



CITY OF HOUSTON INVITATION TO BID

Issued: November 18, 2011

REVISED 12/14/2011

BID OPENING

Sealed bids, in duplicate, will be received by the City Secretary of the City of Houston, in the City Hall Annex, Public Level, 900 Bagby, Houston, Texas 77002, until **10:30 AM Thursday, December 29, 2011** and all bids will be opened and publicly read in the City Council Chamber, City Hall Annex, Public Level, 900 Bagby at 11:00 AM on that date for the purchase of:

**CONCRETE REPAIR SERVICES FOR VARIOUS DEPARTMENTS
BID INVITATION NO.: S50-C23560
NIGP CODE: 913-71**

BUYER

Questions regarding this solicitation document should be addressed to **Arturo Lopez, Senior Procurement Specialist**, at (832) 393-8731, or e-mail to **arturo.lopez@houston.tx.gov**.

ELECTRONIC BIDDING

In order to submit a bid for the items associated with this procurement, you must fill in the pricing information on the "PLACE BID" page.

PRE-BID CONFERENCE

A Pre-Bid Conference will be held for all Prospective Bidders at the City Hall, Strategic Purchasing Division, 901 Bagby, Conference Rm. 1 (Basement), Houston, Texas 77002 at **10:00 AM on Tuesday, November 29, 2011**.

All Prospective Bidders are urged to be present. It is the bidder's responsibility to ensure that they have secured and thoroughly reviewed the solicitation documents prior to the Pre-Bid Conference. Any revisions to be incorporated into this solicitation document arising from discussions before, during and subsequent to the Pre-Bid Conference will be confirmed in writing by Letter(s) of Clarification prior to the bid due date. Verbal responses will not otherwise alter the specifications, terms and conditions as stated herein.

Bidding forms, specifications, and all necessary information should be downloaded from the Internet at **https://purchasing.houston.tx.gov/**. By registering and downloading this solicitation document, all updates to this solicitation document will be automatically forwarded via e-mail to all registered bidders. This information may also be obtained from the Supplier Assistance Desk, Strategic Purchasing Division, 901 Bagby, Concourse Level, Houston, Texas 77002.

The place of the bid opening may be transferred in accordance with Paragraph (b), (5) of Section 15-3 of The Code of Ordinances, Houston, Texas. The bid opening meeting may be rescheduled in accordance with Paragraph (b), (6) of said Section 15-3.

The City reserves the right to reject any or all bids or to accept any bid or combination of bids deemed advantageous to it.

City Employees are prohibited from bidding on this solicitation in accordance with the Code of Ordinances, Section 15-1.

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SECTION A: OFFER
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SECTION C: GENERAL TERMS & CONDITIONS AND BOND FORMS

***NOTE 1: Actual page numbers for each Section may change when the solicitation document is downloaded from the Internet or because of Letters of Clarification. Therefore, Bidders must read the bid document in its entirety and comply with all the requirements set forth therein.**

***NOTE 2: To be considered for award, please submit the electronic bid form and the forms listed in Section A, including the Official Signature Page, which must be signed by a company official authorized to bind the company.**

SECTION A



CONCRETE REPAIR SERVICES FOR VARIOUS DEPARTMENTS BID INVITATION NO.: S50-C23560 NIGP CODE: 913-71

To The Honorable Mayor
and Members of the City Council
of the City of Houston (the "City"), Texas:

The undersigned Bidder hereby offers to contract with the City upon the terms and conditions stated in that certain "**Contract for Concrete Repair Services for a three-year period with two (2) one-year option periods to extend for Various Departments**", which was distributed by the City together with the "Notice to Bidders" and is hereby incorporated herein by this reference (the "Contract"). This offer is made at the prices stated on the electronic Bid Form. When issued by the City of Houston, Letters of Clarification shall automatically become part of this bid document and shall supersede any previous specifications or provisions in conflict with the Letters of Clarification. It is the responsibility of the bidder to ensure that it has obtained all such letters. By submitting a bid on this project, bidder shall be deemed to have received all Letters of Clarification and to have incorporated them into its bid.

The City may accept this bid offer by issuance of a Contract covering award of said bid to this Bidder at any time on or before the 180th day following the day this Official Bid Form is opened by the City. This offer shall be irrevocable for 180 days, but shall expire on the 181st day unless the parties mutually agree to an extension of time in writing.

The City of Houston reserves the option, after bids are opened, to increase or decrease the quantities listed, subject to the availability of funds, and/or make award by line item.

If the City accepts the foregoing offer, this Bidder promises to deliver to the City Purchasing Agent of the City, five (5) original counterparts of said Contract duly executed by this Bidder (as "Contractor") in accordance with this paragraph, proof of insurance as outlined in Article II of the Contract, all on or before the tenth (10th) day following the day this Bidder receives from the City the unsigned counterparts shall be executed so as to make it binding upon the Bidder, and all of the applicable requirements stated in the document entitled "Instructions for Execution of Contract Documents," (which was distributed by the City) shall be complied with.

The City reserves the right to accept or reject, in whole or in part, any or all bids received and to make award on the basis of individual items or combination of items, as it is deemed in the best interest of the City.

If the City accepts the foregoing offer, this bidder shall furnish all labor, supervision, materials, supplies, equipment and tools necessary to provide **Concrete Repair Services** for the City in accordance with attached Specifications.

Documents/forms must be downloaded from the City's Website at <https://purchasing.houstontx.gov/>

Additional Required Forms to be included with this Bid:

In addition to the Electronic Bid Form and the Official Signature Page, the Forms listed in Table 1 **must be completed and submitted to the Office of the City Secretary on or before the date and time the bid is due:**

TABLE 1 - REQUIRED FORMS
Affidavit of Ownership.
Fair Campaign Ordinance
Statement of Residency
Conflict of Interest Questionnaire.doc
Pay or Play Program Acknowledgement Form
Contractor's Questionnaire
List of Subcontractors
10% Bid Bond

Table 2 lists other documents and forms that should be viewed/downloaded from the City's website, but are not required to be submitted with the bid. The City will request these forms, as applicable, to be completed and submitted to the City by the recommended/successful bidder:

TABLE 2 - DOCUMENTS & FORMS
Drug Forms.doc
EEOC.doc
Formal Instructions for Bid Terms.doc
M/WBE.doc
Sample Insurance Over \$50,000.pdf
Sample OCP Insurance Policy
Bonds for Construction (Performance, Maintenance and Statutory Payment)
Pay or Play Form 2 / Certification of Agreement to Comply w' the Program
Pay or Play Contractor/Subcontractor Payment Reporting Form 3
2011 Engineering Wage Scale

Note:

1. Questions concerning the Bid should be submitted in writing to: City of Houston, Strategic Purchasing Division, 901 Bagby, Room B506, Houston, TX 77002, Attn: Arturo Lopez or via fax: 832-393-8759 or via email (preferred method) to arturo.lopez@houstontx.gov ***no later than 4:00 PM, Monday, December 5, 2011.***
2. Although it is the intent of the City to award one contract as results of this invitation to bid, the City reserves the right to award by line item/group.

All Documents and Sections that are not visible in the Technical Specifications can be viewed from the following Public Works and Engineering web link:

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

CONTRACTOR'S QUESTIONNAIRE

In order to receive bid award consideration, the bidder must be able to demonstrate that they are currently providing or have had at least one contract, for Concrete Improvement Services that is similar in size and scope to this contract. **Bidder must have references documenting that it has performed Concrete Repair Services.** The reference(s) should be included in the space provided below. Please attach another piece of paper if necessary. If references are not included with the bid, the bidder shall be required to provide such references to the City of Houston within five working days from receipt of a written request from the City of Houston to do so. **Bidder's capability and experience shall be a factor in determining the Contractor's responsibility.**

1. Name: _____
Address: _____
City & State: _____
Name & Phone Number of Contact: _____ Years of Services: _____

2. Name: _____
Address: _____
City & State: _____
Name & Phone Number of Contact: _____ Years of Services: _____

3. Name: _____
Address: _____
City & State: _____
Name & Phone Number of Contact: _____ Years of Services: _____

4. Name: _____
Address: _____
City & State: _____
Name & Phone Number of Contact: _____ Years of Services: _____

5. Name: _____
Address: _____
City & State: _____
Name & Phone Number of Contact: _____ Years of Services: _____

BID BOND:

The Contractor shall be required to provide and submit with the bid a Bid Bond in the amount of 10% of the **Five Year, Grand Total Bid**. The Bid Bond shall be in the same form as that distributed by the City, and attached hereto, all duly executed by this Bidder (as "Principal") and by a corporate surety company licensed to do business in the State of Texas, and if the amount of the bond is greater than \$100,000.00 the surety must hold a certificate of authority from the United States Secretary of the Treasury, or a Cashier's or a Certified check in a like amount. Company or personal checks are not acceptable.

PRICING ADJUSTMENTS:

The contract prices shall not be adjusted during the entire term of the contract. Therefore, bidders, when preparing its bid, should take into account inflation and other market factors when pricing each contract year.

SITE INSPECTION:

The City of Houston reserves the right to inspect the bidder's current place of business to evaluate equipment condition and capabilities, staff experience, training and capabilities, and storage capabilities as they relate to the performance of this contract.

QUALITY AND WORKMANSHIP:

The bidder must be able to demonstrate upon request that it has satisfactorily performed services similar to the services specified herein. The bidder will provide records of warranty and repair services upon request by City. The City of Houston shall be the sole judge as to whether the services performed are similar to the scope of services contained herein and whether the bidder is capable of performing such services.

