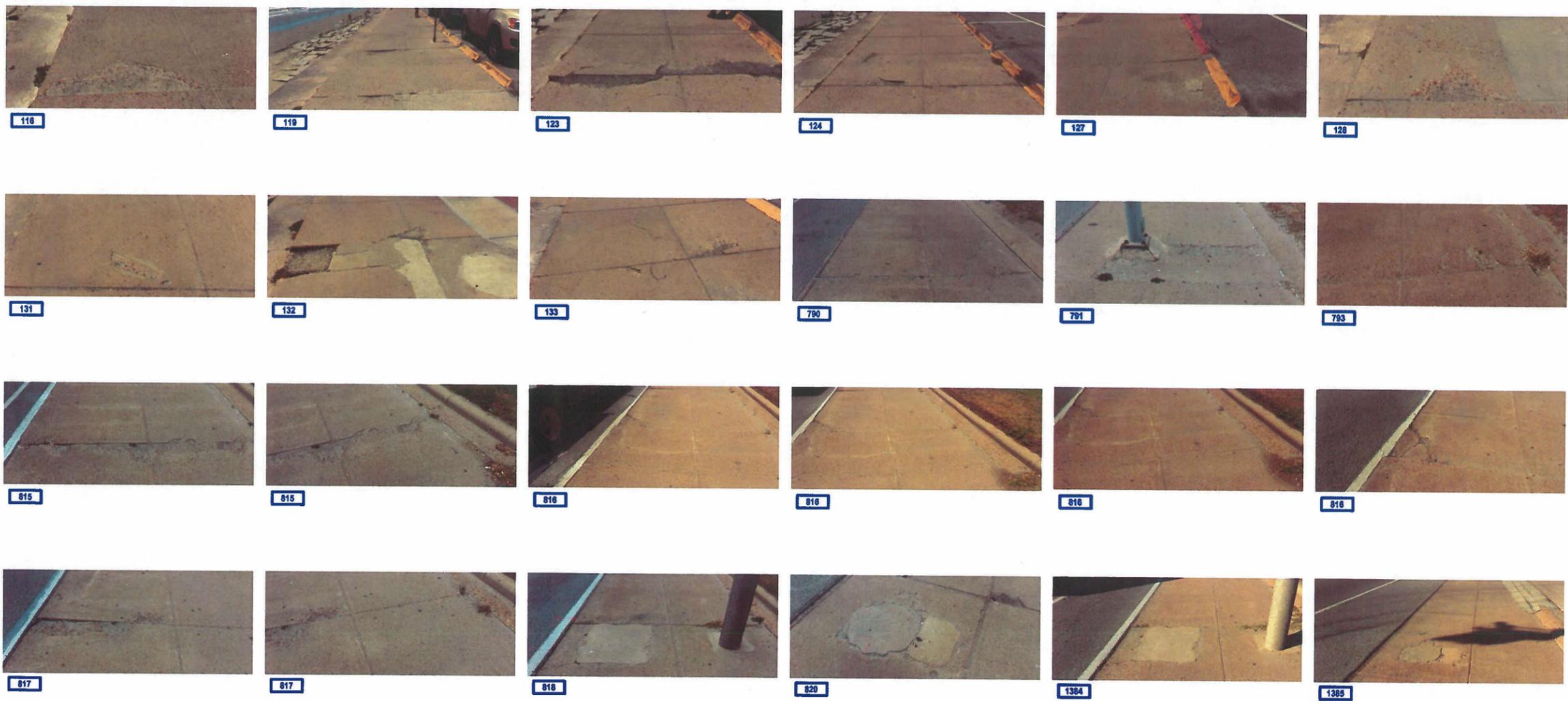


SEE SHEET 17 FOR CONTINUATION



- LEGEND**
- PARTIAL PANEL REPAIR
 - FULL PANEL REPAIR
 - ALTERNATE AREAS
 - SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

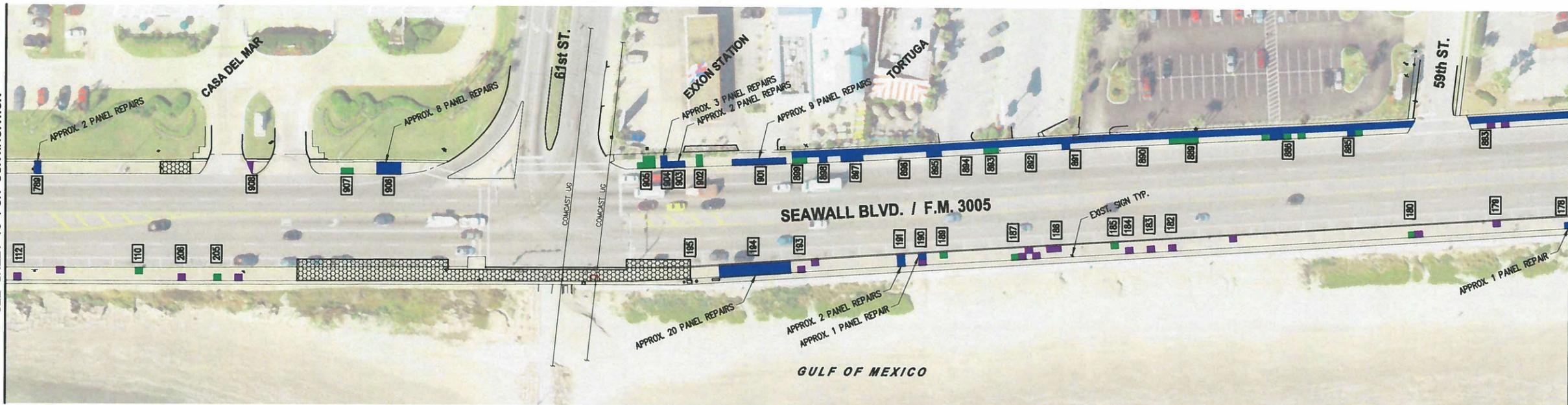
PROJECT LAYOUT 12

LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

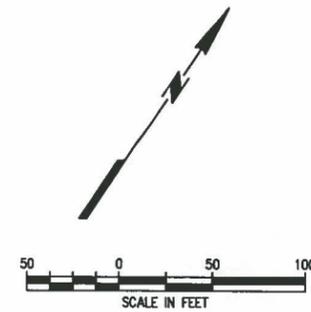
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 16 Of 44

H:\ACAD\Clients\384\1502 & 1503 Design\0384-1502&1503-16 LAYOUT SHEET 12.dwg (XREF: 0384-1502&1503 Border Base)

SEE SHEET 16 FOR CONTINUATION



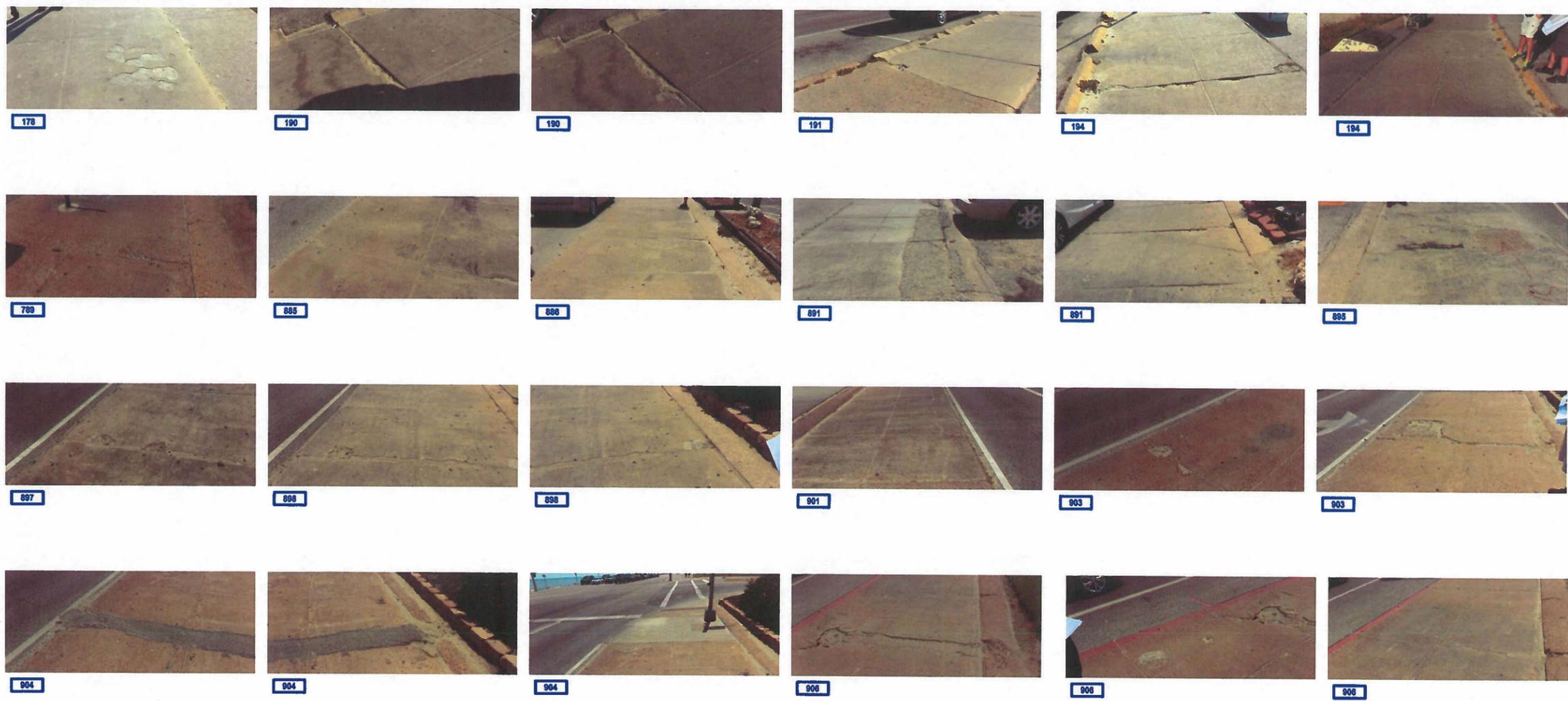
SEE SHEET 18 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

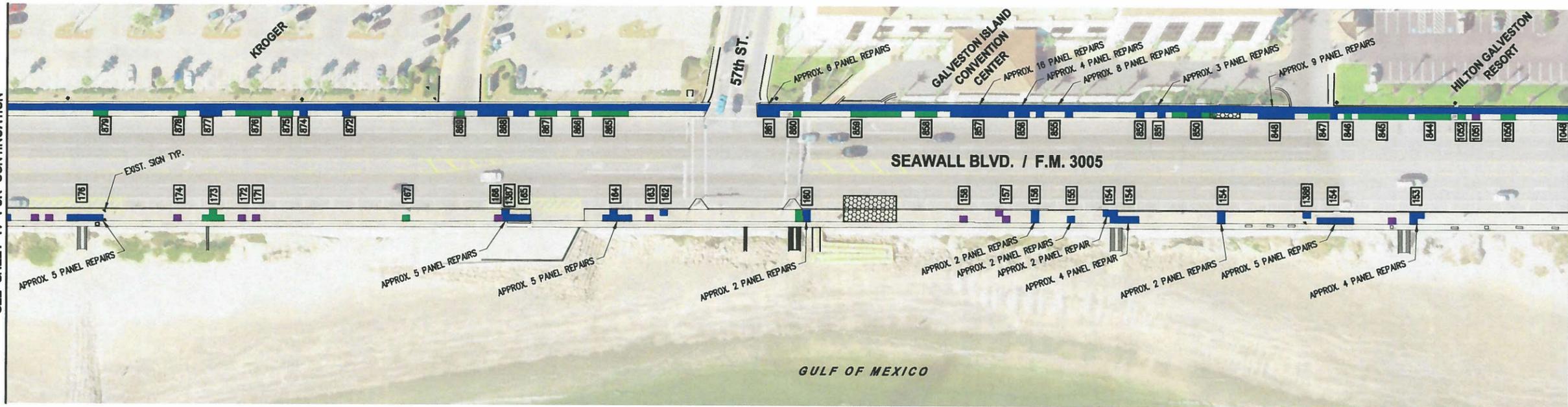
PROJECT LAYOUT 13

LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

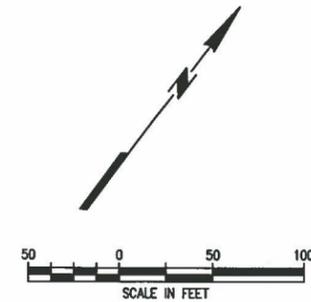
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 17 Of 44

H:\VACAD\Clients\1584\1502 & 1503\Design\0384-1502&1503-17 LAYOUT SHEET 13.dwg (REF: 0384-1502&1503 Border: Base1)

SEE SHEET 17 FOR CONTINUATION



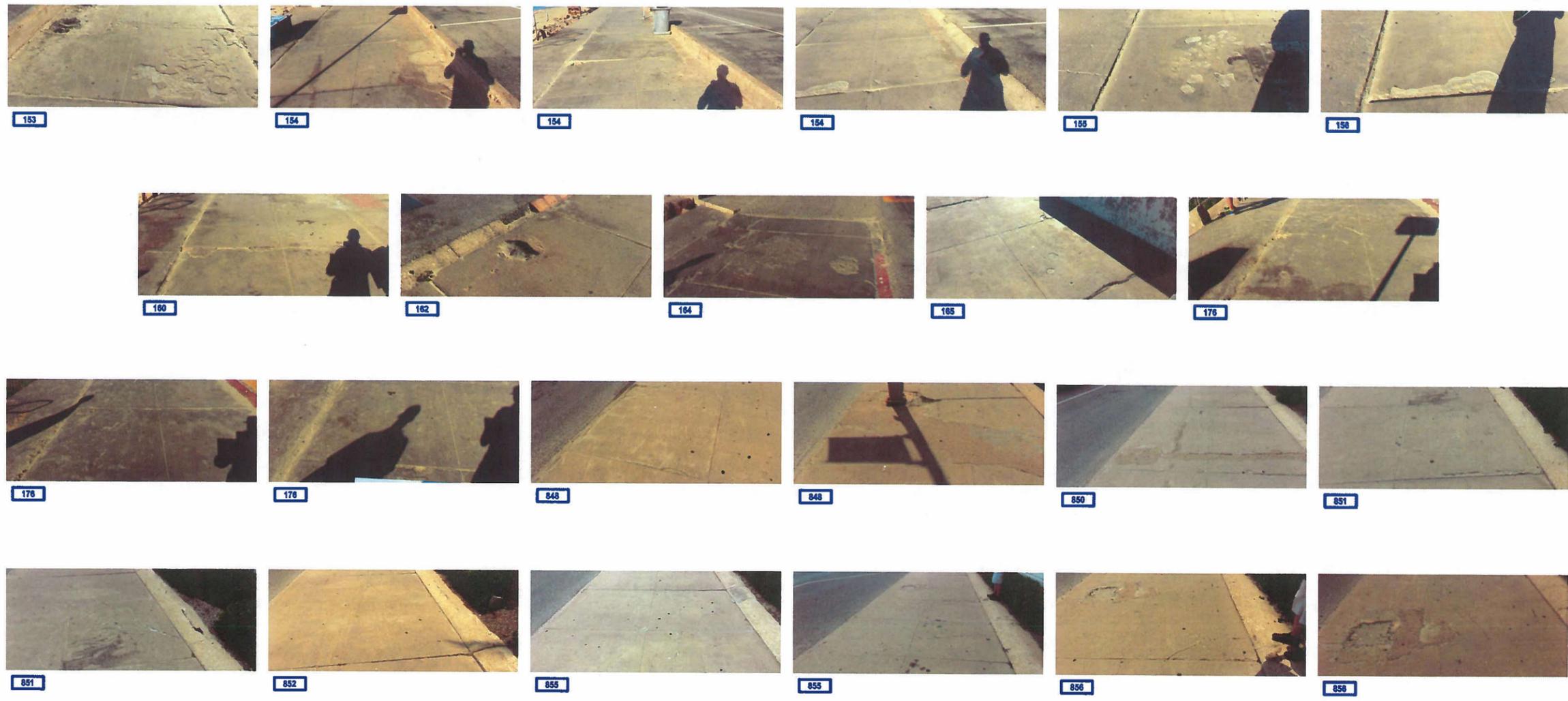
SEE SHEET 19 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date
GALVESTON COUNTY GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT				
PROJECT LAYOUT 14				
LJA Engineering, Inc.				
11821 East Freeway Suite 360 Houston, Texas 77029		Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388		
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503			
DRAWN: B.D.	DATE: OCTOBER, 2015			
CHECKED:	SCALE: 1"=50'			
APPROVED:	SHEET No. 18 Of 44			

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Mark E. Havran
 MARK E. HAVRAN
 118610
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