PRE-AWARD REQUIREMENT:

If the City accepts the foregoing offer, the selected Bidder promises to deliver to the Purchasing Agent of the City, five (5) original counterparts of said Contract duly executed by this Bidder (as "Contractor") in accordance with this paragraph, proof of insurance, as outlined in the Supplementary Conditions , and Maintenance, Payment and Performance Bonds on or before the fifth (**5th**) workday following the day this Bidder receives from the City the unsigned counterparts and shall be executed so as to make it binding upon the Bidder, and all of the applicable requirements stated in the document entitled "Instructions for Execution of Contract Documents," (which was distributed by the City) shall be complied with.

CONTRACT TYPE:

This is a Work Order Contract. The Contractor shall perform all work necessary to prepare drawings, submit plans for review and approval for any required permits, pay all fees, call for all inspections, and provide the City a Certificate of Compliance for work upon completion of the project.

SUBMISSION OF QUOTATION FORMS:

"Submission or attachment of Quotation Forms or any other extraneous information containing alternative terms and/or conditions is not acceptable and can result in your bid being determined as non-responsive".

ETHICS LANGUAGE:

REVISED 12/14/2011

The respondent warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees. For breach or violation of this warranty, the City shall have the right to annul this agreement without liability or, at its discretion, to deduct from the contract prices or consideration, or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee.

HIRE HOUSTON FIRST:

Designation as a City Business or Local Business

To be designated as a City or Local Business for the purposes of the Hire Houston First Program, as set out in Article XI of Chapter 15 of the Houston City Code, a bidder or proposer must submit the **Hire Houston First Application and Affidavit (“HHF Affidavit”)** to the Director of the Mayor’s Office of Business Opportunities and receive notice that the submission has been approved prior to award of a contract. Bidders are encouraged to secure a designation prior to submission of a bid or proposal if at all possible.

Download the HHF Affidavit from the Office of Business Opportunities Webpage at the City of Houston e-Government Website at the following location:

www.houstontx.gov/obo/moreforms/hirehoustonfirstaffidavit.pdf

Submit the completed application forms to: Mayor’s Office of Business Opportunity, One Stop Business Center, 900 Bagby St., Public Level, Houston, TX 77002 or Applications may be submitted via e-mail to HHF-MOBO@houstontx.gov or faxed to 832.393.0952.

Award of Procurement of \$100,000 or More for Purchase of Non-Professional Services , Including Construction Services:

THE CITY WILL AWARD THIS PROCUREMENT TO A ” CITY BUSINESS,” AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES (“THE CODE”):

- IF THE BID OF THE LOCAL BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A LOCAL BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

Award of Procurement under \$100,000 Purchase of Non-Professional Services Including Construction Services:

THE CITY WILL AWARD THIS PROCUREMENT TO A “LOCAL BUSINESS,” AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES (“THE CODE”):

- IF THE BID OF THE CITY BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 5% OF THE LOWEST BID RECEIVED, AND

- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A LOCAL BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

Award of Procurement that may be More or Less than \$100,000 for Purchase of Non-Professional Services, Including Construction Services:

THE CITY WILL AWARD THIS PROCUREMENT TO A "LOCAL BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE"):

- IF THE BID OF THE LOCAL BUSINESS IS LESS THAN \$100,000 AND IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 5% OF THE LOWEST BID RECEIVED, OR
- IF THE BID OF THE LOCAL BUSINESS IS MORE THAN \$100,000 AND IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A LOCAL BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

**SECTION B
PART I
SCOPE OF WORK**

1.0 GENERAL:

- 1.1 Contractor shall provide all labor, materials, equipment, safety, insurance, transportation, and permits necessary to comply with all the City of Houston Building Codes, City of Houston Construction Standard Specifications and Construction Standard Details or their latest revision.
- 1.2 The project shall include driveways, wheelchair ramps, sidewalks and curbs.
- 1.3 *The minimum dollar amount of any work order shall be \$7,000.00. All work orders that have multiple sites will be within a ½-mile radius of the starting point.***
- 1.4 The project shall be constructed in accordance with the Technical Specification and the referenced Sections of the City of Houston Construction Standard Specifications and/or the referenced Details of the City of Houston Construction Standard Construction Details.
- 1.5 The work will be completed at various locations throughout the city, spanning the term of this contract.
- 1.6 The Project Manager will provide drawings and approximate measurements to the Contractor.
- 1.7 Contract Compliance; The primary responsibility for monitoring compliance rests with the City's Contract Compliance Section. The Contractor shall be responsible for the following:
- 1.7.1 Reviewing assigned proposed plans
- 1.7.2 Verifying all measurements and quantities
- 1.7.3 Notifying department of any discrepancy
- 1.7.4 Providing a written proposal utilizing all applicable bid items for the required work.
- 1.7.5 The City reserves the right to monitor this contract for compliance to ensure legal obligations are fulfilled and acceptable levels of service are provided. Monitoring may take the form of, but not necessarily be limited to:
- Inspection, testing, and/or sampling of goods delivered or to be delivered
 - Review of deliveries received for accuracy and timeliness
 - Review of Supplier's invoices for accuracy
 - Review of certifications and/or licenses
 - Site visits
- 1.8 If there is a conflict or discrepancy between the proposed field measurements and the other data, it is the Contractor's responsibility to notify the Project Manager of such conflict or discrepancy with supporting calculation prior to commencing work on an assigned project. Any additional cost incurred after work commenced shall be at the expense of the

Contractor.

- 1.9 There will be no mobilization item for this project, which is incidental to each work order to be issued at different site(s) upon the needs of the City maintenance requirement.
- 1.10 Projects undertaken under the scope of this contract will NOT require an Engineer's seal.
- 1.11 City of Houston shall provide personnel for water on/off services within a reasonable time frame from receipt of request from contractor.
- 1.12 City of Houston shall provide inlets, manholes, and water valves as required by the Contractor to complete adjustments/repairs.
- 1.13 The City shall require a Pre-Construction Conference.
 - A. The City of Houston will schedule a conference after Notice of Award. Those required to attend will be given a five (5) day notice of meeting.
 - B. Attendance Required: City Department Representative, Affirmative Action, Contract Administrator and Contractor.
 - C. Agenda:
 1. Affirmative Action, Contract Compliance Division
 2. Designation of personnel representing the parties in Contract
 3. Contractor receives purchase order from City of Houston.

2.0 WORKMANSHIP:

- 2.1 All work shall be performed and completed in a thorough, workmanlike manner and in accordance with the latest proven practices of the trade by thoroughly skilled and experienced workmen.
- 2.2 All work shall be performed and completed using the latest standard industrial practices, notwithstanding any omissions from these specifications or drawings.
- 2.3 The concrete work shall conform to latest edition of ACI, ASTM Building Codes, City Ordinances, and all other applicable construction codes, specifications and details.
- 2.4 All materials furnished and all work performed under this contract must be satisfactory to the project manager.
- 2.5 Contractor shall remove all materials from the work site that do not conform to the applicable codes and shall replace them with materials that conform to the applicable codes.
- 2.6 The Contractor shall immediately correct any deficiencies discovered during work or after completion.

3.0 SAFETY AND FACILITY SECURITY:

- 3.1 The Contractor shall submit the Hazard Communications Program / Contract Compliance

form and all associated documentation to the Project Manager WITH EACH WORK ORDER.

- 3.2 All work shall be performed between the hours of 7:01 a.m. and 4:00 p.m., Monday through Friday, unless otherwise authorized. (Holidays as prescribed by City Council not included.)
- 3.3 The Contractor will be responsible for ensuring a safe work environment in accordance with rules and regulations of O.S.H.A., T.N.R.C.C. and other governmental agencies for all persons entering the work area, i.e. traffic cones or traffic signs for street construction and others applicable.
- 3.4 If it is necessary, for whatever reason, to stop work and leave an open excavation, adequate safety signs, barricades and/or steel plate shall be left in place.
- 3.5 All safety equipment used for the Project will be incidental to the unit price of the specified work.
- 3.6 Flagmen must be certified by Metropolitan Transit Authority of Harris County, Texas (METRO).

4.0 CITY BUILDING CODES:

- 4.1 All work performed or equipment installed shall be in strict accordance with the City of Houston Building Codes. The Contractor will immediately correct any deficiencies discovered during work or after completion. Failure to correct deficiencies will result in termination of the contract or the City having corrections made at the Contractor's expense.

5.0 COMPLETION OF WORK ORDERS:

- 5.1 The Contractor shall notify the Project Manager before the initiation of the project.
 - 5.1.1 City personnel shall be authorized to observe all materials and work performed.
 - 5.1.2 Such observation will not relieve the Contractor from any obligation to perform the work in accordance with the requirements of these specifications.
- 5.2 All concrete work shall be completed within the time and procedure schedule as specified in the work order (generally twenty-one (21) days from issuance of the work order).
- 5.3 Any extension of the original completion date must be with the prior approval of the Project Manager.
- 5.4 Any deficiency listed by the City representative shall be corrected before final acceptance of the work for each work order is granted and invoicing is approved for payment.

6.0 LIABILITY:

- 6.1 All work shall be accomplished in such a manner as to prevent damage to the City of Houston facilities, equipment, roads, grounds, utilities, processes, etc., or to any other existing utilities.
- 6.2 The Contractor shall be liable for any damage to electrical, water, gas, etc. which occurs during the performance of work under this contract.

6.3 When such damage is due to the failure of the Contractor to take precautionary actions, or to exercise sound judgment, or fail to utilize proven construction practices, the Contractor shall restore, repair, or replace equipment.

6.3.1 The restoration, repair or replacement shall be to a state that it had been before the damage occurred without additional charge to the City of Houston.

6.4 No additional compensation for repairs will be allowed.

6.5 If necessary, actual costs of repairs, or replacement, may be withheld from contract payment by the City of Houston or the Contractor may issue a credit payment to the city.

7.0 SITE CLEAN UP:

7.1 All rubbish and debris of every type, kind and nature resulting from the Contractor's activities shall be cleared up and removed from the project site or placed/moved to a part of the site, as designated by the project manager.

7.1.1 All ruts and depressions resulting from the Contractor's operations shall be filled in and leveled off to facilitate mowing the site.

7.1.2 Upon completion of the Contractor's work, including site clean up, the area shall be returned to the same or better condition.

7.1.3 No separate payment will be made for clean up and debris removal as described above.

8.0 WARRANTY:

8.1 A warranty of one (1) year minimum shall be provided for both materials and workmanship.

8.2 The warranty period shall commence on the date the City of Houston officially accepts the completed work at each site.

8.3 Any warranty work is to be completed without cost to the City within ten (10) calendar days after written notification of a service problem.

9.0 PERFORMANCE BOND AND PAYMENT BOND:

The Contractor(s) shall be required to provide a Performance and Payment Bond in the total amount (100%) of the Contract if the award is in excess of \$25,000.00.

The Performance and/or Payment Bond shall be in the same form as that distributed by the City, and attached hereto, all duly executed by this bidder (as "Principal") and by an incorporated surety company licensed to do business in the State of Texas. If the amount of the bond is greater than \$100,000.00 the surety must hold a certificate of authority from the United States Secretary of the Treasury.

The Contractor(s) shall be required to provide a Performance and/or Payment Bond as outlined above, which will be delivered to the City Purchasing Agent of the City, on or before the tenth (10th) day following the day the bidder receives notice from the City.

10.0 MAINTENANCE BOND:

The Contractor shall furnish a maintenance bond in the total (100%) bid amount in the form required by the City (samples attached). One bond, also referred to as the One Year Maintenance Bond, will be conditioned upon Contractor's repair, replacement or restoration of any work or any portion of the work which is found to be defective or fails in any way to comply strictly with this contract or the plans and specifications for such work within a period of one (1) year from the date of acceptance of such work by the City Council or after the date that the "CO", or his designee in writing, determines, in a written notice to the Contractor, to be the date upon which the project is both substantially complete and available for the full and beneficial occupancy or use of the City.

11.0 MWBE COMPLIANCE:

The Contractor shall comply with the City's Minority and Women Business Enterprise ("MWBE") programs as set out in Chapter 15, Article V of the City of Houston Code of Ordinances. The Contractor shall make good faith efforts to award subcontracts or supply agreements in at least **22%, MBE 14% and SBE 8%** of the value of this Agreement to MWBEs. The Contractor acknowledges that it has reviewed the requirements for good faith efforts on file with the City's Office of Business Opportunities ("OBO"), and will comply with them.

The Contractor shall require written subcontracts with all MWBE subcontractors and shall submit all disputes with MWBEs to binding arbitration to be conducted in Houston, Texas, if directed to do so by the OBO Director. MWBE subcontracts must contain the terms set out in Exhibit "D".

12.0 CITY CONTRACTORS' PAY OR PLAY PROGRAM:

The purpose of this Executive Order 1-7 is to require certain contractors to offer to certain employees a minimal level of health benefits or to contribute a designated amount to be used to offset the costs of providing health care to uninsured people in the Houston/Harris County area. To that purpose, this Executive Order establishes the Pay or Play Program and procedures for the effectiveness and impact of the Program on contracting firms and the City of Houston

13.0 GENERAL CONDITIONS:

- 13.1 The Project's specifications listed in the Technical Specification contains modifying criteria related to working conditions, paid/unpaid items, etc. which supersede and/or represent an addendum to the respective City of Houston Standard Construction Specifications / Details. The most restrictive/critical rule between the two specifications of Technical Specification and Standard Construction Specifications will prevail for the construction requirement(s) of this project.
- 13.2 In addition to the Technical Specifications, the City of Houston Standard Construction Specifications is attached, as well as the Construction Detail(s) is attached. It is the Contractor's responsibility to verify the correct dimensions, materials, construction methods and other items referred in said Construction Specifications/Details for the specified bid items prior to bidding on this Project regardless of whether the documents are attached or not.
- 13.3 All wheelchair ramps must comply with current American with Disabilities Act (ADA) requirements, Standards for Accessible Design, Title III regulations 28 CFR Part 36, revised July 1, 1994, www.usdoj.gov/crt/stdspdf.htm

14.0 SEQUENCE OF WORK ORDER EXECUTION:

14.1 The Project Manager will issue a drawing sketch and total cost estimation to the Contractor for their estimation of the complete scope of work required for completion of the project.

14.2 The Contractor must respond with their construction cost quotation within three (3) working days after receiving the drawing sketch and cost estimation from the department. The quotation must include a breakdown by fee schedule line item of each service to be provided, the quantity, and the total cost for that line.

14.2.1 The Contractor will submit a completed **Hazard Communications Program / Contractor Compliance Form** with each cost quotation. **(ADDENDUM A)**

14.3 If the Contractor's construction cost quotation is acceptable, the Project Manager will issue a Work Order authorizing the Contractor to perform work at the site.

14.3.1 The schedule of project will be coordinated with City of Houston Project Manager so as not to interfere with City of Houston Water Production operations.

14.3.2 The Contractor will not commence work on the project until the Project Manager has approved the submitted schedule of work. Issuance of the Work Order is not sufficient to begin work. The Contractor must also obtain approval of the schedule of work prior to mobilization to the site.

14.4 The Contractor must start the construction within thirty (30) working days after the Work Order is issued. The specified response time includes the time required for building inspection, underground utility lines staking and material requisition. However, the Contractor agrees to start a specified construction work within five (5) working days or less if an emergency condition exists.

14.5 Existing utilities

14.5.1 It is the responsibility of the Contractor to contact all utility companies to field mark their underground lines in the area of the proposed concrete work prior to construction.

14.5.2 If a utility in an existing building is to be interrupted due to alteration work, the scheduled interruption must be coordinated with and be approved by the City of Houston Project Manager at least three (3) working days before the proposed construction.

15.0 PRICE ADJUSTMENTS:

15.1 The contract prices shall not be adjusted during the entire term of the contract.

16.0 ADDITIONS & DELETIONS:

16.1 The City, by written notice from the City Purchasing Agent to the Contractor, at anytime during the term of this contract, may add or delete like services to be performed. Any such written notice shall take effect on the date stated in the notice from the City. Equipment, locations and/or services added will be subject to the contract services and charges or rates as an item already specified in the fee schedule. In the event the additional service is not

identical to any item already under contract, the charges therefore will then be the Contractor's normal and customary charges or rates for the equipment, locations and/or services classified in the fee schedule.

17.0 ESTIMATED QUANTITIES NOT GUARANTEED:

17.1 The estimated quantities specified herein are not a guarantee of actual quantities, as the City does not guarantee any particular quantity of concrete repair services during the term of this contract. The quantities may vary depending upon the actual needs of the user Department. The quantities specified herein are good faith estimates of usage during the term of this contract. Therefore, the City shall not be liable for any contractual agreements/obligations the Contractor enters into based on the City purchasing requiring all the quantities specified herein.

18.0 WARRANTY OF SERVICES:

18.1 *Definitions:* "Acceptance" as used in this clause, means the act of an authorized representative of the City by which the City assumes for itself, approval of specific services, as partial or complete performance of the contract.

18.2 "Correction" as used in this clause, means the elimination of a defect.

18.3 Notwithstanding inspection and acceptance by the City or any provision concerning the conclusiveness thereof, the Contractor warrants that all services performed under this contract will, at the time of acceptance, be free from defects in workmanship and conform to the requirements of this contract. The City shall give written notice of any defect or nonconformance to the Contractor within a one-year period from the date of acceptance by the City. This notice shall state either (1) that the Contractor shall correct or re-perform any defective or non-conforming services at no additional cost to the City, or (2) that the City does not require correction or re-performance.

18.4 If the Contractor is required to correct or re-perform, it shall be at no cost to the City, and any services corrected or re-performed by the Contractor shall be subject to this clause to the same extent as work initially performed. If the Contractor fails or refuses to correct or re-perform, the City may, by contract or otherwise correct or replace with similar services and charge to the Contractor the cost occasioned to the City thereby, or make an equitable adjustment in the contract price.

18.5 If the City does not require correction or re-performance, the City shall make an equitable adjustment in the contract price.

19.0 INTERLOCAL AGREEMENTS:

Under the same terms and conditions hereunder, the Contract may be expanded to other government entities through inter-local agreements between the City of Houston and the respective government entity that encompass all or part of the products/services provided under this contract. Separate contracts will be drawn to reflect the needs of each participating entity.