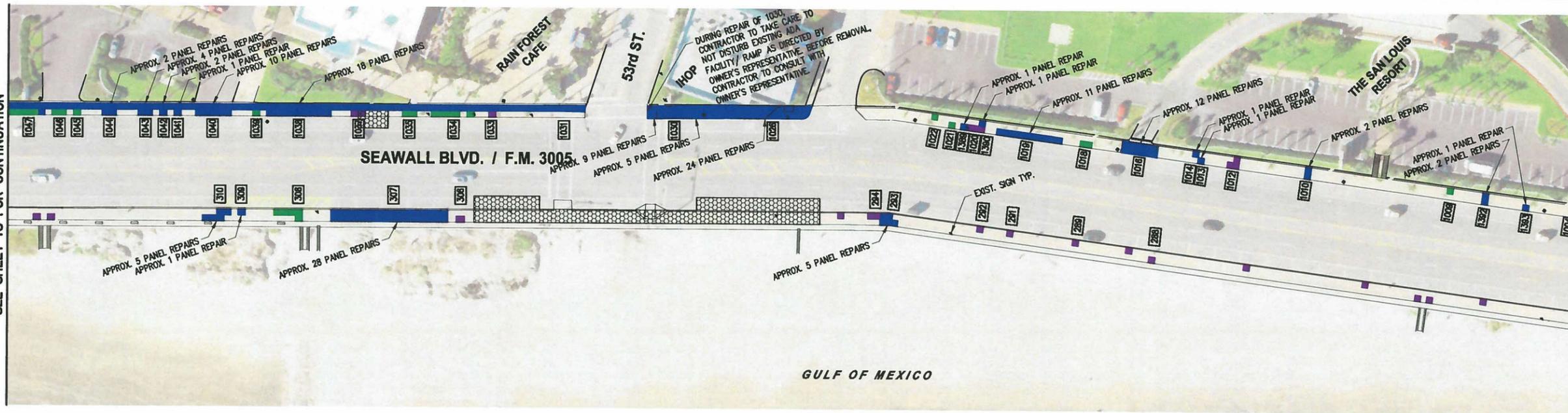
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT 14
 PHOTOS**

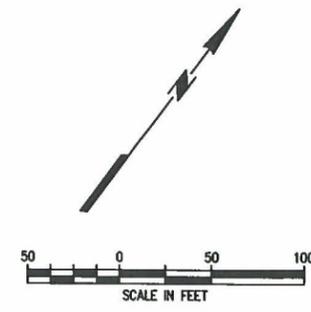
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 18A Of 44

SEE SHEET 18 FOR CONTINUATION



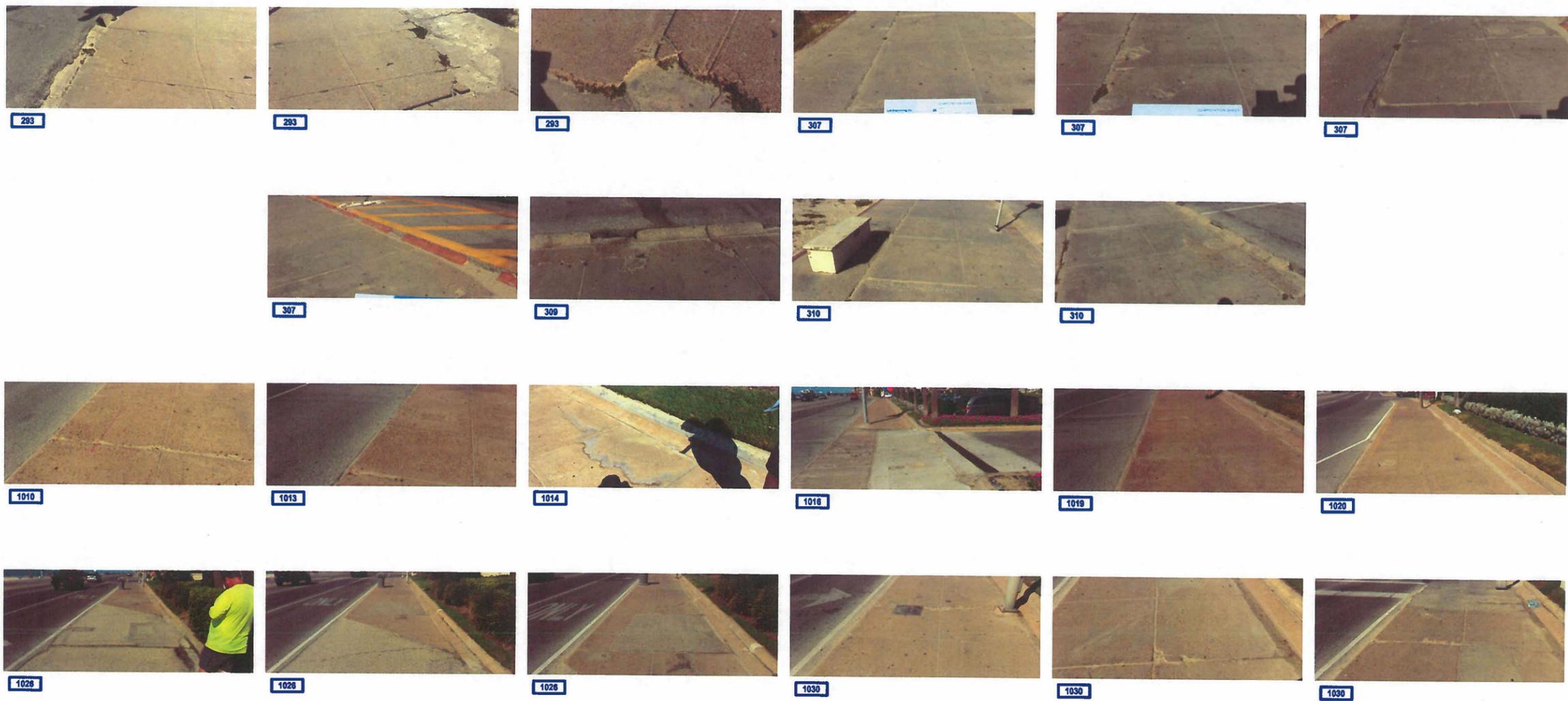
SEE SHEET 20 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



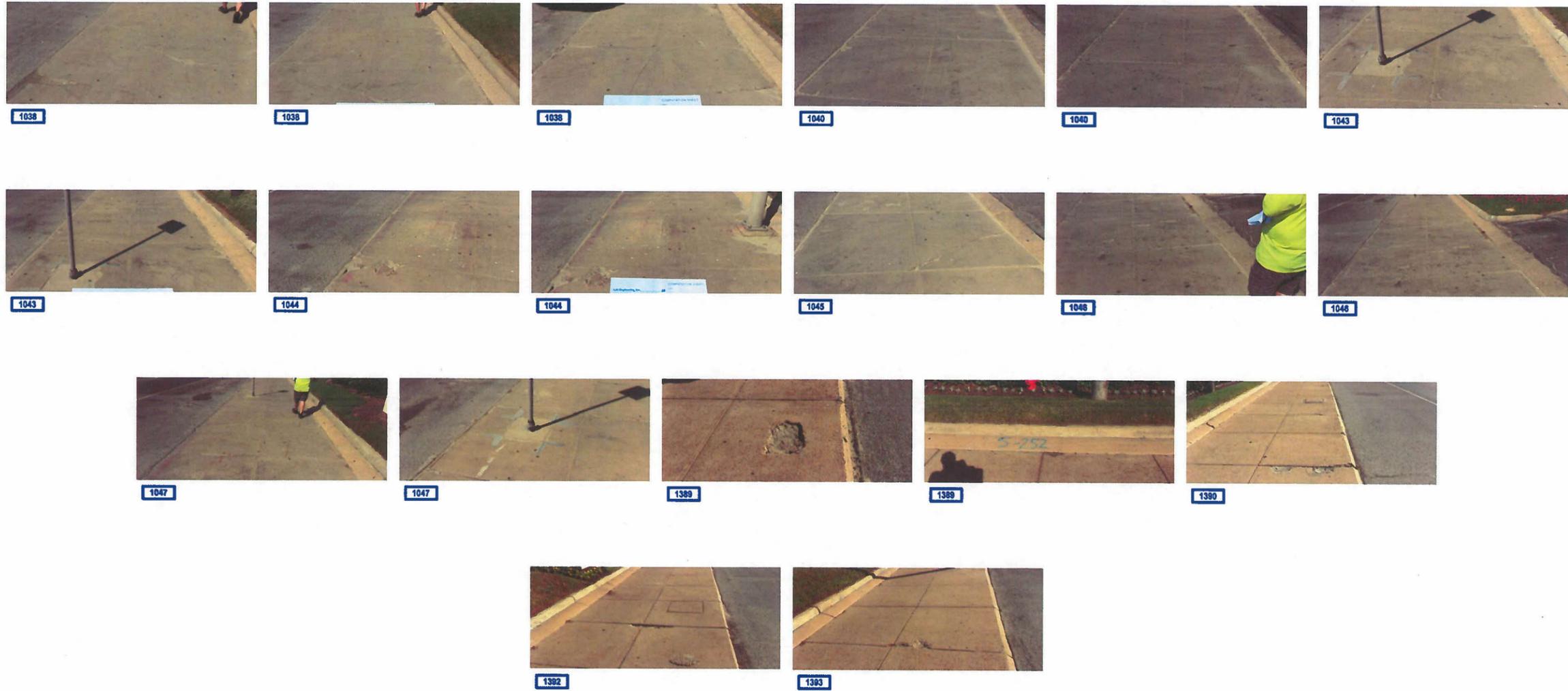
Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

PROJECT LAYOUT 15

LJA Engineering, Inc.
11821 East Freeway Suite 380 Houston, Texas 77029
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DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 19 Of 44



Mark E. Havran
 STATE OF TEXAS
 MARK E. HAVRAN
 118610
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

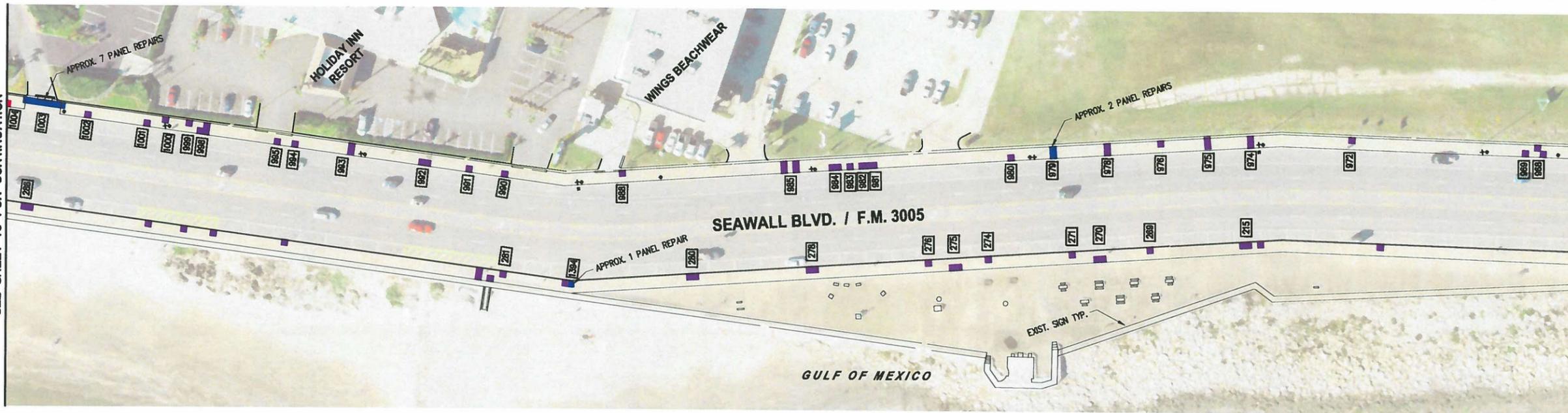
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT 15
 PHOTOS**

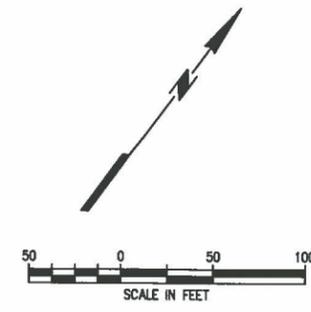
LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 19A Of 44

SEE SHEET 19 FOR CONTINUATION



SEE SHEET 21 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



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Mark E. Havran

 10-20-15

Revision	By	Chk.	Appr.	Date

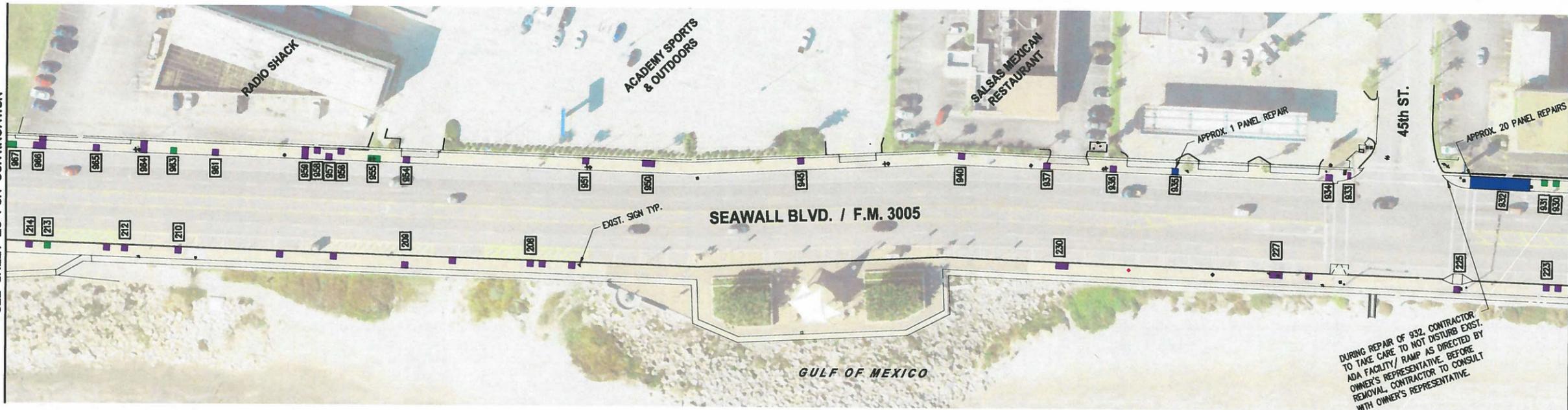
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 16

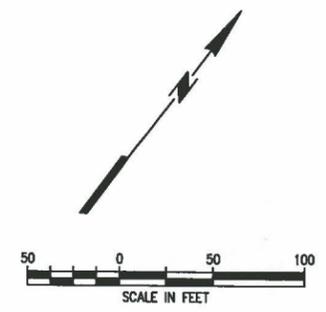
LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 20 Of 44

SEE SHEET 20 FOR CONTINUATION



SEE SHEET 22 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

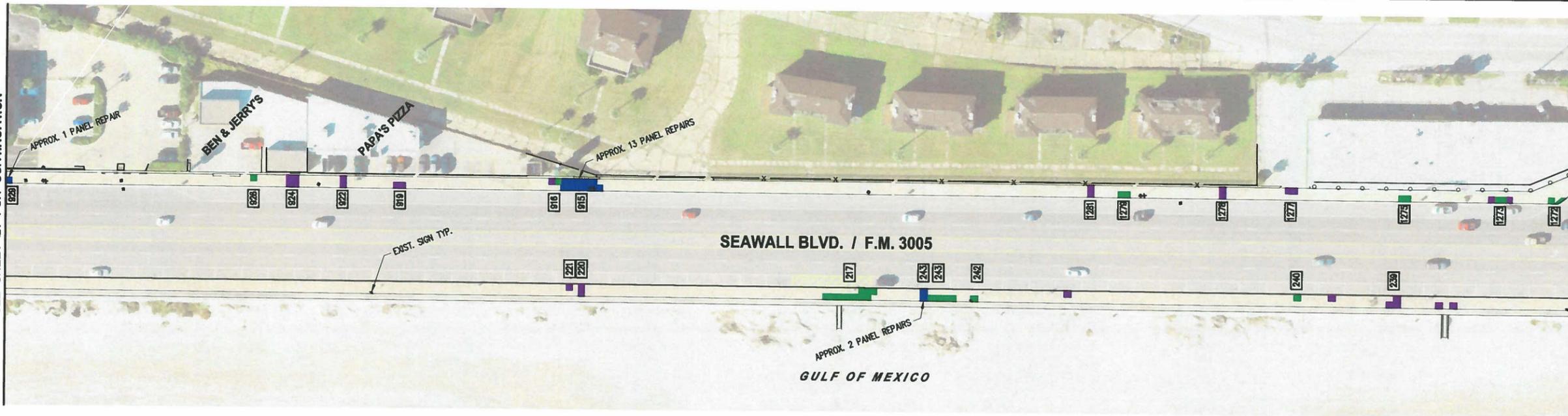
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 17

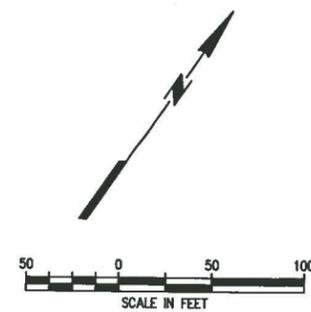
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
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DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 21 Of 44

SEE SHEET 21 FOR CONTINUATION



SEE SHEET 23 FOR CONTINUATION



- LEGEND**
- PARTIAL PANEL REPAIR
 - FULL PANEL REPAIR
 - ALTERNATE AREAS
 - SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

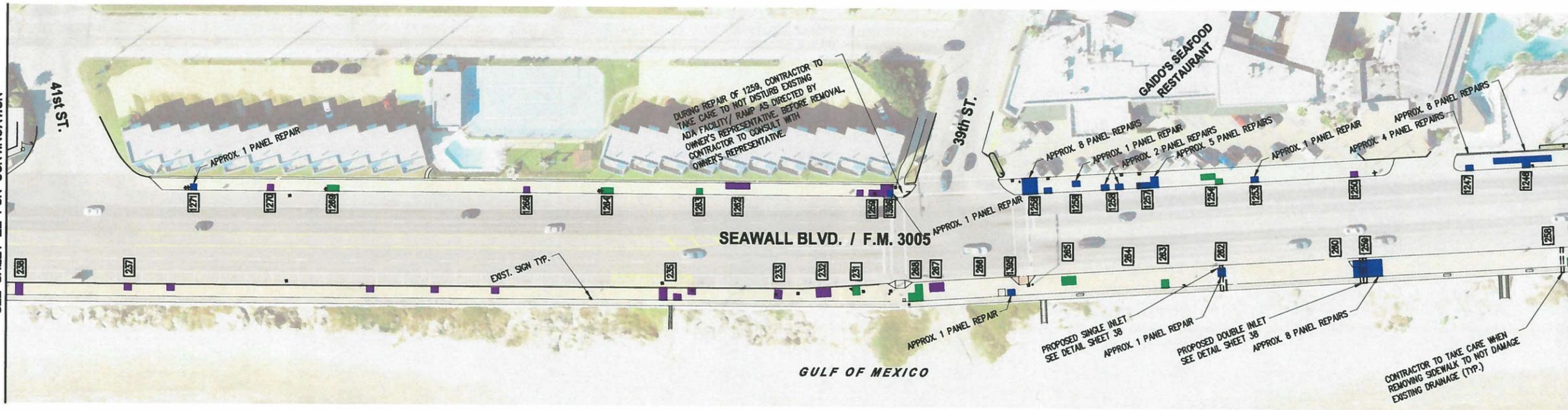
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 18

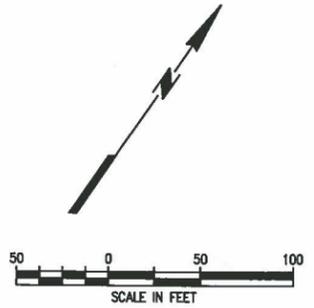
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 22 Of 44

SEE SHEET 22 FOR CONTINUATION



SEE SHEET 24 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
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CLEANING & SEALING JOINTS AND CRACKS NOTE:
 CONTRACTOR TO SEAL JOINTS AND CRACKS ALONG NORTHWEST SIDEWALK FROM FOUR POINTS HOTEL TO 22ND STREET AND ALONG SOUTHEAST SIDEWALK FROM 39TH TO 18TH STREET. CONTRACTOR TO VERIFY WHAT IS TO BE SEALED WITH OWNER'S REPRESENTATIVE BEFORE WORK IS PERFORMED.