**SECTION B
PART II
TECHNICAL SPECIFICATIONS**

City of Houston Standard Specifications
For
WORK ORDER CONTRACT FOR CONCRETE REPAIR SERVICES

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Table of Contents

Document Title: The following standard specifications are included in the bid package:

DIVISION 1 – GENERAL REQUIREMENTS

01110 Summary of Work
01145 Use of Premises
01255 Change Order Procedures
01270 Measurement and Payment
01312 Coordination and Meetings
01325 Construction Photographs
01330 Construction Schedule
01422 Submittal Procedures
01450 Reference Standards
01452 Inspection Services
01454 Testing Laboratory Services
01555 Traffic Control and Regulation
01576 Waste Material Disposal
01610 Basic Product Requirement
01725 Field Surveying
01770 Closeout Procedures
01785 Project Record Documents

**DIVISION 2 – SITE WORK
(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

02086 Adjusting Manholes, Inlets, and Valve Boxes to Grade
02221 Removing Existing Pavements and Structures
02317 Backfill for Pavement Repair
02320 Backfill
02632 Cast-in-place Headwalls
02711 Hot-mix Asphalt Base Course
02712 Cement Stabilized Base Course
02741 Hot-mix Asphalt Concrete Pavement
02743 Tack Coat
02751 Concrete Paving
02752 Concrete Pavement Joints
02753 Concrete Pavement Curing
02754 Concrete Driveways
02771 Curb, Curb and Gutter, and Headers
02775 Concrete Sidewalks
02911 Topsoil

2922 Sodding

City of Houston Standard Specifications
For
WORK ORDER CONTRACT FOR CONCRETE REPAIR SERVICES

The following standard specifications are included in the bid package:

DIVISION 2 – SITE WORK

- 02952 Mudjacking (Slabjacking) Rigid Pavement
- 02953 Crack Sealing
- 02954 Sawed Joints
- 03931 Concrete Repair and Rehabilitation

SECTION 01110
SUMMARY OF WORK

This text gives standard City of Houston provisions, as they may be appropriate to an individual Project. Determine Project requirements from City authorities in editing this text, and provide additional text as appropriate.

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Summary of the Work including work by City, City furnished products, Work sequence, future Work, Contractor use of Premises, and City occupancy.

2.0 WORK COVERED BY CONTRACT DOCUMENTS

2.0 Work of the contract is for the construction of [CONCRETE IMPROVEMENTS].

3.0 CASH ALLOWANCES

3.1 Include the following specific Cash Allowances in the Contract Price under provision of General Conditions, **“REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700”**

4.0 CITY FURNISHED PRODUCTS

4.1 Items Furnished by City for Installation and Final Connection by Contractor:
Water meter.

4.2 Contractor's Responsibilities:

4.1.1 Arrange and pay for product delivery to site.

4.1.2 Receive and unload products at site; jointly with City, inspect for completeness or damage.

4.1.2.1 Handle, store, install, and finish products.

4.1.2.2 Repair or replace damaged items.

SECTION 01110
SUMMARY OF WORK

5.0 WORK SEQUENCE

5.1 Construct Work in phases during the construction period, coordinate construction schedule and operations with City: ***THIS SECTION WILL BE CLARIFIED AT THE PRE-BID MEETING, IF CONTRACTORS ARE UNSURE***)

5.1.1 Phase 1: [_____].

5.1.2 Phase 2: [_____].

5.1.3 Phase 3: [_____].

5.2 Coordination of the Work: Refer to Section 01312 - Coordination and Meetings, and Section 01230 – Alternates (**PWE web link**)

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

6.0 CONTRACTOR USE OF PREMISES

6.1 Comply with procedures for access to the site and Contractor's use of rights-of-way as specified in Section 01145 - Use of Premises.

6.2 Construction Operations: Limited to City's rights-of-way provided by City.

6.3 Utility Outages and Shutdown: Provide notification to the City and private utility companies (when applicable) a minimum of 48 hours, excluding weekends and holidays, in advance of required utility shutdown. Coordinate all work as required.

7.0 WARRANTY

7.1 Comply with warranty requirements in accordance with Document 00700 - General Conditions. ""

*PART 2 PRODUCTS -*** Not Used****

*PART 3 EXECUTION -*** Not Used****

SECTION 01145
USE OF PREMISES

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Section includes general use of the site including properties inside and outside of rights-of-way, work affecting road, ramps, streets and driveways and notification to adjacent occupants.

2.0 RIGHTS-OF-WAY

2.1 Confine access and operations and storage areas to rights-of-way provided by City as stipulated in Document 00700 – reference page 135, “Exhibit M”, web link, General Conditions; trespassing on abutting lands or other lands in the area is not allowed.

2.2 Contractor may make arrangements, at Contractor's cost, for temporary use of private properties, in which case Contractor and Contractor's surety shall indemnify and hold harmless the City against claims or demands arising from such use of properties outside of rights-of-way. Submit notarized copy of agreement between private property owner and Contractor prior to use of the area.

2.3 Obtain permits from City of Houston Parks and Recreation Department for storage of materials on esplanades and other areas within rights-of-way under that Department's jurisdiction. Submit copies of permits prior to use of the area.

2.4 Restrict total length which materials may be distributed along the route of the construction at any one time to 1,000 linear feet unless otherwise approved in writing by City Engineer.

3.0 PROPERTIES OUTSIDE OF RIGHTS-OF-WAY

3.1 Altering the condition of properties adjacent to and along rights-of-way will not be permitted.

3.2 Means, methods, techniques, sequences, or procedures which will result in damage to properties or improvements in the vicinity outside of rights-of-way will not be permitted.

3.3 Any damage to properties outside of rights-of-ways shall be repaired or replaced to the satisfaction of the City Engineer and at no cost to the City.

4.0 USE OF SITE

4.1 Obtain approvals of governing authorities prior to impeding or closing public roads or streets. Do not close more than two consecutive intersections at one time.

SECTION 01145
USE OF PREMISES

- 4.2 Notify City Engineer and City Traffic Management and Maintenance department at least 48 hours prior to closing a street or a street crossing. Permits for street closures are required in advance and are the responsibility of the Contractor.
- 4.3 Maintain access for emergency vehicles including access to fire hydrants.
- 4.4 Avoid obstructing drainage ditches or inlets; when obstruction is unavoidable due to requirements of the Work, provide grading and temporary drainage structures to maintain unimpeded flow.
- 4.5 Locate and protect private lawn sprinkler systems which may exist on rights-of-ways within the site. Repair or replace damaged systems to condition equal to or better than that existing at start of Work.
- 4.6 Perform daily clean-up of dirt outside the construction zone, and debris, scrap materials, and other disposable items. Keep streets, driveways, and sidewalks clean of dirt, debris and scrap materials. Do not leave building, roads, streets or other construction areas unclean overnight.

5.0 NOTIFICATION TO ADJACENT OCCUPANTS

- 5.1 Notify individual occupants in areas to be effected by the Work of the proposed construction and time schedule. Notification shall be not less than 72 hours or more than 2 weeks prior to work being performed within 200 feet of the homes or businesses. City Engineer will provide a sample door hanger showing form and content to be followed.
- 5.2 Include in notification names and telephone numbers of two company representatives for resident contact, who will be available on 24-hour call. Include precautions which will be taken to protect private property and identify potential access or utility inconvenience or disruption.
- 5.3 Submit proposed notification to City Engineer for approval. Consideration shall be given to the ethnicity of the neighborhood where English is not the dominant language. Notice shall be in an understandable language.

6.0 PUBLIC, TEMPORARY, AND CONSTRUCTION ROADS AND RAMPS

- 6.1 Construct and maintain temporary detours, ramps, and roads to provide for normal public traffic flow when use of public roads or streets is closed by necessities of the Work.
- 6.2 Provide mats or other means to prevent overloading or damage to existing roadways from tracked equipment or large or heavy trucks or equipment.
- 6.3 Construct and maintain access roads and parking areas as specified in Section 01504 - Temporary Facilities and Controls. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

7.0 EXCAVATION IN STREETS AND DRIVEWAYS

- 7.1 Avoid needless hindering or inconveniencing public travel on a street or any intersecting alley or street for more than two blocks at any one time, except by permission of the City Engineer.
- 7.2 Obtain the City Traffic Management and Maintenance Department and City Engineer's approval when the nature of the Work requires closing of an entire street. Permits required for street closure are the Contractor's responsibility. Avoid unnecessary inconvenience to abutting property owners.
- 7.3 Remove surplus materials and debris and open each block for public use as work in that block is complete.
- 7.4 Acceptance of any portion of the Work will not be based on return of street to public use.
- 7.5 Avoid obstructing driveways or entrances to private property.
- 7.6 Provide temporary crossing or complete the excavation and backfill in one continuous operation to minimize the duration of obstruction when excavation is required across drives or entrances.
- 7.7 Provide barricades and signs in accordance with Section VI of the State of Texas Manual on Uniform Traffic Control Devices.

8.0 TRAFFIC CONTROL

- 8.1 Comply with traffic regulation as specified in Section 01555 - Traffic Control and Regulation.

9.0 SURFACE RESTORATION

- 9.1 Restore site to condition existing before construction to satisfaction of City Engineer.

- 9.2 Repair paved area per the requirements of Section 02951 - Pavement Repair and Resurfacing. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

- 9.3 Repair turf areas which become damaged, level with bank run sand conforming to Section 02317 - Excavation and Backfill for Utilities, or topsoil conforming to Section 02911 - Topsoil, as approved by the City Engineer and resod in accordance with Section 02922 - Sodding. Water and level newly sodded areas with adjoining turf using steel wheel rollers appropriate for sodding. Do not use spot sodding or sprigging. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

PART 2 PRODUCTS -*** **Not Used*****

PART 3 EXECUTION -*** **Not Used*****

SECTION 01255
CHANGE ORDER PROCEDURES

PART 1 GENERAL

1.0 SECTION INCLUDES

- 1.1 Procedures for processing Change Orders, including:
- 1.2 Assignment of a responsible individual for approval and communication of changes in the Work;
- 1.3 Documentation of change in Contract Price and Contract Time;
- 1.4 Change procedures, using proposals and construction contract modifications, work change directive, stipulated price change order, unit price change order, time and materials change order;
- 1.5 Execution of Change Orders;
- 1.6 Correlation of Contractor submittals.

2.0 REFERENCES

- 2.1 Rental Rate Blue Book for Construction Equipment (Data Quest Blue Book). Rental Rate is defined as the full unadjusted base rental rate for the appropriate item of construction equipment.

3.0 RESPONSIBLE INDIVIDUAL

- 3.1 Contractor shall provide a letter indicating the name and address of the individual authorized to execute change documents, and who shall also be responsible for informing others in Contractor's employ and Subcontractors of changes to the Work. The information shall be provided at the Preconstruction Conference.

4.0 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

- 4.1 Contractor shall maintain detailed records of changes in the Work. Provide full information required for identification and evaluation of proposed changes, and to substantiate costs of changes in the Work.
- 4.2 Contractor shall document each proposal for a change in cost or time with sufficient data to allow evaluation of the proposal.
- 4.3 Proposals shall include, as a minimum, the following information as applicable:

4.3.1 Quantities of items in the original Document 00405 - Schedule of Unit Price Work with additions, reductions, deletions, and substitutions.

(PWE web link)

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

4.3.2 When Work items were not included in the Schedule of Unit Price Work, Contractor shall provide unit prices for the new items, with supporting information as required by the City Engineer.

4.3.3 Justification for any change in Contract Time.

4.3.4 Additional data upon request.

4.4 For changes in the Work performed on a time-and-material basis, the following additional information may be required:

4.4.1 Quantities and description of products and equipment.

4.4.2 Taxes, insurance and bonds.

4.4.3 Overhead and profit as noted in Document 00800 - Supplementary Conditions. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

4.4.4 Dates and times work was performed, and by whom.

4.4.5 Time records and certified copies of applicable payrolls.

4.4.6 Invoices and receipts for products, rented equipment, and subcontracts, similarly documented.

4.5 For changes in the work performed on a time-and-materials basis, rental equipment will be paid as follows:

4.5.1 Rented equipment will be paid by actual invoice cost for the duration of time required to complete the extra work without markup for overhead and profit. If the extra work comprises only a portion of the rental invoice where the equipment would otherwise be on the site, the Contractor shall compute the hourly equipment rate by dividing the actual monthly invoice by 176. (One day equals 8 hours and one week equals 40 hours.)

4.5.2 Operating costs shall not exceed the estimated operating costs given in the Blue Book for the item of equipment. Overhead and profit will be allowed on operating cost.

4.6 For changes in the work performed on a time-and-materials basis using Contractor-owned equipment, use Blue Book rates as follows:

- 4.6.1 Contractor-owned equipment will be paid at the Blue Book Rental Rate for the duration of time required to complete the extra work without markup for overhead and profit. The Rental Rate utilized shall be the lowest cost combination of hourly, daily, weekly or monthly rates. Use 150 percent of the Rental Rate for double shifts (one extra shift per day) and 200 percent of the Rental Rate for more than two shifts per day. Standby rates shall be 50 percent of the appropriate Rental Rate shown in the Blue Book. No other rate adjustments shall apply.
- 4.6.2 Operating costs shall not exceed the estimated operating costs given in the Blue Book for the item of equipment. Overhead and profit will be allowed on operating cost. Operating costs will not be allowed for equipment on standby.

5.0 CHANGE PROCEDURES

- 5.1 Changes to Contract Price or Contract Time can only be made by issuance of a Change Order. Issuance of a Work Change Directive will be formalized into a Change Order. All changes will be in accordance with the requirements of - General Conditions, **“REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700”**
- 5.2 The City Engineer will advise of minor changes in the Work not involving an adjustment to Contract Price or Contract Time as authorized by the General Conditions by issuing supplemental instructions.
- 5.3 Contractor may request clarification of Drawings, Specifications or Contract Documents or other information by using Document 00660 - Request for Information. Response by the City Engineer to a Request for Information does not authorize the Contractor to perform tasks outside the scope of the Work. All changes must be authorized as described in this section. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

6.0 PROPOSALS AND CONTRACT MODIFICATIONS

- 6.1 The City Engineer may issue Document 00661 - Request for Proposal, I which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications. The City Engineer may also request a proposal in the response to a Request for Information. Contractor shall prepare and submit a proposal within 7 days or as specified in the request.

(PWE web link)

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

- 6.2 The Contractor may propose an unsolicited change by submitting a proposal to the City Engineer describing the proposed change and its full effect on the Work, with a statement describing the reason for the change and the effect on the Contract Price and Contract Time including full documentation.

7.0 WORK CHANGE DIRECTIVE

- 7.1 City Engineer may issue a signed Work Change Directive instructing the Contractor to proceed with a change in the Work. A Work Change Directive will subsequently be incorporated in a Change Order.
- 7.2 The document will describe changes in the Work and will designate a method of determining any change in Contract Price or Contract Time.
- 7.3 Contractor shall proceed promptly to execute the changes in the Work in accordance with the Work Change Directive.

8.0 STIPULATED PRICE CHANGE ORDER

- 8.1 A stipulated price Change Order will be based on an accepted proposal including the Contractor's lump sum price quotation with Schedule of Values.

9.0 UNIT PRICE CHANGE ORDER

- 9.1 Where Unit Prices for the affected items of Work are included in the Bid Line Item Detail, the unit price Change Order will be based on the unit prices, subject to Articles 7 and 9 of the General Conditions, **"REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700"**
- 9.2 Where unit prices of Work are not pre-determined in the Bid Line Item Detail, the Work Change Directive or accepted proposal will specify the unit prices to be used.

10.0 TIME-AND-MATERIAL CHANGE ORDER

- 10.1 Contractor shall provide an itemized account and supporting data after completion of change, within time limits indicated for claims in the General Conditions, **"REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700"**
- 10.2 City Engineer will determine the change allowable in Contract Price and Contract Time as provided in the General Conditions, **"REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700"**
- 10.3 Contractor shall maintain detailed records of work done on time-and-material basis as specified in paragraph 10.4, Documentation of Change in Contract Price and Contract Time.
- 10.4 Contractor shall provide full information required for evaluation of changes and shall substantiate costs for changes in the Work.

11.0 EXECUTION OF CHANGE DOCUMENTATION

- 11.1 City Engineer will issue Change Orders, Work Change Directives, or accepted proposal for signatures of parties as described in Document 00700 - General Conditions. **"REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700"**

12.0 CORRELATION OF CONTRACTOR SUBMITTALS

12.1 For Stipulated Price Contracts, Contractor shall promptly revise the Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item.

12.2 For Unit Price Contracts, the next monthly estimate of work after acceptance of a Change Order will be revised to include any new items not previously included and the appropriate unit rates.

12.3 Contractor shall promptly revise progress schedules to reflect any change in Contract Time, and shall revise schedules to adjust time for other items of work affected by the change, and resubmit for review.

12.4 Contractor shall promptly enter changes to the on-site and record copies of the Drawings, Specifications or Contract Documents as required in Section 01785 - Project Record Documents.

*PART 2 PRODUCTS -*** Not Used****

*PART 3 EXECUTION -*** Not Used****

SECTION 01270
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Procedures for measurement and payment plus conditions for nonconformance assessment and nonpayment for rejected products.

2.0 AUTHORITY

2.1 Measurement methods delineated in Specification sections are intended to complement the criteria of this section. In the event of conflict, the requirements of the Specification section shall govern.

2.2 City Engineer will take all measurements and compute quantities accordingly.

2.3 Contractor shall assist by providing necessary equipment, workers, and survey personnel as required by City Engineer.

3.0 UNIT QUANTITIES SPECIFIED

3.1 Quantity and measurement estimates stated in the Agreement are for contract purposes only. Quantities and measurements supplied or placed in the Work and verified by City Engineer shall determine payment as stated in Article 9 of the General Conditions. **“REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700”**

3.2 If the actual Work requires greater or lesser quantities than those quantities indicated in the Bid Form, provide the required quantities at the unit prices contracted, except as otherwise stated in Article 9 of the General Conditions.

4.0 MEASUREMENT OF QUANTITIES

4.1 Measurement by Weight: Reinforcing steel, rolled or formed steel or other metal shapes will be measured by CRSI or AISC Manual of Steel Construction weights. Welded assemblies will be measured by CRSI or AISC Manual of Steel Construction or scale weights.

4.2 Measurement by Volume:

4.2.1 Stockpiles: Measured by cubic dimension using mean length, width, and height or thickness.

4.2.2 Excavation and Embankment Materials: Measured by cubic dimension using the average end area method.

4.2.3 Measurement by Area: Measured by square dimension using mean length and width or radius.

SECTION 01270
MEASUREMENT AND PAYMENT

4.2.4 Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

4.2.5 Stipulated Price Measurement: By unit designated in the agreement.

4.2.6 Other: Items measured by weight, volume, area, or lineal means or combination, as appropriate, as a completed item or unit of the Work.

5.0 PAYMENT

5.1 Payment Includes: Full compensation for all required supervision, labor, products, tools, equipment, plant, transportation, services, and incidentals; and erection, application or installation of an item of the Work; and Contractor's overhead and profit.

5.2 Total compensation for required Unit Price Work shall be included in Unit Price bid in the Bid Line Item Detail. Claims for payment as Unit Price Work, but not specifically covered in the list of unit prices contained in the Bid Line Item Detail, will not be accepted.

5.3 Interim payments for stored materials will be made only for materials to be incorporated under items covered in unit prices, unless disallowed in Supplementary Conditions.