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**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 19

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DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 23 Of 44



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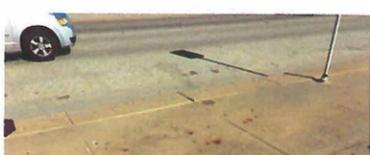
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Mark E. Hagan
 STATE OF TEXAS
 MARK E. HAGAN
 118810
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

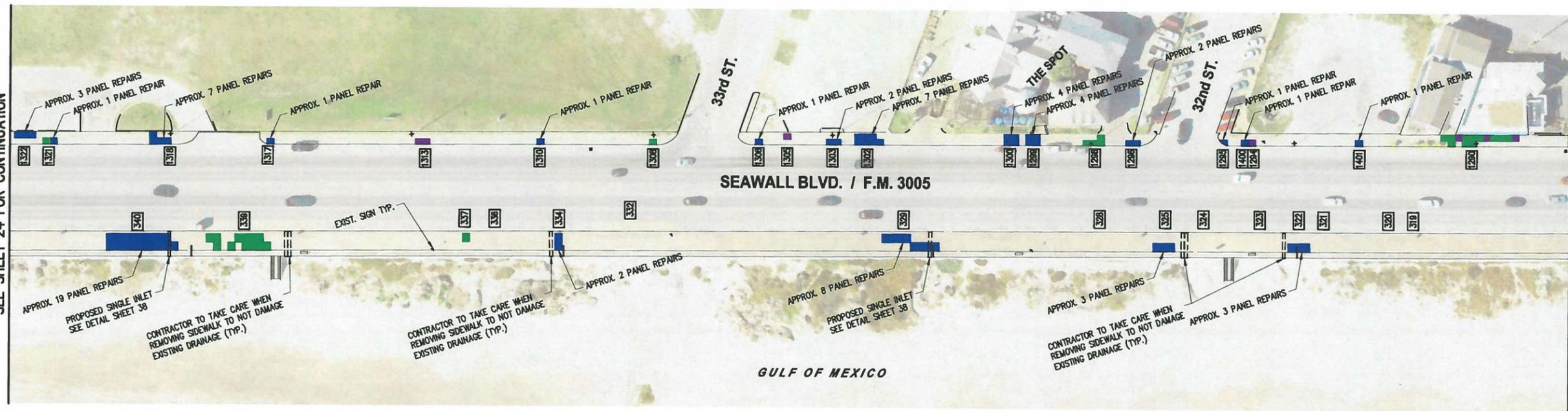
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT 20
 PHOTOS**

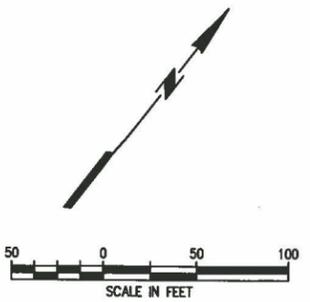
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 24A Of 44

SEE SHEET 24 FOR CONTINUATION



SEE SHEET 26 FOR CONTINUATION

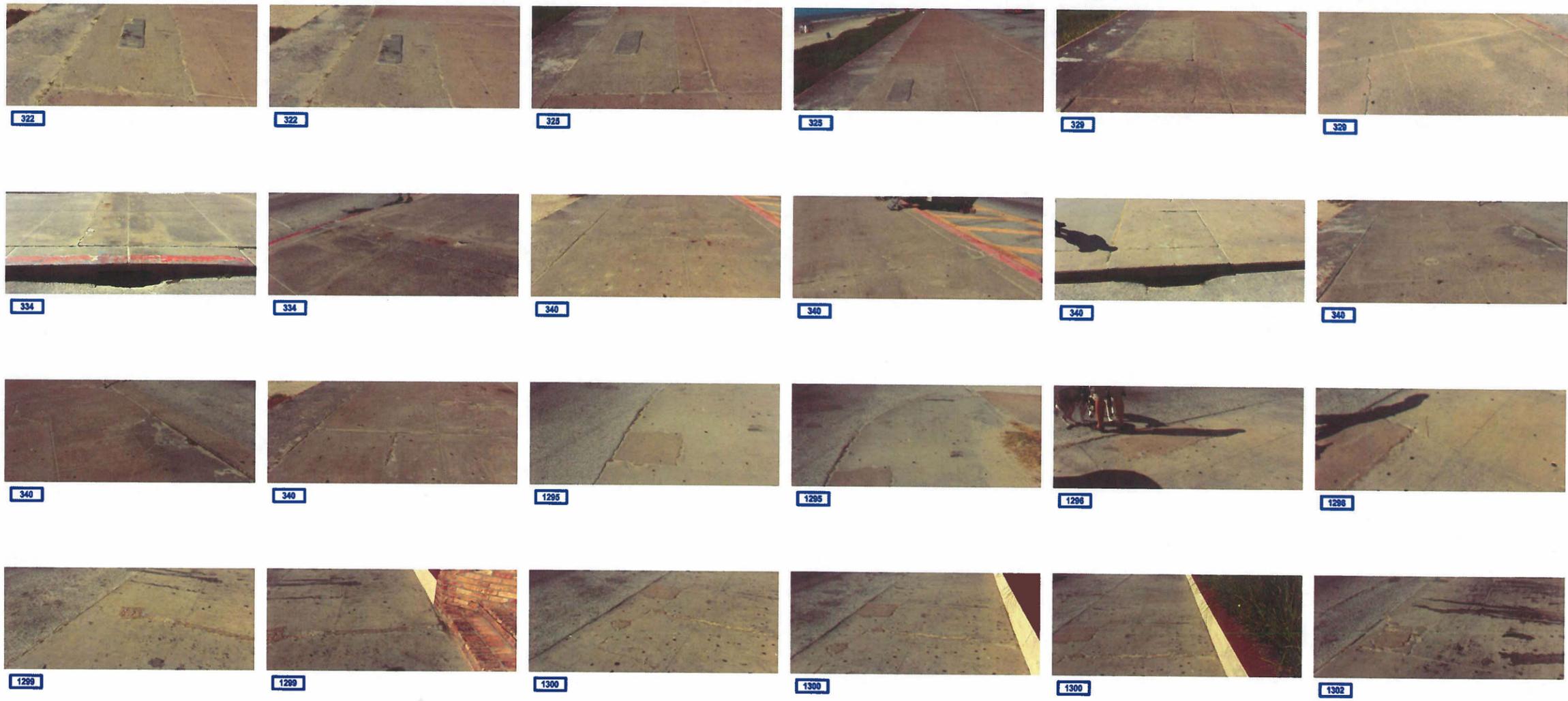


LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.

CLEANING & SEALING JOINTS AND CRACKS NOTE:
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Mark E. Havran

 MARK E. HAVRAN
 118610
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 21

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 11821 East Freeway Suite 360 Houston, Texas 77029
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DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 25 Of 44

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Mark E. Havran
 STATE OF TEXAS
 MARK E. HAVRAN
 11881U
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT 21
 PHOTOS**

LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
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DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 25A Of 44



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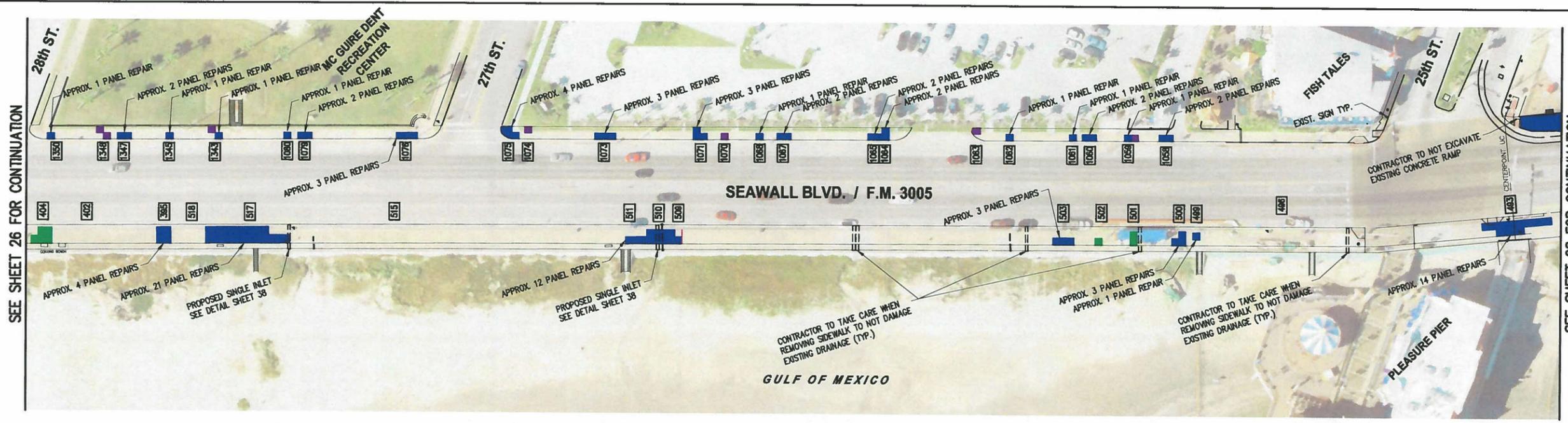
Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

**PROJECT LAYOUT 22
PHOTOS**

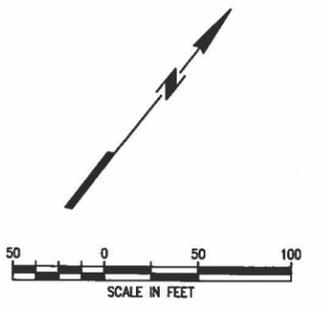
LJA Engineering, Inc.
11821 East Freeway Suite 360 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 26A Of 44



SEE SHEET 26 FOR CONTINUATION

SEE SHEET 28 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
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Mark E. Havran

 10-20-15



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

PROJECT LAYOUT 23

LJA Engineering, Inc.
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 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 27 Of 44



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Revision	By	Chk.	Appr.	Date

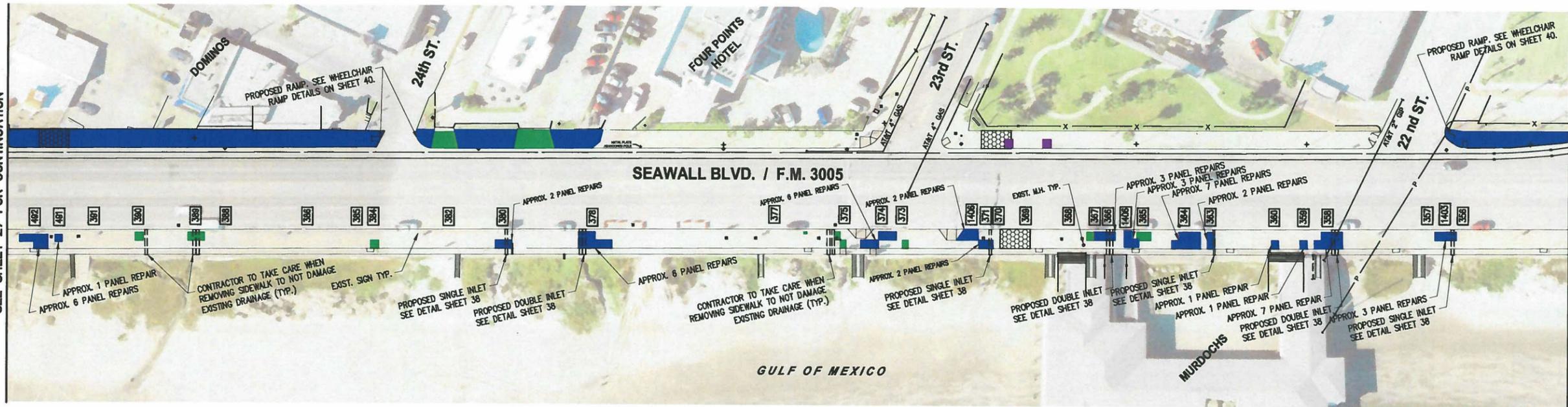
**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

**PROJECT LAYOUT 23
PHOTOS**

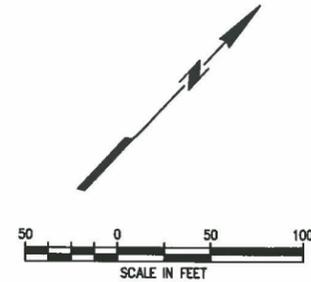
LJA Engineering, Inc.
11821 East Freeway Suite 360 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
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APPROVED:	SHEET No. 27A Of 44

SEE SHEET 27 FOR CONTINUATION



SEE SHEET 29 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
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Revision	By	Chk.	Appr.	Date

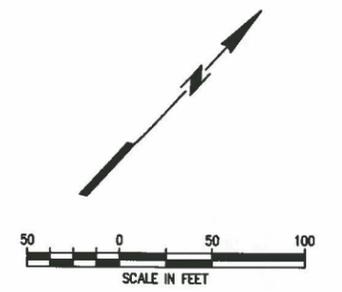
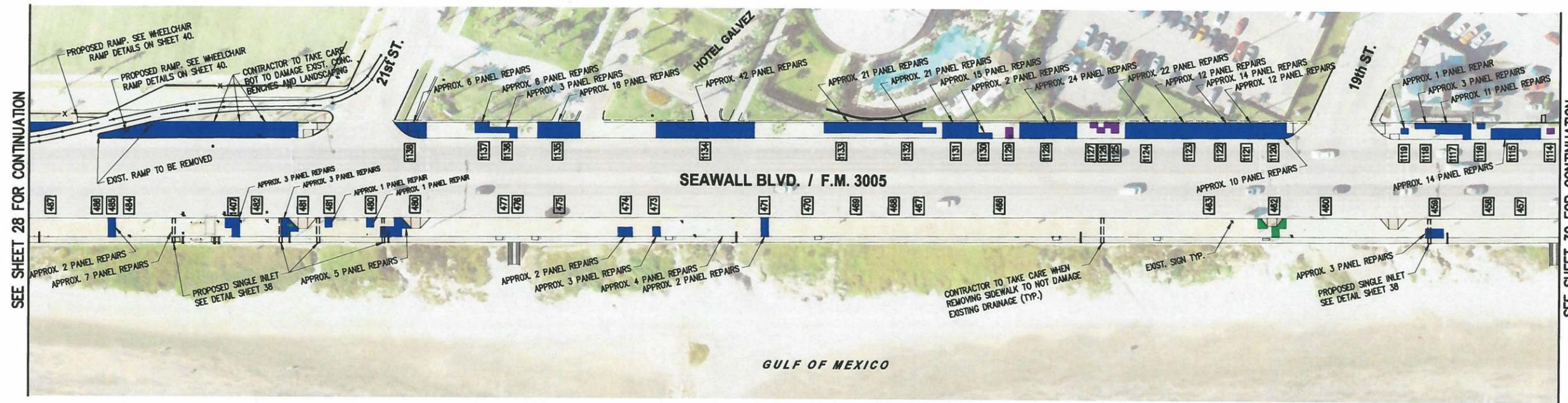
**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

PROJECT LAYOUT 24

LJA Engineering, Inc.
11821 East Freeway Suite 300 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 28 Of 44