5.4 Progress payments will be based on the City Engineer's observations and evaluations of quantities incorporated in the Work multiplied by the unit price.

5.5 Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities determined by City Engineer multiplied by the unit price for Work which is incorporated in or made necessary by the Work.

6.0 NONCONFORMANCE ASSESSMENT

6.1 Remove and replace the Work, or portions of the Work, not conforming to the Contract Documents.

6.2 If, in the opinion of City Engineer, it is not practical to remove and replace the Work, the City Engineer will direct one of the following remedies:

6.2.1 The nonconforming Work will remain as is, but the unit price will be adjusted to a lower price at the discretion of City Engineer.

6.2.2 The nonconforming Work will be modified as authorized by the City Engineer, and the unit price will be adjusted to a lower price at the discretion of City Engineer, if the modified work is deemed to be less suitable than originally specified.

6.2.3 Specification sections may modify the above remedies or may identify a specific formula or percentage price reduction.

6.3 The authority of City Engineer to assess the nonconforming work and identify payment adjustment is final.

7.0 NONPAYMENT FOR REJECTED PRODUCTS

7.1 Payment will not be made for any of the following:

7.1.1 Products wasted or disposed of in a manner that is not acceptable to City Engineer.

7.1.2 Products determined as nonconforming before or after placement.

7.1.3 Products not completely unloaded from transporting vehicle.

7.1.4 Products placed beyond the lines and levels of the required Work.

7.1.5 Products remaining on hand after completion of the Work, unless specified otherwise.

7.1.6 Loading, hauling, and disposing of rejected products.

SECTION 01312
COORDINATION AND MEETINGS

PART 1 GENERAL

1.0 SECTION INCLUDES

- 1.1 Section includes general coordination including pre-construction conference, site mobilization conference, and progress meetings.

2.0 RELATED DOCUMENTS

- 2.1 Coordination is required throughout the documents. Refer to all of the Contract Documents and coordinate as necessary.

3.0 CITY ENGINEER AND REPRESENTATIVES

- 3.1 The City Engineer may act directly or through designated representatives as defined in the General Conditions and as identified by name at the pre-construction conference.

4.0 CONTRACTOR COORDINATION

- 4.1 Coordinate scheduling, submittals, and Work of the various Specifications sections to assure efficient and orderly sequence of installation of interdependent construction elements.
- 4.2 Verify that utility requirement characteristics of operating equipment are compatible with existing or planned utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- 4.3 Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- 4.4 Conceal pipes, ducts, and wiring within the construction in finished areas, except as otherwise indicated. Coordinate locations of fixtures and outlets with finish elements.
- 4.5 Coordinate completion and clean up of Work for Substantial Completion and for portions of Work designated for City's partial occupancy.
- 4.6 Coordinate access to site for correction of nonconforming Work to minimize disruption of City's activities where City is in partial occupancy.

SECTION 01312
COORDINATION AND MEETINGS

5.0 PRECONSTRUCTION CONFERENCE

- 5.1 City Engineer will schedule a pre-construction conference.
- 5.2 Attendance Required: City Engineer's representatives, Architect/Engineer, Contractor, and major Subcontractors.
- 5.3 Agenda:
 - 5.3.1 Distribution of Contract Documents.
 - 5.3.2 Designation of personnel representing the parties in Contract, and the Architect/Engineer.
 - 5.3.3 Review of insurance.
 - 5.3.4 Discussion of formats proposed by the Contractor for schedule of values, and construction schedule.
 - 5.3.5 Procedures and processing of shop drawings and other submittals, substitutions, pay estimates or applications for payment, Requests for Information, Request for Proposal, Change Orders, and Contract closeout.
 - 5.3.6 Scheduling of the Work and coordination with other contractors.
 - 5.3.7 Review of Subcontractors.
 - 5.3.8 Appropriate agenda items listed for Site Mobilization Conference, paragraph 6.3, when pre-construction conference and site mobilization conference are combined.
 - 5.3.9 Procedures for testing.
 - 5.3.10 Procedures for maintaining record documents.

6.0 SITE MOBILIZATION CONFERENCE

- 6.1 When required by the Contract Documents, City Engineer will schedule a conference at the Project site prior to Contractor occupancy.
- 6.2 Attendance Required: City Engineer representatives, Architect/Engineer, Special Consultants, Contractor's Superintendent, and major Subcontractors.

- 6.3 Agenda:
 - 6.3.1 Use of premises by City and Contractor.
 - 6.3.2 Safety and first aid procedures.
 - 6.3.3 Construction controls provided by City.
 - 6.3.4 Temporary utilities.
 - 6.3.5 Survey and layout.
 - 6.3.6 Security and housekeeping procedures.
 - 6.3.7 Field office requirements.

7.0 PROGRESS MEETINGS

- 7.1 Project meetings shall be held at Project field office or other location as designated by the City Engineer. Meeting shall be held at monthly intervals, or more frequent intervals if directed by City Engineer.
- 7.2 Attendance Required: Job superintendent, major Subcontractors and suppliers, City Engineer representatives, and Architect/Engineer as appropriate to agenda topics for each meeting.
- 7.3 City Engineer or his representative will make arrangements for meetings, and recording minutes.
- 7.4 City Engineer or his representative will prepare the agenda and preside at meetings.
- 7.5 Contractor shall provide required information and be prepared to discuss each agenda item.
- 7.6 Agenda:
 - 7.6.1 Review minutes of previous meetings.
 - 7.6.2 Review of Work progress schedule submittal, and pay estimates, payroll and compliance submittals.
 - 7.5.3 Field observations, problems, and decisions.
 - 7.5.4 Identification of problems which impede planned progress.
 - 7.5.5 Review of submittals schedule and status of submittals.

SECTION 01312
COORDINATION AND MEETINGS

7.5.6 Review of RFI and RFP status.

7.5.7 Change order status.

7.5.8 Review of off-site fabrication and delivery schedules.

7.5.9 Maintenance of progress schedule.

7.5.10 Corrective measures to regain projected schedules.

7.5.11 Planned progress during succeeding work period.

7.5.12 Coordination of projected progress.

7.5.13 Maintenance of quality and work standards.

7.5.14 Effect of proposed changes on progress schedule and coordination.

7.5.15 Other item relating to Work.

SECTION 01325
CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.0 GENERAL

- 1.1 Provide Construction Schedules for Work included in this Contract in accordance with requirements in this Section. Create a Construction Schedule using Critical Path Method (CPM) computer software capable of mathematical analysis of Precedence Diagramming Method (PDM) schedules. Provide printed activity listings and bar charts in formats described in this Section.
- 1.2 Combine activity listings and bar charts with a narrative report to form the Contractor's Construction Schedule submittal for the City Engineer.

2.0 SCHEDULING STAFF

- 2.1 Employ or retain services of an individual experienced in critical path scheduling for the duration of the Contract. This person shall cooperate with the City Engineer and shall update the Contractor's schedule at least monthly as required to indicate current status of the Work.

3.0 SUBMITTALS

- 3.1 Make Construction Schedule submittals for review by the City Engineer in accordance with requirements of Section 01330 - Submittal Procedures.
- 3.2 During the pre-construction meeting, as described in Section 01312 - Coordination and Meetings, provide sample bar charts and activity listings produced from the scheduling software proposed. Scheduling software is subject to approval of the City Engineer and must meet requirements provided in this Section. Review of the samples will be provided by the City Engineer within 7 days of the submittal.
- 3.3 Within 21 days of receipt of approval of the Contractor's format, or 30 days of the Notice to Proceed, whichever is later, submit a proposed Construction Schedule for review. The Construction Schedule submittal shall be based on the following:
 - 3.3.1 The level of detail and number of activities required in the schedule are dependent on the project type.
 - 3.3.1.1 For wastewater projects, the work shall be categorized by Work Type and Area Code in the schedule.
 - 3.3.1.1.1 For wastewater rehabilitation projects, there are 6 work-type categories. An area code will be assigned for each Meter Service Area or Basin. The schedule shall include at least one activity for each unique combination of work type and area code. Normal schedules of wastewater

rehabilitation projects contain between 35 and 100 activities, depending on the number of basins and the work types involved in each basin.

3.3.1.1.2 For wastewater relief projects (line work), area codes will be assigned geographically.

3.3.1.1.3 For wastewater plant or facility work, other criteria may apply to the assignment of area codes, such as a combination of geographical and craft categories.

3.3.2 For projects with multiple types of tasks within the scope, these types of work shall be indicated separately within the schedule.

3.3.3 For projects with work at different physical locations or service areas, or different facilities within a site, each location or facility shall be indicated separately within the schedule. Work on each floor of a multi-story building shall be shown as separate tasks.

3.3.4 For projects with multiple crafts or significant subcontractor components, these elements shall be indicated separately within the schedule. Unless permitted by the City Engineer, tasks shall consist of work covered by only one division of the Project Manual.

3.3.5 Unless permitted by the City Engineer, each schedule task shall be the same as a schedule of values line item, and vice versa.

3.3.6 For projects with significant major equipment items or materials representing over 5 percent of the Total Contract Price, the schedule shall indicate dates when these items are to be purchased, when they are to be delivered, and when installed. Activities for testing, adjustment, and delivering O & M manuals shall be included.

3.3.7 No task except the acquisition of major equipment items shall represent more than one percent of the Total Contract Price for facility projects and 3 percent of the Total Contract Price for other projects. The duration of tasks may not exceed 40 calendar days.

3.3.8 For projects where operating **facilities** are involved, each period of work which will **impact** any process or operation shall be identified in the schedule and must be agreed to by the City Engineer and the facility operator prior to starting work in the area

3.3.9 Construction Schedule submittals shall include:

3.3.9.1 Printed bar charts which meet the criteria outlined in this Section and which are produced by the Contractor's approved scheduling software.

SECTION 01325
CONSTRUCTION SCHEDULE

- 3.3.9.2 Activity listings which meet the criteria outlined in this Section and which are produced by the Contractor's approved scheduling software.
 - 3.3.9.3 Predecessor/successor listing sorted by Activity ID which meets the criteria outlined in this Section and which is produced by the Contractor's approved scheduling software.
 - 3.3.9.4 A logic network diagram shall be required with the first construction schedule submittal for facilities projects.
 - 3.3.9.5 A graphic or tabular display of estimated monthly billings for the Work shall be prepared and submitted by the Contractor with the first schedule submittal. This information is not required in monthly updates, unless significant changes in work require resubmittal of the schedule for review. The display shall allocate units indicated in the bid schedule or the schedule of values to Construction Schedule activities. (Weighted allocations are acceptable, where appropriate). The dollar value associated with each allocated unit will be spread across the duration of the activity on a monthly basis. The total for each month and a cumulative total will be indicated. These monthly forecasts are only for planning purposes of the City Engineer. Monthly payments for actual work completed will be made by the City Engineer in accordance with Document 00700 - General Conditions. **“REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700”**
 - 3.3.9.6 A narrative report which shall provide the information outlined in this Section.
- 3.4 No payment will be made until the Construction Schedule and billing forecast are accepted by the City Engineer.
 - 3.5 If the Contractor desires to make changes in his method of operating and scheduling, after approval of the original schedule has been given by the City Engineer, the Contractor shall notify the City Engineer in writing, stating the reasons for the change. If the City Engineer considers these changes to be of significant nature, the Contractor may be required to revise and resubmit for approval all or the affected portion of the Contractor's Construction Schedule to show the effect on the Work.
 - 3.6 Upon written request from the City Engineer, the Contractor shall revise and submit for approval all or any part of the Construction Schedule submittal to reflect changed conditions in the Work or deviations made from the original plan and schedule.
 - 3.7 The Contractor's Construction Schedule shall thereafter be updated with Actual Start and Actual Finish Dates, Percent Complete, and Remaining Duration of

“Revised 11-5-08”

each Activity and submitted monthly. The data date to be used in updating the monthly Construction Schedule shall be the same data date as is used in the monthly Application for Payment. This monthly update of the schedule shall be required before the monthly Application for Payment will be processed for payment.

(Section 4.0 removed, pertains to new construction only)

5.0 NARRATIVE SCHEDULE REPORT

- 5.1 The Narrative Report shall include a listing of the Activities Started This Month; Activities Completed This Month; Activities Continued This Month; Activities Scheduled to Start or Complete Next Month; Problems Encountered This Month; Actions Taken to Solve These Problems.
- 5.2 The narrative Schedule Report shall include a description of changes made to the Construction Schedule Logic (i.e., changes in Predecessors and Lags); Activities Added to the Schedule; Activities Deleted from the Schedule; any other changes made to the Schedule other than the addition of Actual Start Dates and Actual Finish Dates and changes of Data Date and Remaining Durations for recalculation of mathematical analysis.

SECTION 01330
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Submittal procedures for:

- 1.1.1 Schedule of Values.
- 1.1.2 Construction Schedules.
- 1.1.3 Shop Drawings, Product Data, and Sampler/
- 1.1.4 Operations and Maintenance Data.
- 1.1.5 Manufacturer's Certificates.
- 1.1.6 Construction Photographs.
- 1.1.7 Project Record Documents.
- 1.1.8 Video Tapes.
- 1.1.9 Design Mixes.

2.0 SUBMITTAL PROCEDURES

2.1 Scheduling and Handling:

- 2.1.1 Schedule submittals well in advance of the need for the material or equipment for construction. Allow time to make delivery of material or equipment after submittal is approved.
- 2.1.2 Develop a submittal schedule that allows sufficient time for initial review, correction, resubmission and final review of all submittals. The City Engineer will review and return submittals to the Contractor as expeditiously as possible but the amount of time required for review will vary depending on the complexity and quantity of data submitted. In no case will a submittal schedule be acceptable which allows less than 30 days for initial review by the City Engineer. This time for review shall in no way be justification for delays or additional compensation to the Contractor.
- 2.1.3 The City Engineer's review of submittals covers only general conformity to the Drawings, Specifications and dimensions which affect the layout. The Contractor is responsible for quantity determination. No quantities will be verified by the City Engineer. The Contractor is responsible for any errors, omissions or deviations from the Contract requirements; review of submittals in no way relieves the Contractor from his obligation to furnish required items

SECTION 01330
SUBMITTAL PROCEDURES

according to the Drawings and Specifications.

2.1.4 Submit 5 copies of documents unless otherwise specified in the following paragraphs or in the Specifications.

2.1.5 Revise and resubmit submittals as required. Identify all changes made since previous submittal.

2.1.6 The Contractor shall assume the risk for material or equipment which is fabricated or delivered prior to approval. No material or equipment shall be incorporated into the Work or included in periodic progress payments until approval has been obtained in the specified manner.

2.2 Transmittal Form and Numbering:

2.2.1 Transmit each submittal to the City Engineer with a Transmittal Form. A copy of the Transmittal Form is attached.

2.2.2 Sequentially number each transmittal form beginning with the number 1. Resubmittals shall use the original number with an alphabetic suffix (i.e., 2A for first resubmittal of Submittal 2 or 15C for third resubmittal of Submittal 15). Each submittal shall only contain one type of work, material, or equipment. Mixed submittals will not be accepted.

2.2.3 Identify variations from requirements of Contract Documents and identify product or system limitations.

2.2.4 For submittal numbering of video tapes, see paragraph 10.2 Video, page 43.

2.3 Contractor's Stamp:

2.3.1 Apply Contractor's stamp, certifying that the items have been reviewed in detail and are correct and in accordance with Contract Documents, except as noted by any requested variance.

2.3.2 As a minimum, Contractor's Stamp shall include:

2.3.2.1 Contractor's name.

2.3.2.2 Job number.

2.3.2.3 Submittal number.

2.3.2.4 Certification statement that the Contractor has reviewed the submittal and it is in compliance with the Contract Documents.

2.3.2.5 Signature line for Contractor.

3.0 SCHEDULE OF VALUES

3.1 Submit a Schedule of Values in accordance with Section 01292 - Schedule of Values. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

SECTION 01330
SUBMITTAL PROCEDURES

4.0 CONSTRUCTION SCHEDULES

4.1 Submit Construction Schedules as provided in Project Manual.

5.0 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

5.1 Submit shop drawings in accordance with Section 01340 - Shop Drawings, Product Data, and Samples. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

6.0 OPERATIONS AND MAINTENANCE DATA

6.1 Submit Operations and Maintenance data in accordance with Section 01782 - Operations and Maintenance Data.

7.0 MANUFACTURER'S CERTIFICATES

7.1 When specified in Specification sections, submit manufacturers' certificate of compliance for review by City Engineer.

7.2 Contractor's Stamp, as described in paragraph 2.3, page 42, shall be placed on front page of the certification.

7.3 Submit supporting reference data, affidavits, and certifications as appropriate.

7.4 Certificates may be recent or previous test results on material or product, but must be acceptable to City Engineer.

8.0 CONSTRUCTION PHOTOGRAPHS

8.1 Submit Construction Photographs in accordance with Section 01321 - Construction Photographs. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

9.0 PROJECT RECORD DOCUMENTS

9.1 Submit Project Record Documents in accordance with Section 01785 - Project Record Documents.

10.0 VIDEO

10.1 Submit television video tapes as required in Section 02533 - Acceptance Testing for Sanitary Sewers. **(PWE web link)**

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

10.2 Transmittal forms for video tapes shall be numbered sequentially beginning with T01, T02, T03, etc.

SECTION 01330
SUBMITTAL PROCEDURES

11.0 DESIGN MIXES

11.1 When specified in Specifications, submit design mixes for review.

11.2 Contractor's Stamp, as described in paragraph 2.3, on page 42, shall be placed on front page of each design mix.

11.3 Mark each design mix to identify proportions, gradations, and additives for each class and type of design mix submitted. Include applicable test results on samples for each mix.

11.4 Maintain a copy of approved design mixes at mixing plant.

SECTION 01422
REFERENCE STANDARDS

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Section includes general quality assurance as related to Reference Standards and a list of references.

2.0 QUALITY ASSURANCE

2.1 For Products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

2.2 Conform to reference standard by date of issue current on the date as stated in the General Conditions.

2.3 Request clarification from City Engineer before proceeding should specified reference standards conflict with Contract Documents.