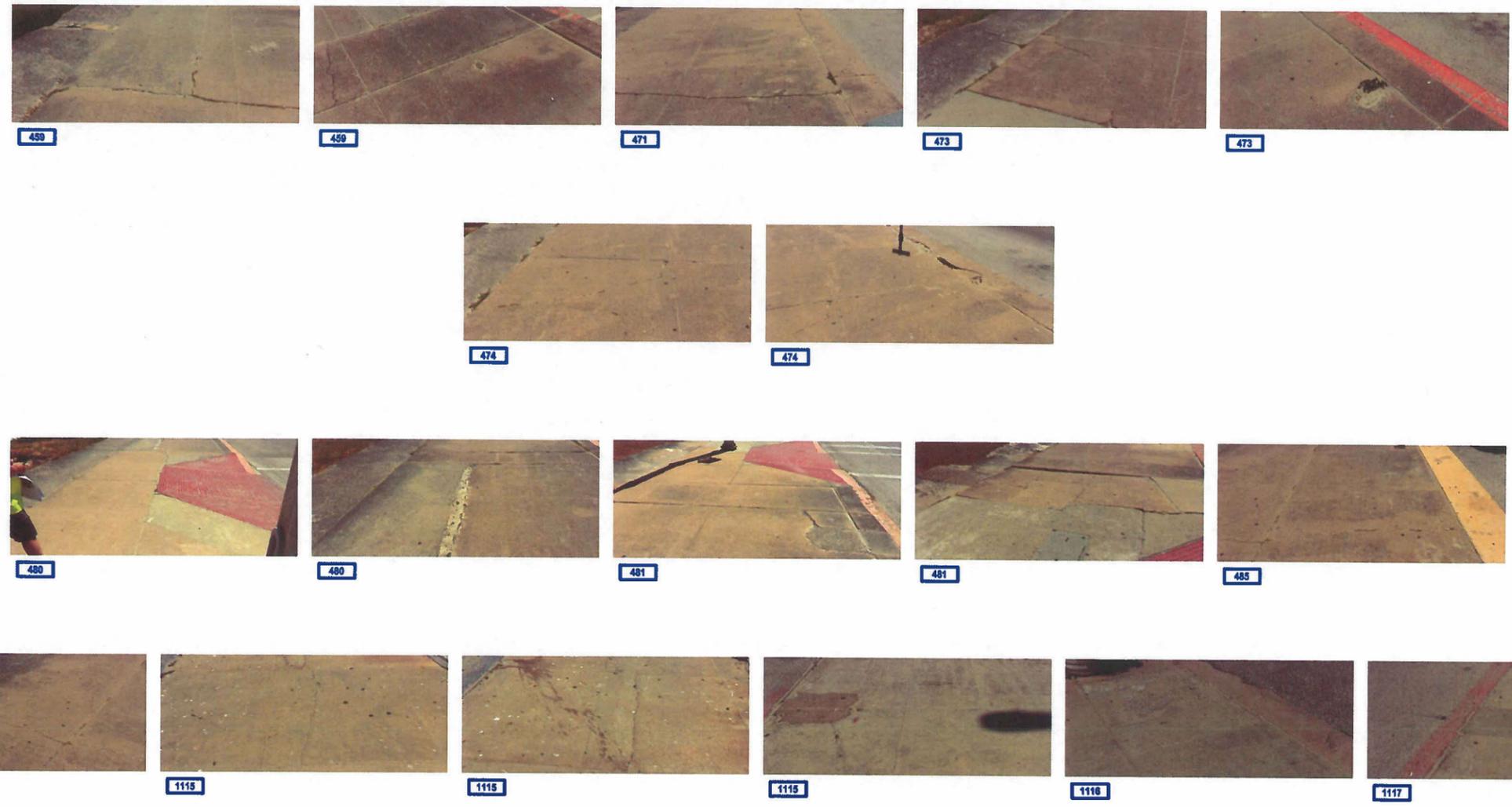
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- LEGEND**
- PARTIAL PANEL REPAIR
 - FULL PANEL REPAIR
 - ALTERNATE AREAS
 - SITE IMPROVEMENTS BY OTHERS

NOTE:
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Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

PROJECT LAYOUT 25

LJA Engineering, Inc.
11821 East Freeway Phone 713.450.1300
Suite 380 Fax 713.450.1385
Houston, Texas 77029 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 29 Of 44

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Mark E. Hairan
 STATE OF TEXAS
 MARK E. HAIRAN
 118810
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

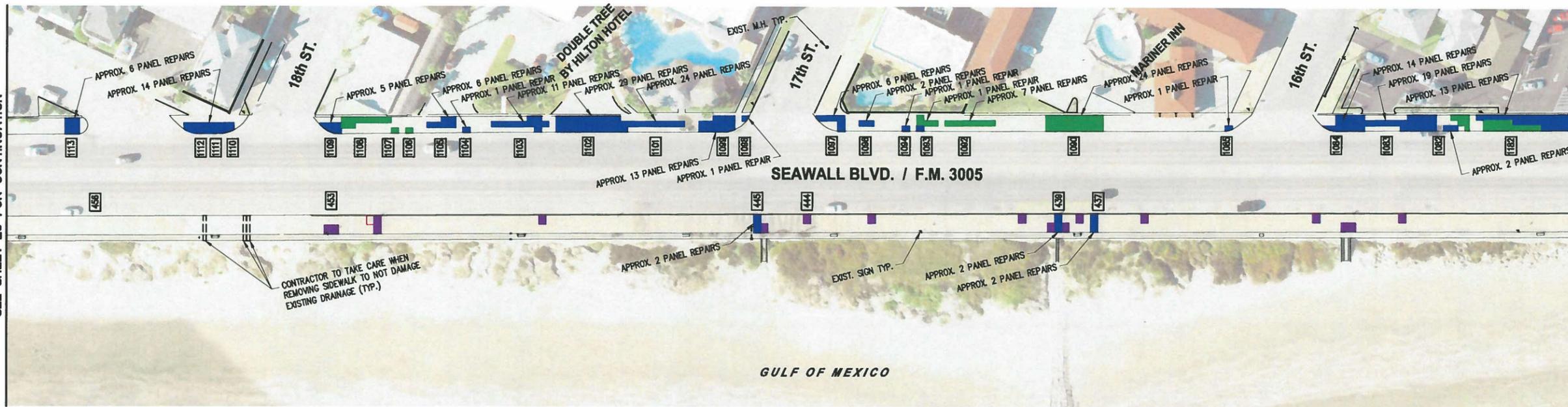
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT 25
 PHOTOS**

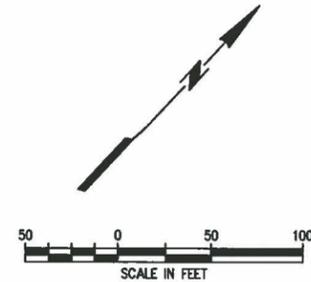
LJA Engineering, Inc.
 11821 East Freeway Phone 713.450.1300
 Suite 360 Fax 713.450.1385
 Houston, Texas 77029 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 29A Of 44

SEE SHEET 29 FOR CONTINUATION



SEE SHEET 31 FOR CONTINUATION

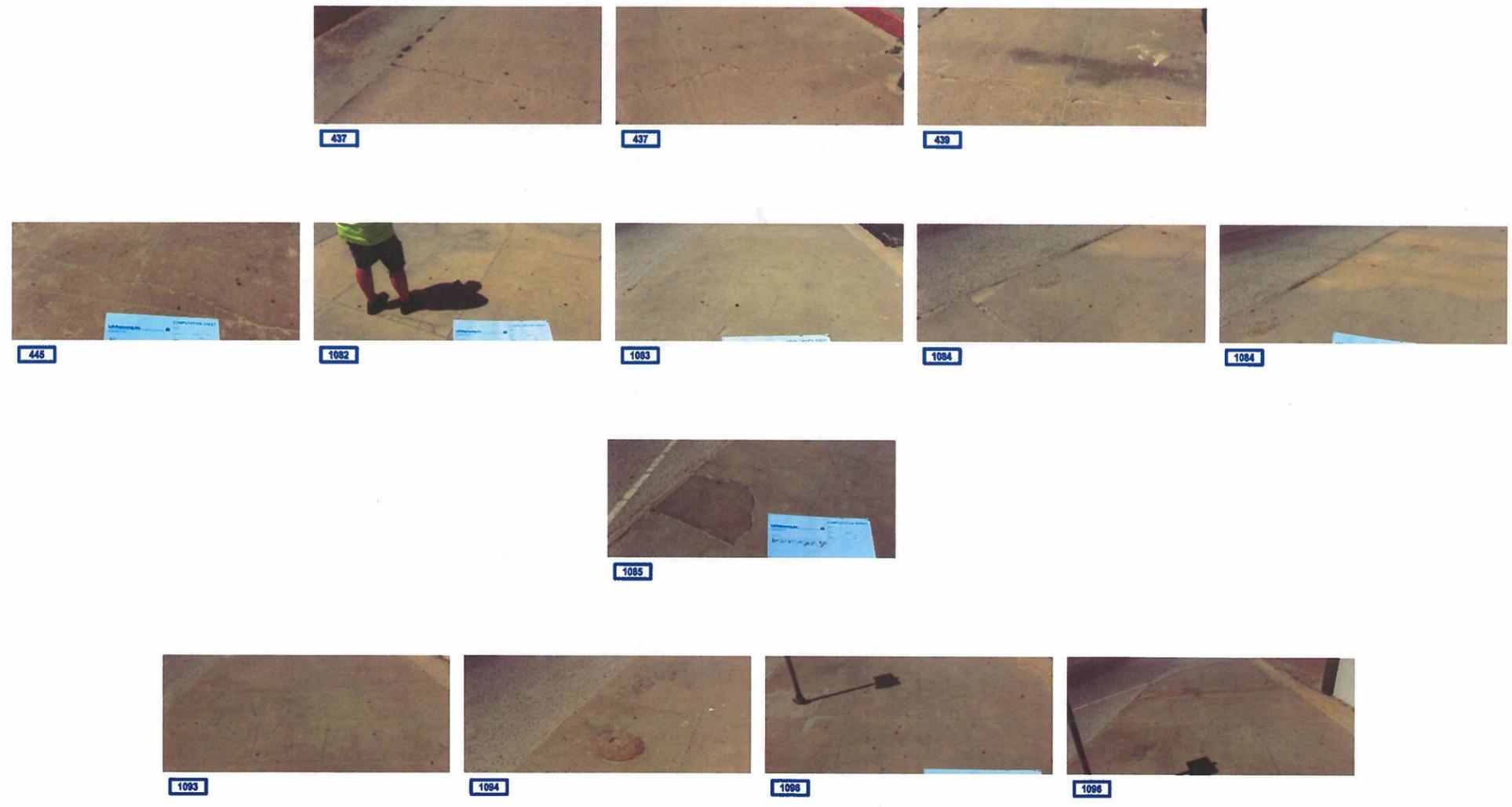


LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.

CLEANING & SEALING JOINTS AND CRACKS NOTE:
CONTRACTOR TO SEAL JOINTS AND CRACKS ALONG NORTHWEST SIDEWALK FROM FOUR POINTS HOTEL TO 22ND STREET AND ALONG SOUTHEAST SIDEWALK FROM 39TH TO 18TH STREET. CONTRACTOR TO VERIFY WHAT IS TO BE SEALED WITH OWNER'S REPRESENTATIVE BEFORE WORK IS PERFORMED.



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

PROJECT LAYOUT 26

LJA Engineering, Inc.
11821 East Freeway Suite 360 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 30 Of 44

H:\ACAD\Clients\1502 & 1503\Design\0384-1502&1503-30_LAYOUT_SHEET_26.dwg (REF: 0384-1502&1503 Border: Brown)



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Mark E. Hauran
 STATE OF TEXAS
 MARK E. HAURAN
 118810
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

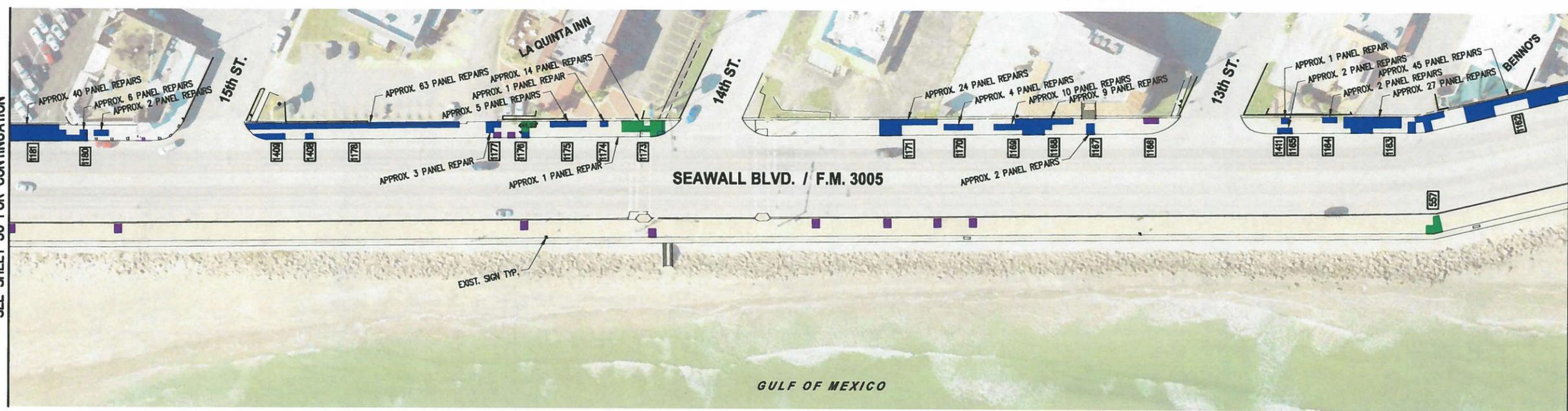
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT 26
 PHOTOS**

LJA Engineering, Inc.
 11821 East Freeway Phone 713.450.1300
 Suite 360 Fax 713.450.1385
 Houston, Texas 77029 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 30A Of 44

SEE SHEET 30 FOR CONTINUATION

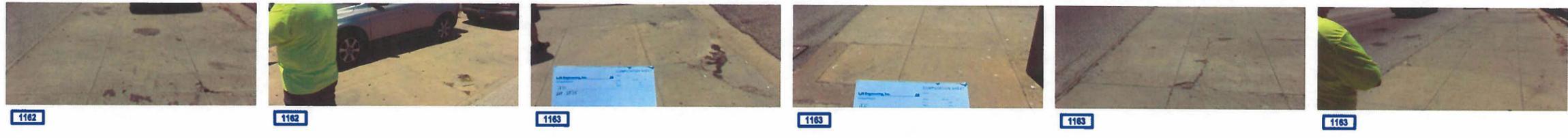


SEE SHEET 32 FOR CONTINUATION

LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

PROJECT LAYOUT 27

LJA Engineering, Inc.
11821 East Freeway Suite 380 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 31 Of 44



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1411

Mark E. Hanrahan
 STATE OF TEXAS
 MARK E. HANRAHAN
 118810
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

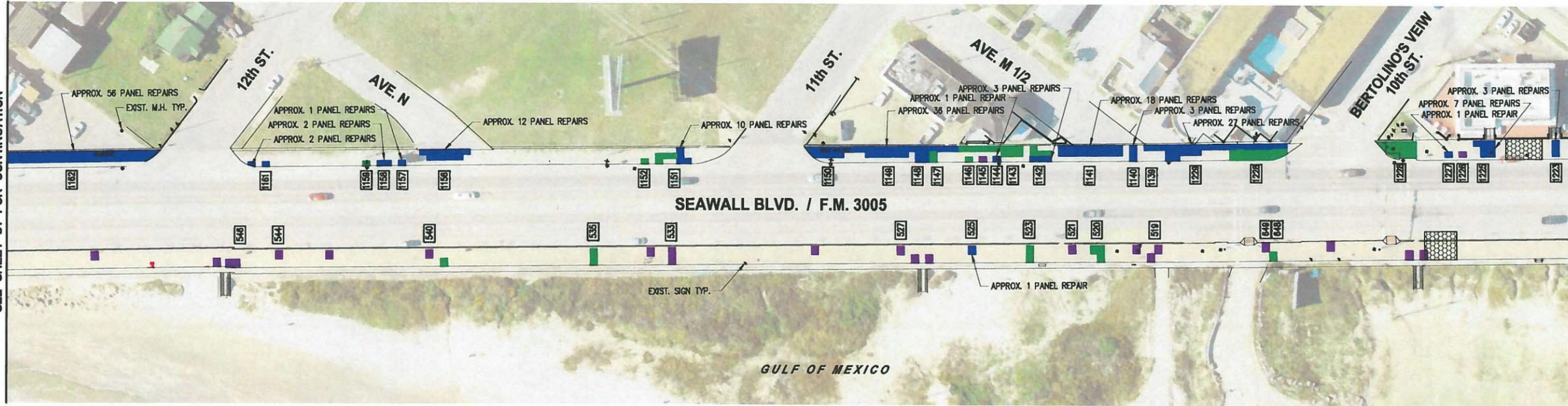
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

**PROJECT LAYOUT 27
 PHOTOS**

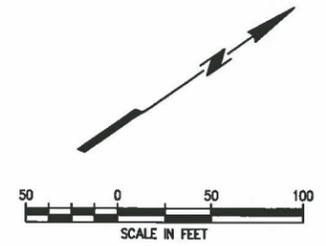
LJA Engineering, Inc.
 11821 East Freeway Phone 713.450.1300
 Suite 360 Fax 713.450.1385
 Houston, Texas 77029 FRN - F-1386

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 31A Of 44

SEE SHEET 31 FOR CONTINUATION



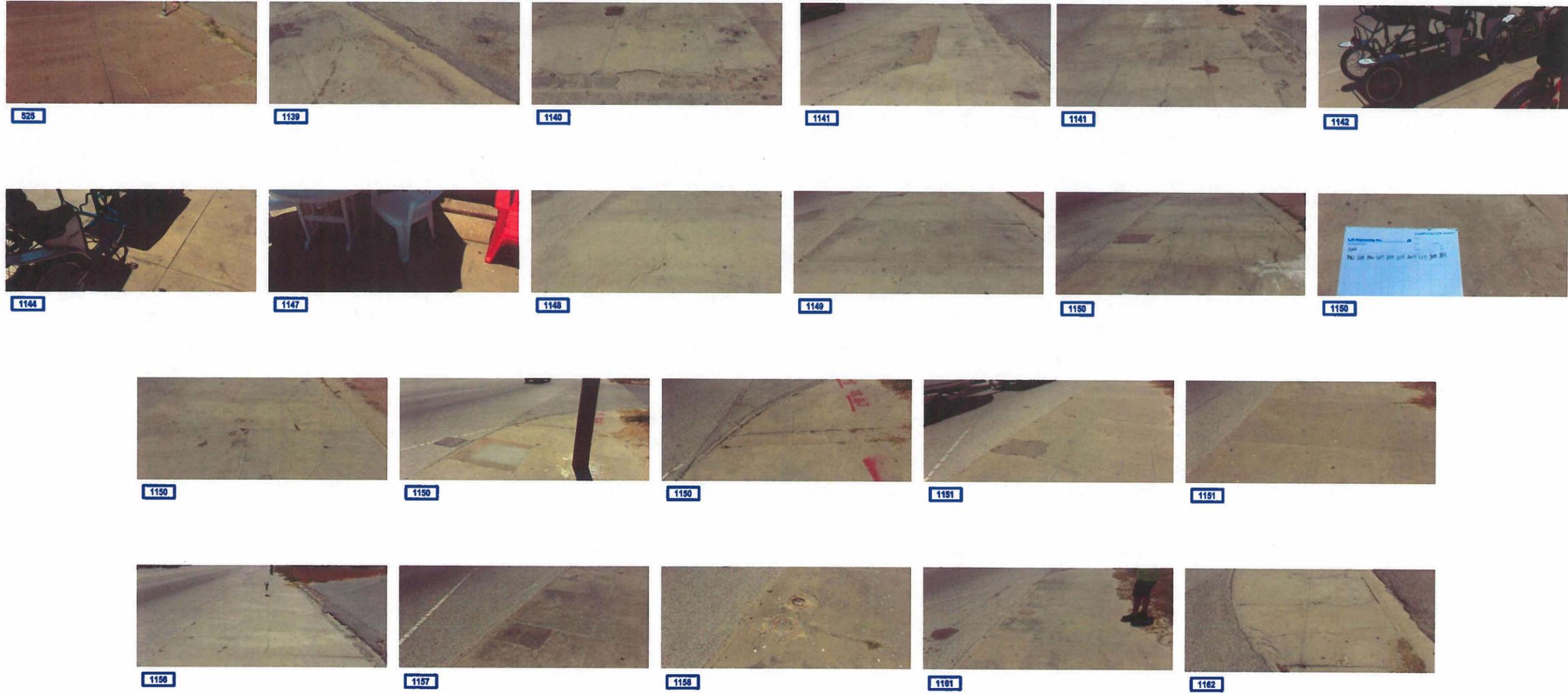
SEE SHEET 33 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 28

LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 32 Of 44

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Mark E. Hairman
 STATE OF TEXAS
 MARK E. HAIRMAN
 118610
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

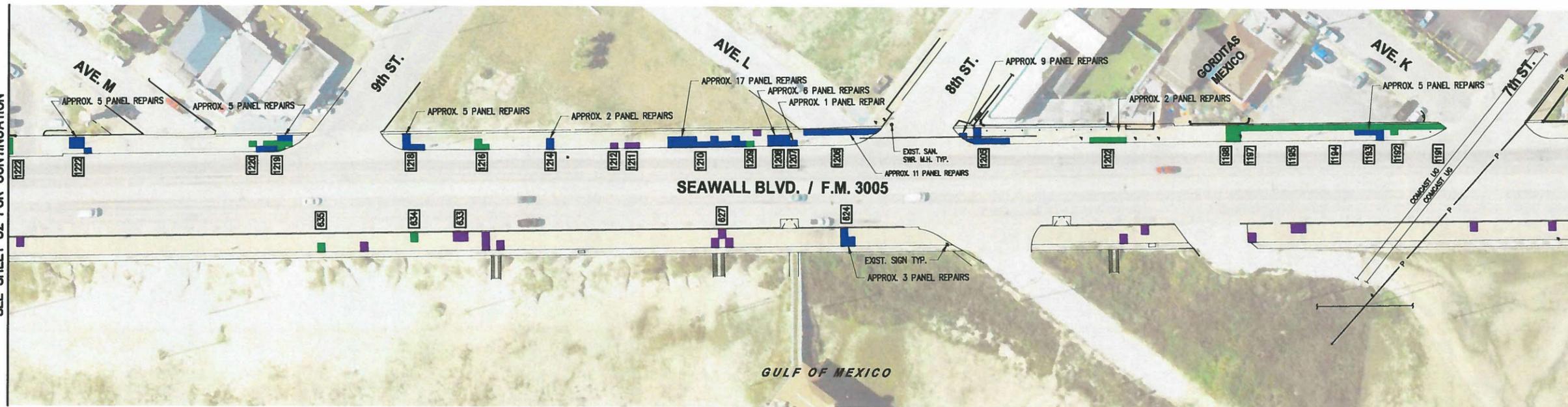
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 28

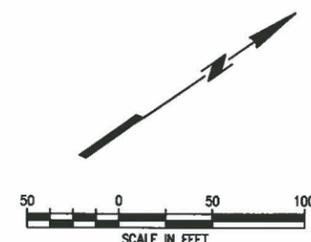
LJA Engineering, Inc.
 11821 East Freeway Phone 713.450.1300
 Suite 360 Fax 713.450.1385
 Houston, Texas 77029 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 32A Of 44

SEE SHEET 32 FOR CONTINUATION



SEE SHEET 34 FOR CONTINUATION



- LEGEND**
- PARTIAL PANEL REPAIR
 - FULL PANEL REPAIR
 - ALTERNATE AREAS
 - SITE IMPROVEMENTS BY OTHERS

NOTE:
CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Mark E. Harkin

 MARK E. HARKIN
 LICENSED PROFESSIONAL ENGINEER
 10-20-15

Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

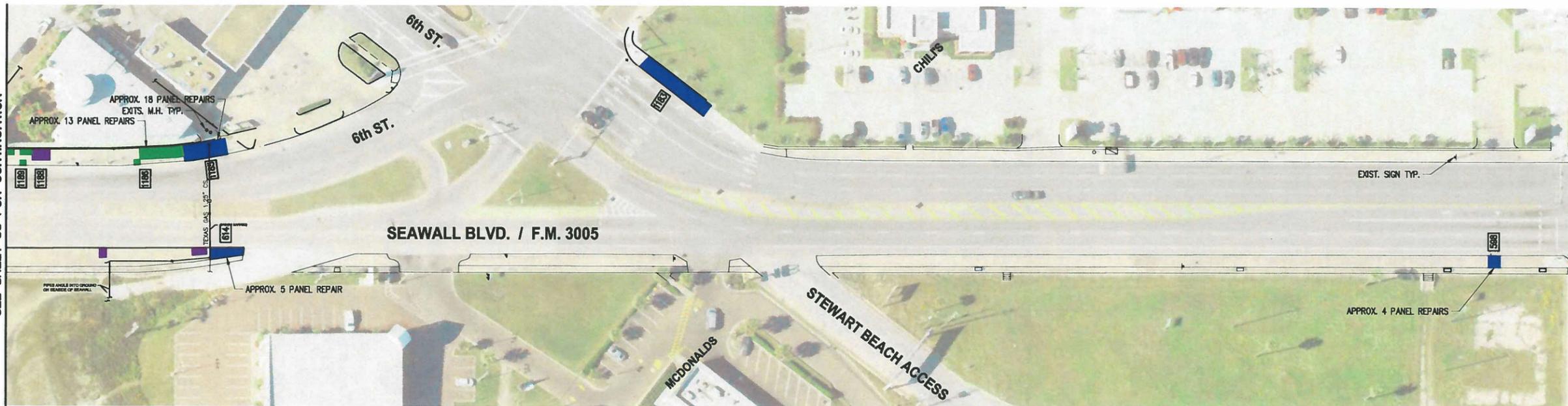
PROJECT LAYOUT 29

LJA Engineering, Inc.
 11821 East Freeway Suite 380 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

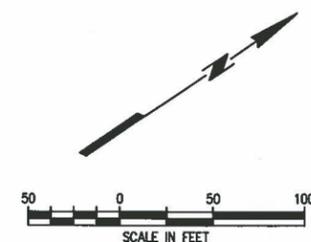
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 33 Of 44

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SEE SHEET 33 FOR CONTINUATION



SEE SHEET 35 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



Revision	By	Chk.	Appr.	Date

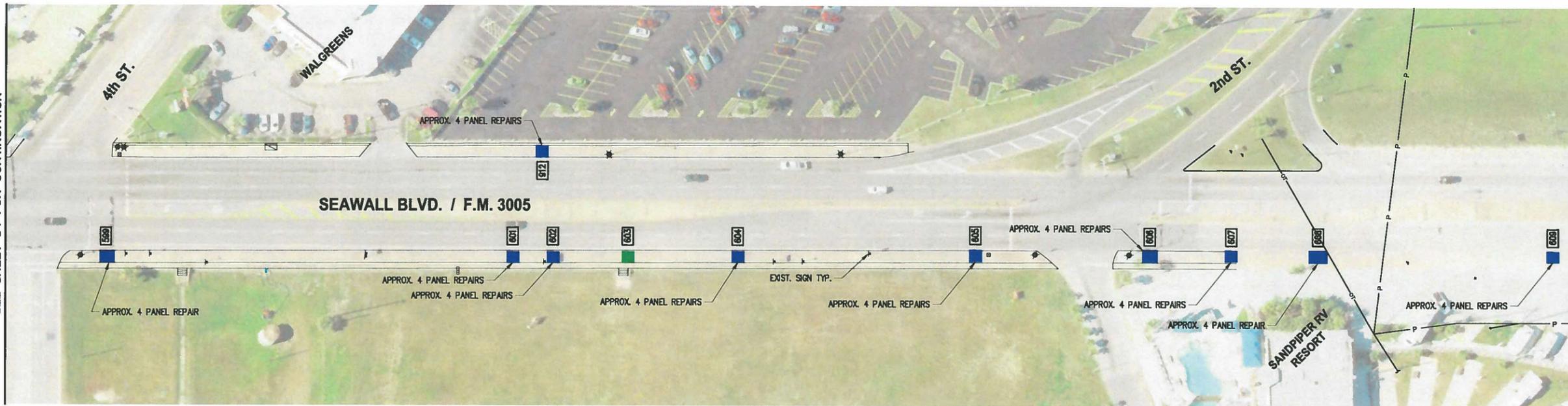
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 30

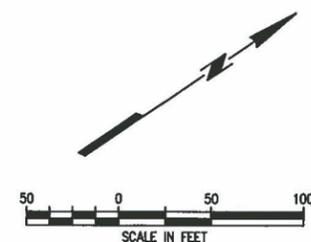
LJA Engineering, Inc.
 11821 East Freeway Suite 360 Houston, Texas 77029
 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 34 Of 44

SEE SHEET 34 FOR CONTINUATION



SEE SHEET 36 FOR CONTINUATION



LEGEND

- PARTIAL PANEL REPAIR
- FULL PANEL REPAIR
- ALTERNATE AREAS
- SITE IMPROVEMENTS BY OTHERS

NOTE:
 CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



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Revision	By	Chk.	Appr.	Date

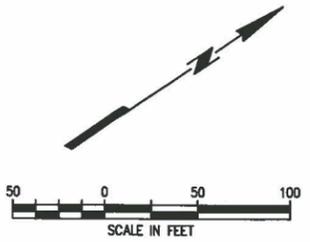
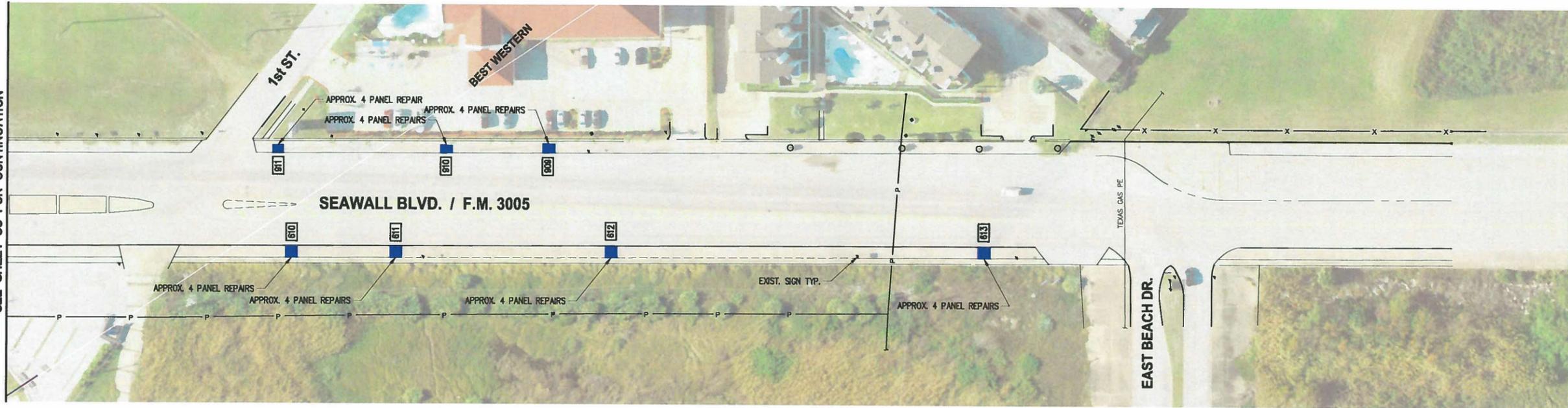
**GALVESTON COUNTY
 GALVESTON SEAWALL ENDCAP
 REPAIR & REPLACEMENT**

PROJECT LAYOUT 31

LJA Engineering, Inc.
 11821 East Freeway Phone 713.450.1300
 Suite 360 Fax 713.450.1385
 Houston, Texas 77029 FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 35 Of 44

SEE SHEET 35 FOR CONTINUATION



- LEGEND**
- PARTIAL PANEL REPAIR
 - FULL PANEL REPAIR
 - ALTERNATE AREAS
 - SITE IMPROVEMENTS BY OTHERS

NOTE:
CONTRACTOR SHALL MARK EVERY PANEL BEFORE ANY SAW-CUTTING OR EXCAVATION BEGINS AND APPROVE THE PANEL WITH OWNER'S REPRESENTATIVE.



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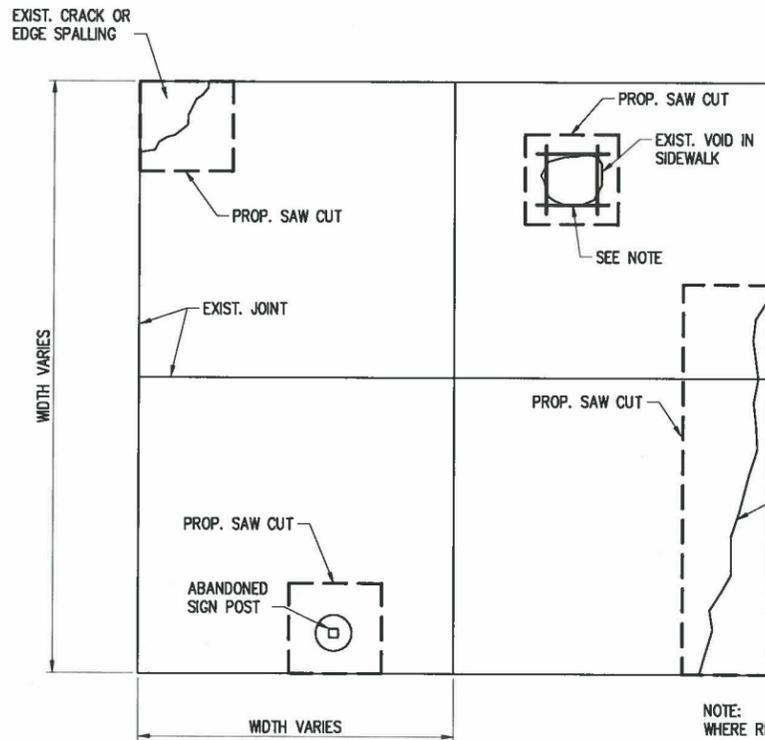
Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

PROJECT LAYOUT 32

LJA Engineering, Inc.
11821 East Freeway Suite 360 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

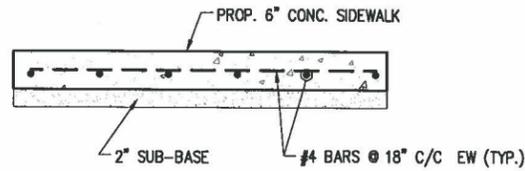
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DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: 1"=50'
APPROVED:	SHEET No. 36 Of 44



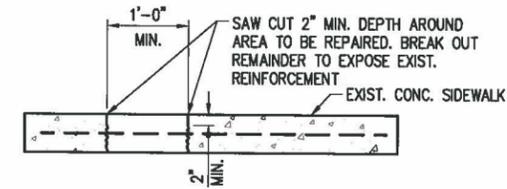
TYPICAL SIDEWALK PAVEMENT REPAIRS

NOTE:
WHERE REBAR CANNOT BE EXPOSED OR DOWELED INTO PAVEMENT, CONTRACTOR SHALL PLACE A GRID OF #4 REBARS ON SYMMETRICAL CENTERS (SPACING VARIES) AS DIRECTED BY OWNER'S REPRESENTATIVE (NO EXTRA PAY).

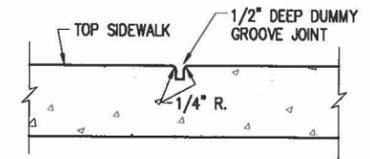
NOTE:
ON ALL FULL PANEL REPAIRS CONTRACTOR SHALL DOWEL INTO EXISTING SIDEWALK WITH NO. 4 REBARS AT 24" C-C DOWELED IN AND SET WITH EPOXY GROUT A MINIMUM OF 15" DEPTH.



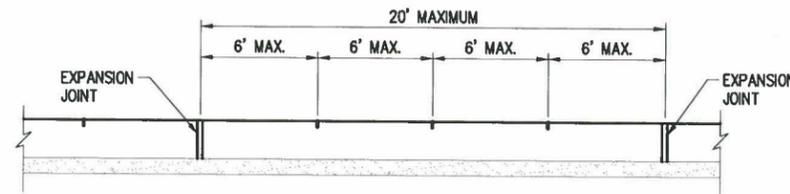
SIDEWALK DETAIL



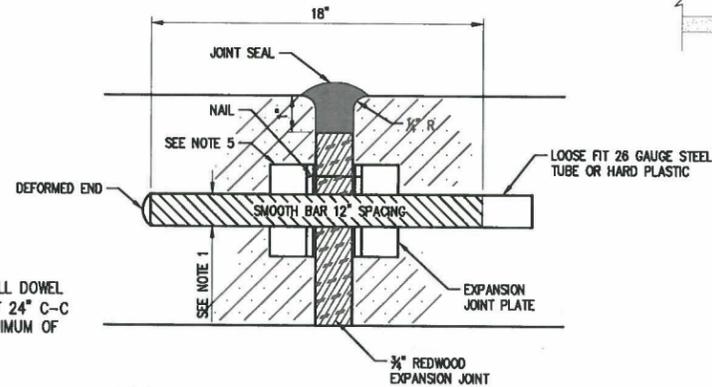
SIDEWALK SAWCUT DETAIL



SCORED DUMMY GROOVE JOINT



JOINT SPACING DETAIL



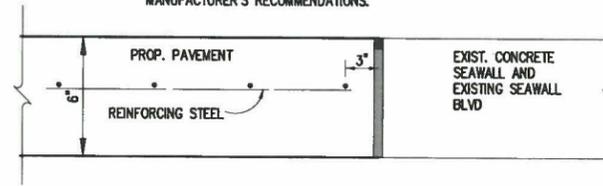
EXPANSION JOINT DETAIL

N.T.S.

NOTES:

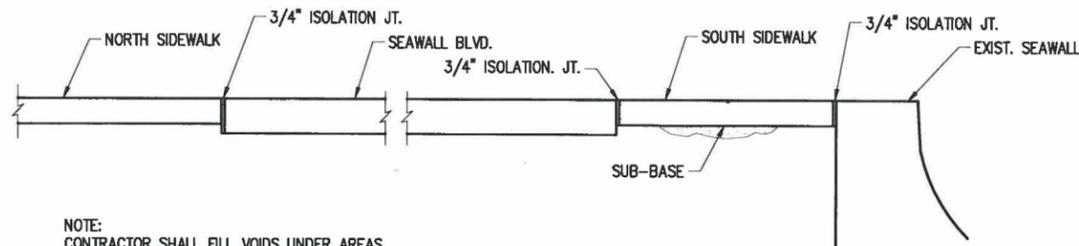
1. DOWELS FOR PAVEMENT EXPANSION SHALL BE 3/8" Ø FOR 6" TO LESS THAN 7" PAVEMENT THICKNESS, 1" Ø FOR 7" TO LESS THAN 9" PAVEMENT THICKNESS AND 1 1/2" Ø FOR 9" OR GREATER PAVEMENT THICKNESS.
2. EXPANSION JOINT SHALL BE PLACED AT THE END OF EACH CURB RETURN AND AT MAXIMUM 20' SPACING.
3. PRE-MANUFACTURED JOINT PLATE.

JOINT SEAL, SEALANT CLASS 8 (GRAY COLOR), PRE-QUALIFIED JOINT SEAL PRODUCER WITH TxDOT, FLUSH WITH PAVEMENT SURFACE. ALL JOINT SEALANT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



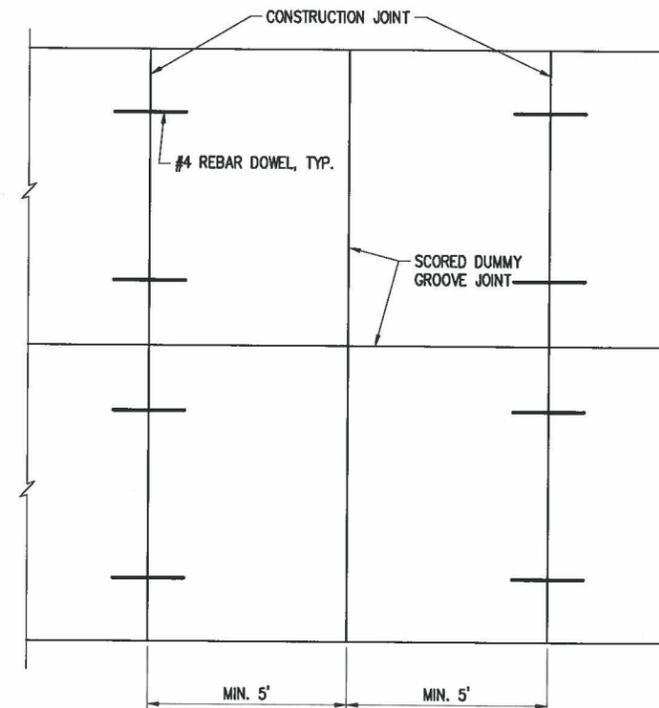
ISOLATION JOINT DETAIL

N.T.S.



NOTE:
CONTRACTOR SHALL FILL VOIDS UNDER AREAS OF FULL PANEL REPAIR TO ENSURE A MINIMUM 6" THICK SIDEWALK CAN BE PLACED ON LEVEL SUBSURFACE.

TYPICAL SEAWALL BLVD. AND SIDEWALK SECTION



NOTE:
CONTRACTOR TO VERIFY SPACING OF DUMMY JOINTS.

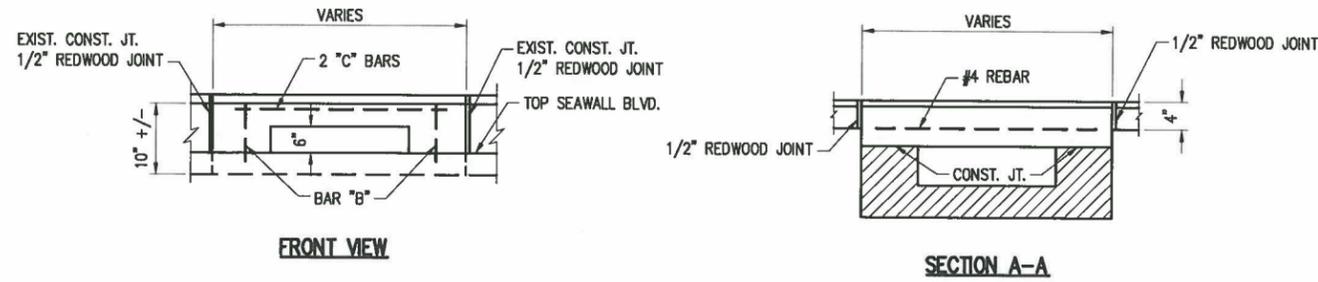
NOTE:
ON ALL FULL PANEL REPAIRS CONTRACTOR SHALL DOWEL INTO EXISTING SIDEWALK WITH NO. 4 REBARS AT 24" C-C DOWELED IN AND SET WITH EPOXY GROUT A MINIMUM OF 15" DEPTH.

SIDEWALK REPAIR EAST OF 6TH STREET TO EAST BEACH DRIVE

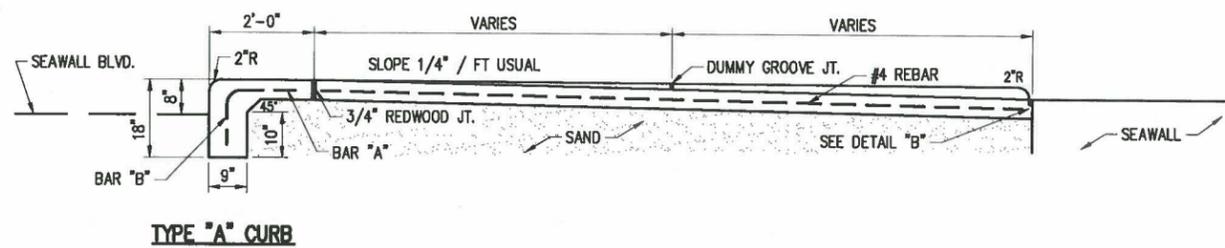


Revision	By	Chk.	Appr.	Date
GALVESTON COUNTY SEAWALL ENDCAP REPAIR & REPLACEMENT				
SIDEWALK DETAILS 1 OF 2				
LJA Engineering, Inc.				
11821 East Freeway Suite 360 Houston, Texas 77029		Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388		
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503			
DRAWN: B.D.	DATE: OCTOBER, 2015			
CHECKED:	SCALE: AS SHOWN			
APPROVED:	SHEET No. 37 Of 44			

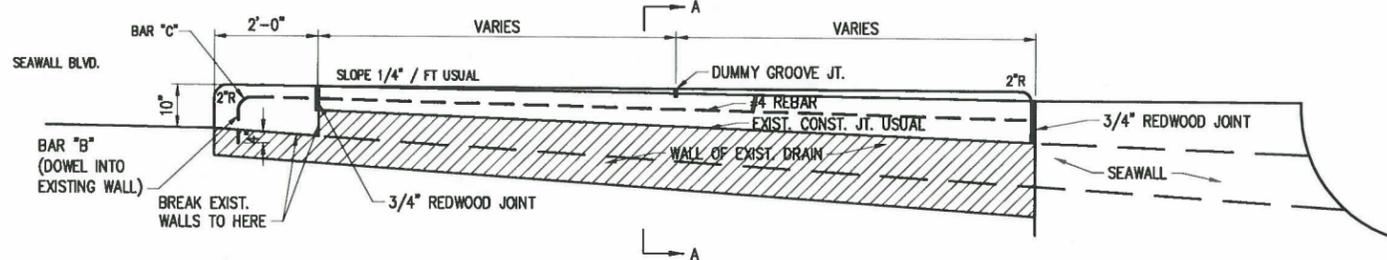
(SEE DOUBLE DRAIN DETAIL)
TYPICAL SECTION THRU DRAIN WALL



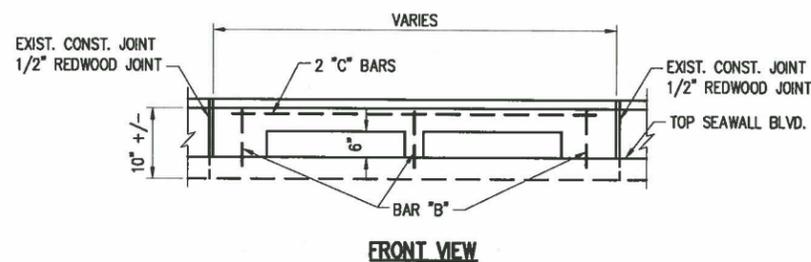
SINGLE DRAIN DETAIL



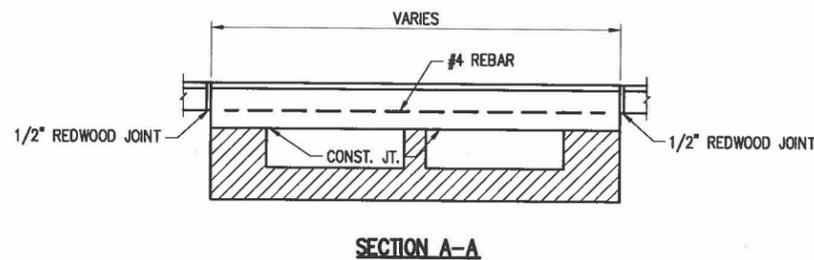
TYPICAL SECTION



TYPICAL SECTION THRU DRAIN WALL



FRONT VIEW



SECTION A-A

DOUBLE DRAIN DETAIL

NOTES:

- THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD. SEE COH STANDARD SPECIFICATIONS FOR REQUIREMENTS IN OTHER CONDITIONS.
- SEE TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE.
NOMINAL PIPE SIZE "C"
1 1/2" TO 30" 30"
OVER 30" 36"
- MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
- ALTERNATIVE EMBEDED BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED, SEE COH STANDARD SPECIFICATIONS.

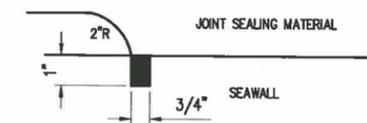
TYPICAL CROSS-SECTION

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

SANITARY OR STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH

APPROVED BY: [Signature] CITY ENGINEER
APPROVED BY: [Signature] DIRECTOR OF PUBLIC WORKS AND ENGINEERING

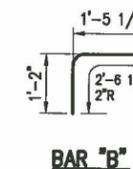
EST. DATE: OCT-01-2002 DWP NO: 02317-03



DETAIL "B"

BAR SCHEDULE AND DIAGRAM

BAR	SIZE	LENGTH	SPAC
A	4	29'-8" USUAL	—
B	4	2'-6 1/2"	17 5/8"
C	4	VARIES	—



BAR "B"



Revision	By	Chk.	Appr.	Date

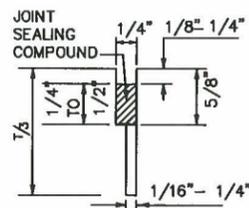
GALVESTON COUNTY
SANITARY SEWALL ENDCAP REPAIR & REPLACEMENT

SIDEWALK DETAILS
2 OF 2

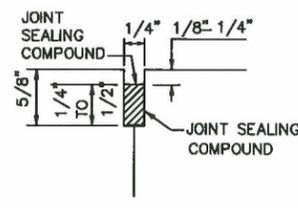
LJA Engineering, Inc.
11821 East Freeway Suite 360 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388

DESIGN: M.E.H. JOB No. 0384-1502 & 0384-1503
DRAWN: B.D. DATE: OCTOBER, 2015
CHECKED: SCALE: AS SHOWN
APPROVED: SHEET No. 38 OF 44

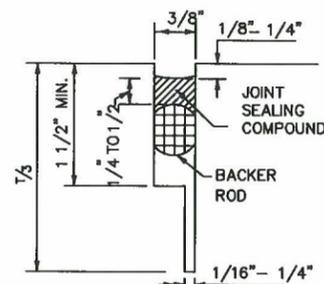
METHOD B: JOINT SEALING COMPOUND



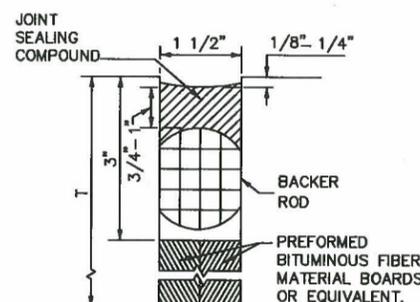
LONGITUDINAL SAWED CONTRACTION JOINT



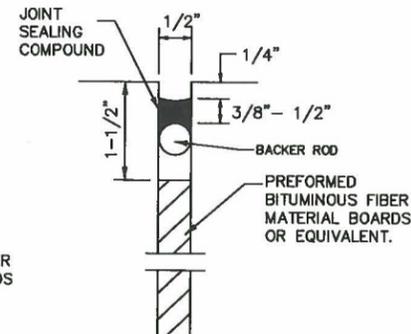
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

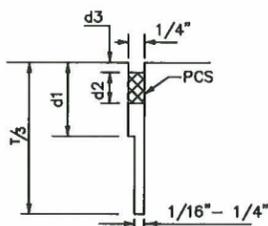


TRANSVERSE FORMED EXPANSION JOINT

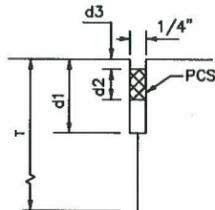


FORMED ISOLATION JOINT

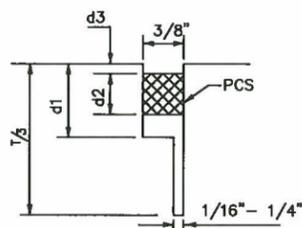
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



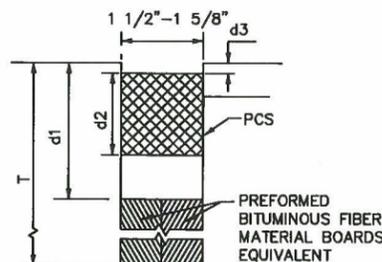
LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

GENERAL NOTES

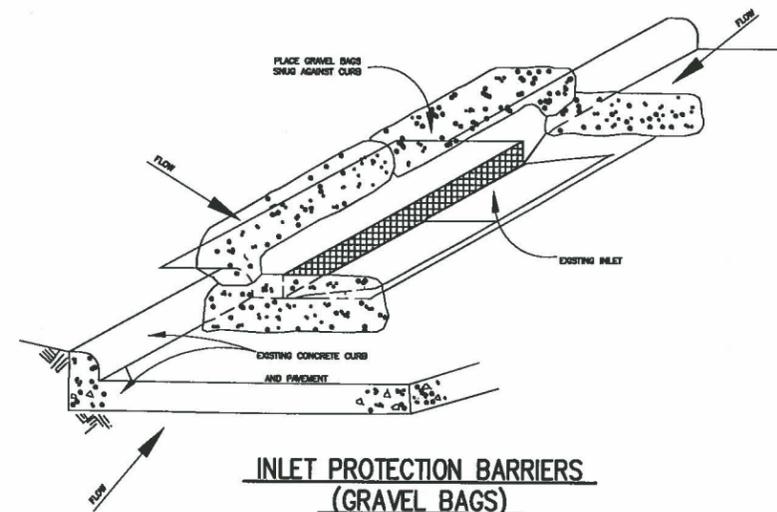
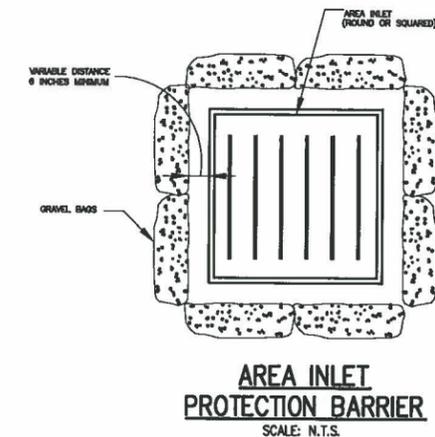
- UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
- THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
- THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
- DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
- REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
- FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
- FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4,5,7,OR 8 FOR MAINTAINING EXISTING JOINTS.
- THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
- ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

Texas Department of Transportation
Design Division Standard

CONCRETE PAVING DETAILS
JOINT SEALS
JS-14

FILE: js14.dgn
DATE: DECEMBER 2014

DESIGNER	CHK	APP	DATE



INLET PROTECTION BARRIERS (GRAVEL BAGS)
SCALE: N.T.S.

10-20-15

Professional Engineer Seal: MARK E. HAWKIN, LICENSE NO. 118610, STATE OF TEXAS.

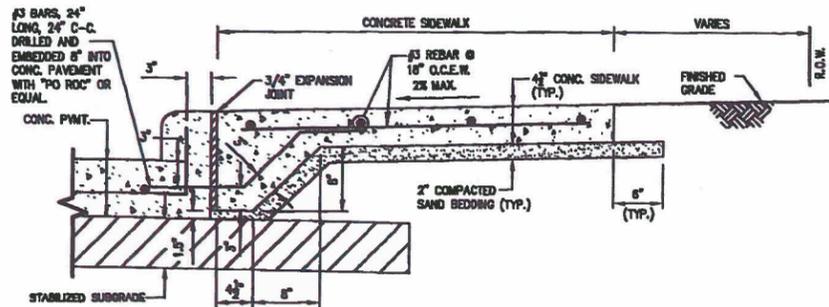
Revision	By	Chk.	Appr.	Date

GALVESTON COUNTY SEAWALL ENDCAP REPAIR & REPLACEMENT

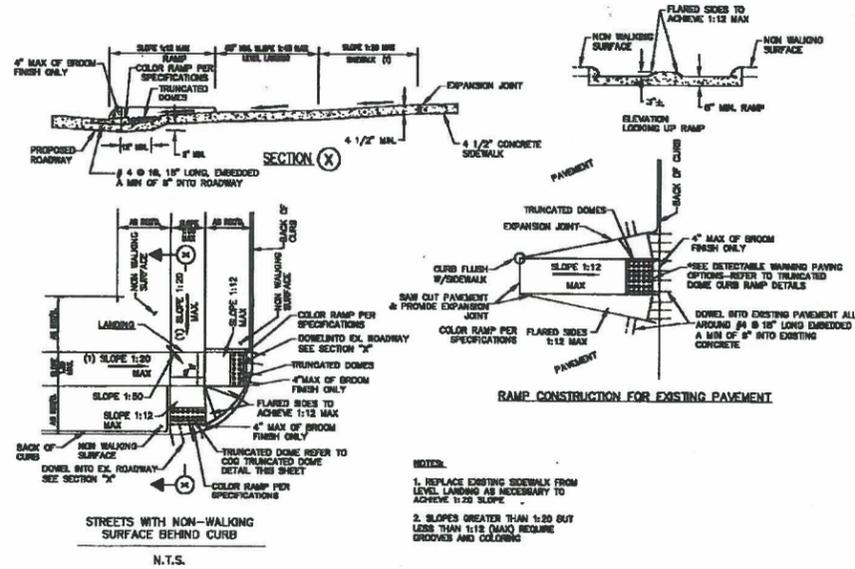
MISCELLANEOUS DETAILS
1 OF 2

LJA Engineering, Inc.
11821 East Freeway Suite 360 Houston, Texas 77029
Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

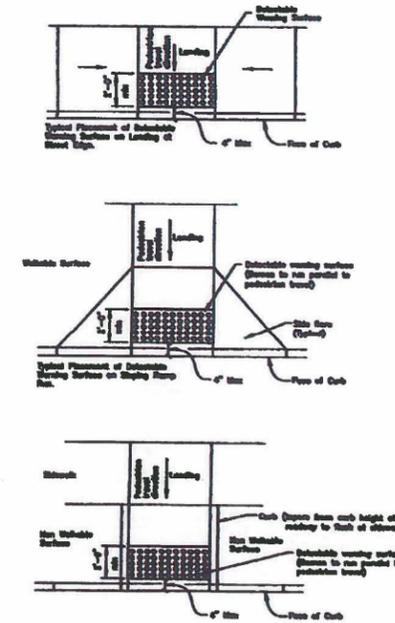
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
DRAWN: B.D.	DATE: OCTOBER, 2015
CHECKED:	SCALE: AS SHOWN
APPROVED:	SHEET No. 39 Of 44



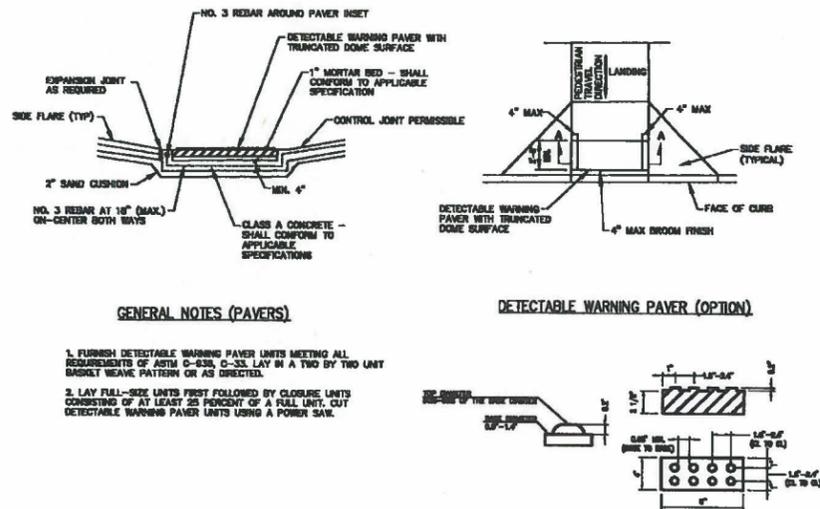
SIDEWALK ON BACK OF CURB DETAIL



WHEELCHAIR RAMP DETAILS



DETECTABLE WARNING CURB RAMP DETAILS

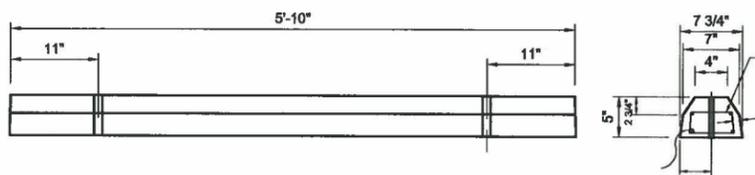


GENERAL NOTES (PAVERS)

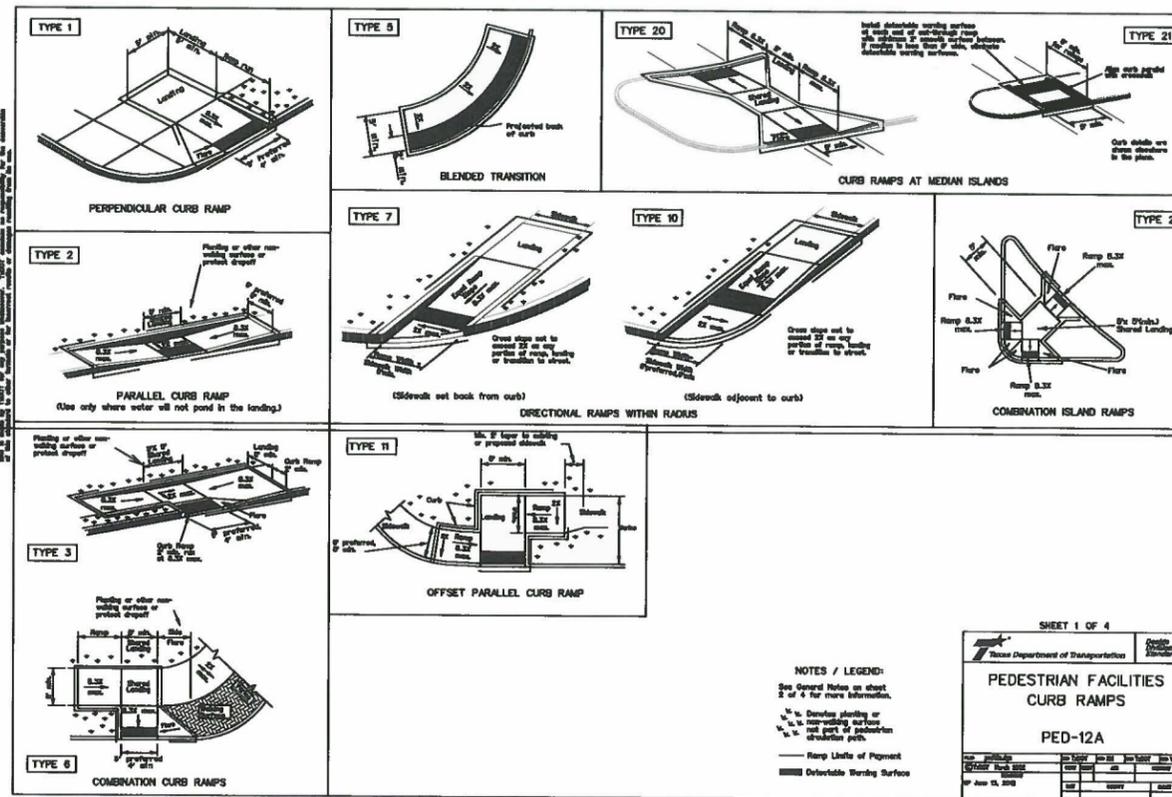
1. FINISH DETECTABLE WARNING PAVER UNITS MEETING ALL REQUIREMENTS OF ASTM C-833, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.
2. LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING PAVER UNITS USING A POWER SAW.

DETECTABLE WARNING PAVER (OPTION)

DETECTABLE WARNING PAVER



PRECAST CONCRETE WHEEL STOP DETAIL



ADA WHEELCHAIR RAMP DETAILS

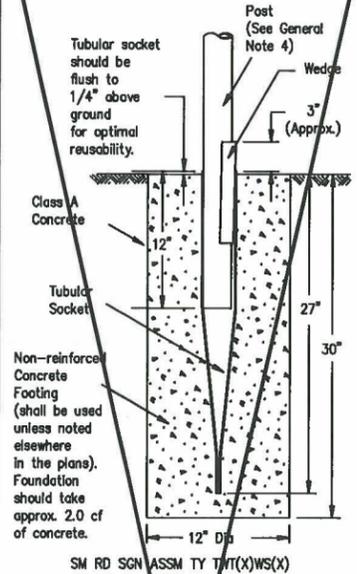
- GENERAL NOTES FOR DETECTABLE WARNINGS**
1. CURB RAMP MUST BE GIVEN A SLOPE OF 1:12 MAXIMUM. THE SLOPE OF 1:12 MAXIMUM MUST BE MAINTAINED THROUGHOUT THE ENTIRE LENGTH OF THE RAMP. THE SLOPE OF 1:12 MAXIMUM MUST BE MAINTAINED THROUGHOUT THE ENTIRE LENGTH OF THE RAMP.
 2. DETECTABLE WARNING SURFACES MUST BE SLIP RESISTANT AND NOT SLIPPERY TO ACCIDENTAL.
 3. ALL TRUNCATED DOMES, IN THE DIRECTION OF PROGRESSIVE TRAVEL, MUST BE SPACED 2 INCHES.
 4. CURB
 5. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN WIDTH AT THE BEGINNING OF PROGRESSIVE TRAVEL. THE WIDTH OF THE CURB LINE IS 4" FROM THE BEGINNING OF THE RAMP.
 6. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THEY DO NOT INTERFERE WITH THE CURB LINE IS 4" FROM THE BEGINNING OF THE RAMP.
 7. REFERENCE CURB RAMP DETAILS FOR RAMP GROOVES SURFACE.



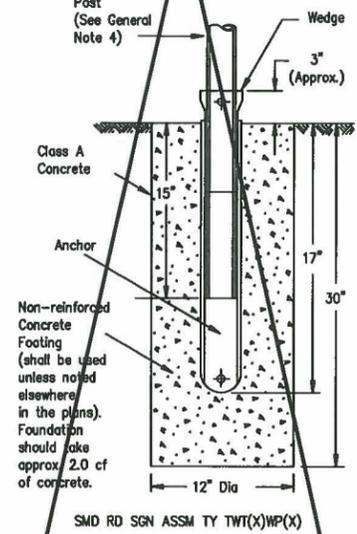
Revision	By	Chk.	Appr.	Date
GALVESTON COUNTY GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT				
MISCELLANEOUS DETAILS				
LJA Engineering, Inc.				
11821 East Freeway Suite 360 Houston, Texas 77029		Phone 713.450.1300 Fax 713.450.1385 FRN - F-1388		
DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503			
DRAWN: B.D.	DATE: OCTOBER, 2015			
CHECKED:	SCALE: AS SHOWN			
APPROVED:	SHEET No. 40 Of 44			

DISCLAIMER: The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any liability resulting from its use.

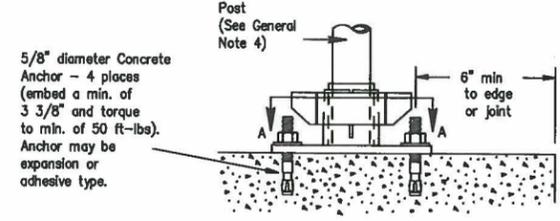
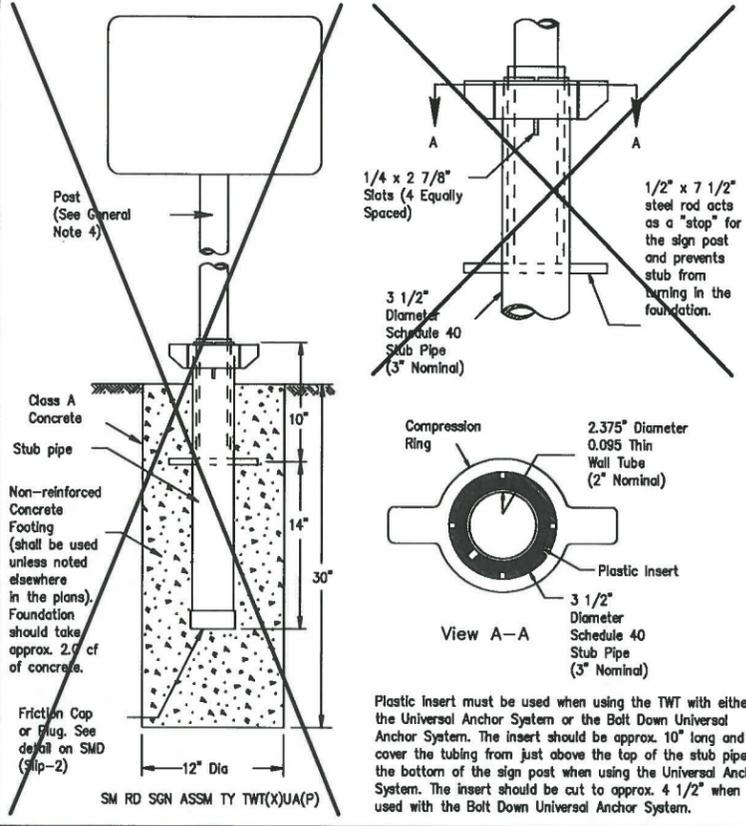
Wedge Anchor Steel System



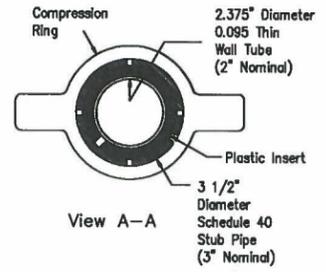
Wedge Anchor High Density Polyethylene (HDPE) System



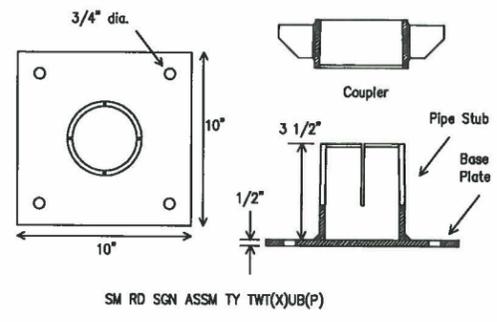
Universal Anchor System with Thin-Walled Tubing Post



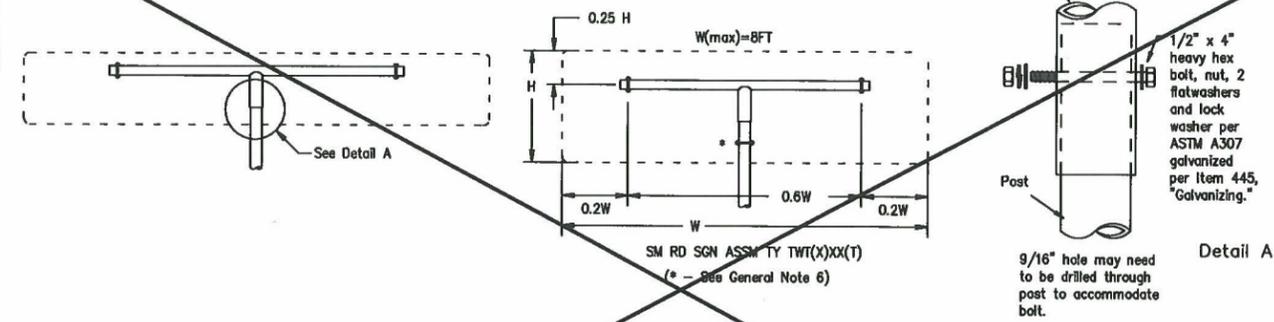
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxyes and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



Plastic Insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.



Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



NOTE
The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

- GENERAL NOTES:**
- The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
 - The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer, method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
 - Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer_list.htm
 - Material used as post with this system shall conform to the following specifications:
 - 13 BWG Tubing (2.375" outside diameter) (TWT)
 - 0.095" nominal wall thickness
 - Seamless or electric-resistance welded steel tubing
 - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
 - Other steels may be used if they meet the following:
 - 55,000 PSI minimum yield strength
 - 70,000 PSI minimum tensile strength
 - 18% minimum elongation in 2"
 - Wall thickness (uncoated) shall be within the range of .083" to .099"
 - Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
 - Galvanization per ASTM 123 or ASTM A653 G210. For pre-coated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
 - Sign blanks shall be the sizes and shapes shown on the plans.
 - Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
 - Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
 - See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>

- WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE**
- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
 - The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
 - Insert tubular socket into concrete until top of socket is approximately 1/4" above the concrete footing.
 - Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer.
 - Attach the sign to the sign post.
 - Insert the sign post into socket and align sign face with roadway.
 - Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

- UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE**
- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
 - Insert base post in hole to depths shown and backfill hole with concrete.
 - Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
 - Attach the sign to the sign post.
 - Install plastic insert around bottom of post.
 - Insert sign post into base post. Lower until the post comes to rest on steel rod.
 - Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
 - Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST SMD(TWT)-08

©TxDOT July 2002	DRG TxDOT	CHK TxDOT	DRG TxDOT	CHK TxDOT
9-08	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY	SHEET NO.	

26E

Revision	By	Chk.	Appr.	Date
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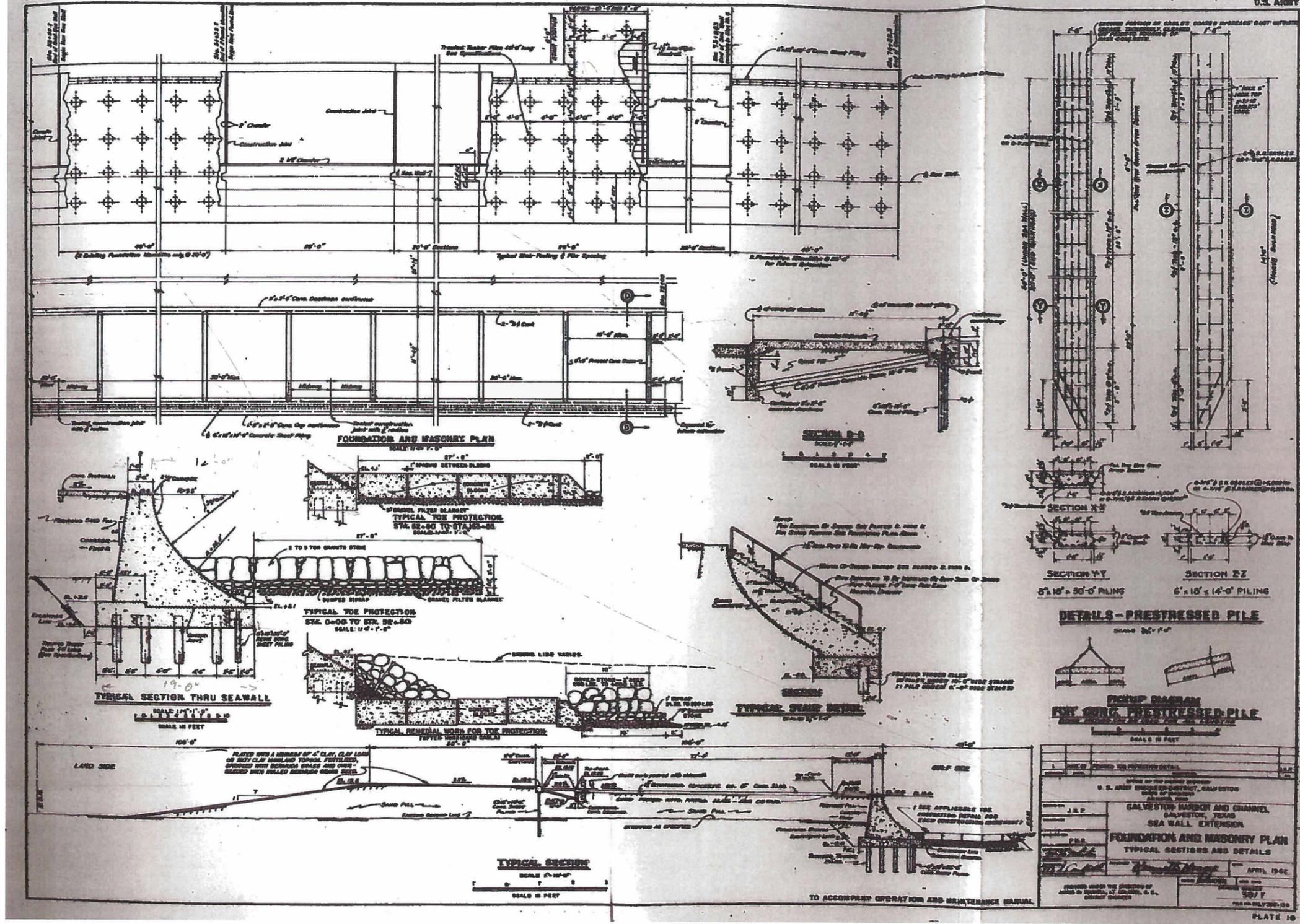
GALVESTON COUNTY GALVESTON SEAWALL ENDCAP REPAIR & REPLACEMENT

SIGN MOUNTING DETAILS

LJA Engineering, Inc.
11821 East Freeway
Suite 360
Houston, Texas 77029
Phone 713.450.1300
Fax 713.450.1385
FRN - F-1388

DESIGN: M.E.H.	JOB No. 0384-1502 & 0384-1503
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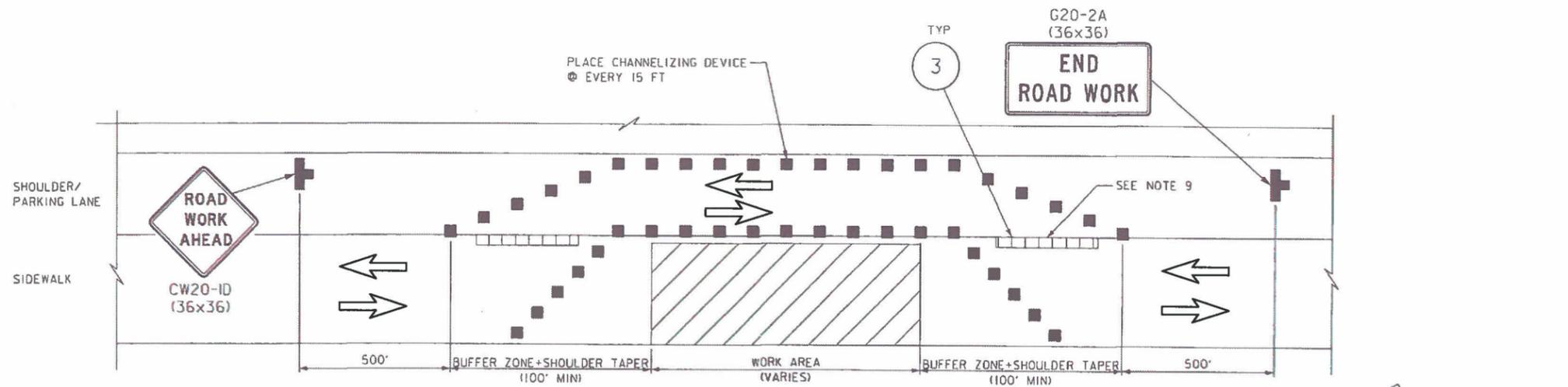
**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

SEAWALL DETAILS

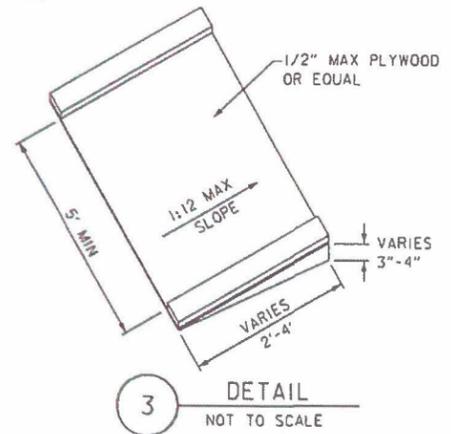
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FOR REFERENCE ONLY



1 TCP DETAIL 1
SIDEWALK CLOSURE
NOT TO SCALE



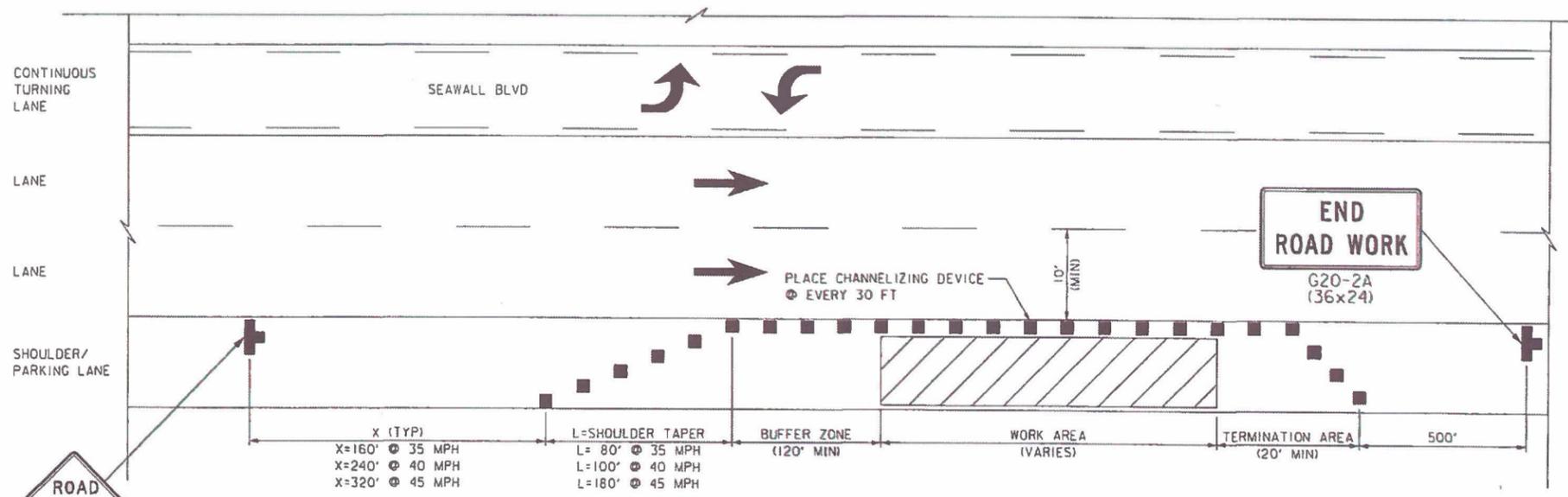
3 DETAIL
NOT TO SCALE

LEGEND

- WORK SPACE
- CONSTRUCTION SIGN (SHOWN FACING LEFT)
- CHANNELIZING DEVICE
- TRAFFIC DIRECTION
- PEDESTRIAN RAMP (SEE DETAIL 3)
- PEDESTRIAN TRAFFIC

TCP NOTES

1. CONTRACTOR TO PROVIDE AND INSTALL CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM CONTROL DEVICES (TEXAS M.U.T.C.D., MOST RECENT EDITION WITH REVISIONS) DURING CONSTRUCTION.
2. CONSTRUCTION SIGN OFFSET DISTANCE BASED ON POSTED SPEED LIMIT OF 35 MPH TO 45 MPH. CONTRACTOR SHALL MAINTAIN ONE LANE (MIN) OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS.
- 3A. CONTRACTOR SHALL MAINTAIN TRAFFIC LANE(S) ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
- 3B. CONTRACTOR SHALL COVER OPEN EXCAVATION WITH STEEL PLATES ANCHORED PROPERLY DURING NONWORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW.
4. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF PLANS TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO IMPLEMENTATION.
5. * ALTERNATE TCP SUBMITTED BY THE CONTRACTOR SHALL BE SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. PLANS WILL BECOME PART OF THE CONTRACT DRAWINGS.
6. APPROVED COPIES OF "TRAFFIC CONTROL PLANS" AND LANE/SIDEWALK CLOSURE PERMITS SHALL BE AVAILABLE FOR INSPECTION AT JOB SITE AT ALL TIMES.
7. CONTRACTOR SHALL SECURE AND HAVE PROPER CLOSURE PERMITS FROM CITY'S TRAFFIC MANAGEMENT AND MAINTENANCE BRANCH BEFORE CLOSING A LANE/SIDEWALK. CONTRACTOR MUST FOLLOW THE SUBMITTAL PROCEDURE FOR THE CITY OF GALVESTON.
8. BARRICADES SHALL NOT BLOCK EXISTING DRIVEWAY AND STREET ACCESS.
9. WHEN DIRECTING PEDESTRIAN TRAFFIC FROM SIDEWALK TO ROADWAY SHOULDER, PROVIDE RAMP TO TRANSITION OVER PAVEMENT GRADE BREAK.



2 TCP DETAIL 2
SHOULDER CLOSURE
NOT TO SCALE

X (TYP)	Speed
X=160'	35 MPH
X=240'	40 MPH
X=320'	45 MPH

L=SHOULDER TAPER	Speed
L=80'	35 MPH
L=100'	40 MPH
L=180'	45 MPH

Revision	By	Chk.	Appr.	Date

**GALVESTON COUNTY
GALVESTON SEAWALL ENDCAP
REPAIR & REPLACEMENT**

**TRAFFIC CONTROL PLAN
1 OF 2**

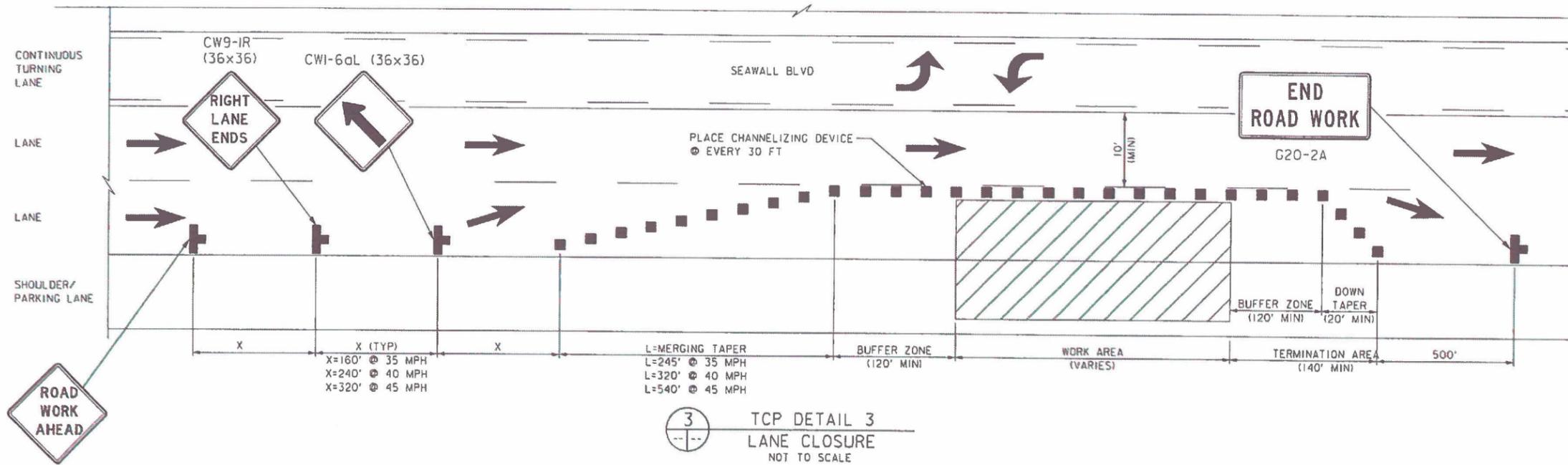
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11821 East Freeway Suite 360 Houston, Texas 77029 Phone 713.450.1300 Fax 713.450.1385 FRN - F-1386

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APPROVED:	SHEET No. 43 Of 44

LEGEND

-  WORK SPACE
-  CONSTRUCTION SIGN (SHOWN FACING LEFT)
-  CHANNELIZING DEVICE
-  TRAFFIC DIRECTION
-  PEDESTRIAN RAMP (SEE DETAIL 3 DWG NO. 42)



Mark E. Harkin

STATE OF TEXAS
MARK E. HARKIN
118610
LICENSED PROFESSIONAL ENGINEER
10-20-15

Revision	By	Chk.	Appr.	Date
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TRAFFIC CONTROL PLAN 2 OF 2				
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