3.0 SCHEDULE OF REFERENCES

3.1 AASHTO American Association of State Highway
and Transportation Officials
444 North Capitol Street, N.W.
Washington, DC 20001

3.2 ACI American Concrete Institute
P.O. Box 9094
Farmington Hills, MI 48333-9094

3.3 AGC Associated General Contractors of America
1957 E Street, N.W.
Washington, DC 20006

3.4 AI Asphalt Institute
Asphalt Institute Building
College Park, MD 20740

3.5 AITC American Institute of Timber Construction
333 W. Hampden Avenue
Englewood, CO 80110

3.6 AISC American Institute of Steel Construction
400 North Michigan Avenue
Eighth Floor,
Chicago, IL 60611

- 3.7 AISI American Iron and Steel Institute
1000 16th Street, N.W.
Washington, DC 20036
- 3.8 ASME American Society of Mechanical Engineers
345 East 47th Street
New York, NY 10017
- 3.9 ANSI American National Standards Institute
1430 Broadway
New York, NY 10018
- 3.10 APA American Plywood Association
Box 11700
Tacoma, WA 98411
- 3.11 API American Petroleum Institute
1220 L Street, N.W.
Washington, DC 20005
- 3.12 AREA American Railway Engineering Association
50 F Street, N.W.
Washington, DC 20001
- 3.13 ASTM American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
- 3.14 AWPA American Wood-Preservers' Association
7735 Old Georgetown Road
Bethesda, MD 20014
- 3.15 AWS American Welding Society
P.O. Box 35104
Miami, FL 33135
- 3.16 AWWA American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235
- 3.17 COH City of Houston
900 Bagby Street
P.O. Box 1562
Houston, TX 77251-1562
- 3.18 CLFMI Chain Link Fence Manufacturers Institute
1101 Connecticut Avenue, N.W.
Washington, DC 20036

- 3.19 CRSI Concrete Reinforcing Steel Institute
933 Plum Grove Road
Schaumburg, IL 60173-4758
- 3.20 EJMA Expansion Joint Manufacturers Association
707 Westchester Avenue
White Plains, NY 10604
- 3.21 FS Federal Standardization Documents
General Services Administration
Specifications Unit (WFSIS)
7th and D Streets, S.W.
Washington, DC 20406
- 3.22 ICEA Insulated Cable Engineer Association
P.O. Box 440
S. Yarmouth, MA 02664
- 3.23 IEEE Institute of Electrical and Electronics Engineers
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 0855-1331
- 3.24 ISA International Society of Arboriculture
303 West University
P.O. Box GG
Savoy, IL 61874

SECTION 01422
REFERENCE STANDARDS

- 3.25 MIL Military Specifications
General Services Administration
Specifications Unit (WFSIS)
7th and D Streets, S.W.
Washington, DC 20406
- 3.26 NACE National Association of Corrosion Engineers
1440 South Creek Drive
Houston, TX 71084
- 3.27 NEMA National Electrical Manufacturers' Association
2101 L Street, N.W., Suite 300
Washington, DC 20037
- 3.28 NFPA National Fire Protection Association
Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
- 3.29 OSHA Occupational Safety Health Administration
U.S. Department of Labor
Government Printing Office
Washington, DC 20402
- 3.30 PCA Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077-1083
- 3.31 PCI Prestressed Concrete Institute
201 North Wacker Drive
Chicago, IL 60606
- 3.32 SDI Steel Deck Institute
Box 9506
Canton, OH 44711
- 3.33 SSPC Steel Structures Painting Council
4400 Fifth Avenue
Pittsburgh, PA 15213
- 3.34 TAC Texas Administrative Code
Texas Water Commission
P. O. Box 13087, Capitol Station
Austin, TX 78711-3087

3.36 TxDOT Texas Department of Transportation
11th and Brazos
Austin, TX 78701 2483

3.37 UL Underwriters' Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062

3.38 UNI-BELL UNI-BELL Pipe Association
2655 Villa Creek Drive, Suite 155
Dallas, TX 75234

*PART 2 PRODUCTS-*** Not Used****

*PART 3 EXECUTION-*** Not Used****

SECTION 01450
CONTRACTOR'S QUALITY CONTROL

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Quality assurance and control of installation and manufacturer's field services and reports.

2.0 MEASUREMENT AND PAYMENT

2.1 No payment will be made for this item. Include the cost of Contractor's quality control in overhead cost for this project.

3.0 QUALITY ASSURANCE/CONTROL OF INSTALLATION

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

3.2 Comply fully with manufacturers' installation instructions, including each step in sequence.

3.3 Request clarification from City Engineer before proceeding should manufacturers' instructions conflict with Contract Documents.

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

3.5 Perform work by persons qualified to produce the specified level of workmanship.

4.0 REFERENCES

4.1 Obtain copies of standards and maintain at job site when required by individual Specification sections.

5.0 MANUFACTURERS' FIELD SERVICES AND REPORTS

5.1 When specified in individual Specification sections, provide material or product suppliers' or manufacturers' technical representative to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, operator training, test, adjust, and balance of equipment as applicable, and to initiate operation, as required. Conform to minimum time requirements for start-up operations and operator training if defined in Specification sections.

5.2 At the City Engineer's request, submit qualifications of manufacturer's representative to City Engineer 15 days in advance of required representative's services. The representative shall be subject to approval of City Engineer.

SECTION 01450
CONTRACTOR'S QUALITY CONTROL

5.3 Manufacturer's representative shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions. Submit report within 14 days of observation to City Engineer for review.

*PART 2 PRODUCTS -*** Not Used****

*PART 3 EXECUTION -*** Not Used****

SECTION 01452
INSPECTION SERVICES

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Inspection services and references

2.0 INSPECTION

2.1 City Engineer will appoint an Inspector as a representative of the City to perform inspections, tests, and other services specified in individual specification Sections

2.3 Alternately, City Engineer may appoint, employ, and pay an independent firm to provide additional inspection or construction management services as indicated in Section 01454 - Testing Laboratory Services.

2.4 Reports will be submitted by the independent firm to City Engineer, Architect/Engineer, and City, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

2.5 Assist and cooperate with the Inspector; furnish samples of materials, design mix, equipment, tools, and storage.

2.6 Notify City Engineer 24 hours prior to expected time for operations requiring services. Notify Architect/Engineer and independent firm when noted.

2.7 Sign and acknowledge report for Inspector.

*PART 2 PRODUCTS-***Not Used****

*PART 3 EXECUTION-*** Not Used****

SECTION 01454
TESTING LABORATORY SERVICES

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Testing laboratory services and Contractor responsibilities related to those services.

2.0 REFERENCES

2.1 ASTM C 1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

2.2 ASTM D 3666 - Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials.

2.3 ASTM D 3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

2.4 ASTM E 329 - Specification for Minimum Requirements for Agencies Engaged the Testing and/or Inspection of Materials Used in Construction.

2.5 ISO/TEC Guide 25 - General Requirements for the Competence of Calibration and Testing Laboratories.

3.0 SELECTION AND PAYMENT

3.1 The City will select, employ, and pay for services of an independent testing laboratory to perform inspection and testing identified in Part 3, Execution, of individual Specification sections.

3.2 The Contractor shall employ and pay for services of an independent testing laboratory or laboratories to perform inspection and testing identified in Part 2, Products, of individual Specification sections.

3.3 Employment of a testing laboratory by the City shall not relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

3.4 The Contractor will have the minimum 2-hour charge for testing laboratory time deducted from the estimate for payment if operations requiring testing or inspection are canceled without prior notification.

3.5 The Contractor will have the cost of retesting deducted from the estimate for payment whenever failed work must be removed and replaced and retested.

SECTION 01454
TESTING LABORATORY SERVICES

4.0 QUALIFICATION OF LABORATORY

- 4.1 Meet laboratory requirements of ASTM E 329 and applicable requirements of ASTM C 1077, ASTM D 3666, and ASTM D 3740.
- 4.2 Meet the ISO/TEC Guide 25 conditions for accreditation by the American Association for Laboratory Accreditation (A2LA) in specific fields of testing required in individual Specification sections.
- 4.3 Where a laboratory subcontracts any part of the testing services, such work shall be placed with a laboratory complying with the requirements of this Section.

5.0 LABORATORY REPORTS

- 5.1 The testing laboratory shall provide and distribute copies of laboratory reports to the distribution list provided by the City Engineer at the pre-construction conference.
- 5.2 One copy of each laboratory report distributed or faxed to the Contractor shall be kept at the site field office for the duration of the project.
- 5.3 Before close of business on the working day following test completion and review, reports which indicate failing test results shall be transmitted immediately via fax from the testing laboratory to the material supplier, Contractor, and City Engineer.

6.0 LIMITS ON TESTING LABORATORY AUTHORITY

- 6.1 Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- 6.2 Laboratory may not approve or accept any portion of the Work.
- 6.3 Laboratory may not assume any duties of the Contractor.
- 6.4 Laboratory has no authority to stop the Work.

7.0 CONTRACTOR RESPONSIBILITIES

- 7.1 Provide safe access to the Work and to manufacturer's facilities for the City Engineer and for testing laboratory personnel.
- 7.2 Provide to the testing laboratory a copy of the construction schedule and a copy of each update to the construction schedule.
- 7.3 Notify the City Engineer and the testing laboratory during normal working hours of the day previous to the expected time for operations requiring inspection and testing services. If the Contractor fails to make timely prior notification, then the Contractor shall not proceed with the operations requiring inspection and testing

services.

- 7.4 Notify the Architect/Engineer 24 hours in advance if the Specification requires the presence of the Architect/Engineer for sampling or testing.
- 7.5 Request and monitor testing as required to provide timely results and to avoid delay to the Work. Provide samples to the laboratory in sufficient time to allow the required test to be performed in accordance with specified test methods before the intended use of the material.
- 7.6 Cooperate with laboratory personnel in collecting samples on site. Provide incidental labor and facilities for safe access to the Work to be tested; to obtain and handle samples at the site or at source of products to be tested; and to facilitate tests and inspections including storage and curing of test samples.

*PART 2 PRODUCTS -*** Not Used****

PART 3 EXECUTION

1.0 CONDUCTING TESTING

- 1.1 Laboratory sampling and testing specified in individual Specification sections shall conform to the latest issues of ASTM standards, TxDOT methods, or other recognized test standards as approved by the City Engineer.
- 1.2 The requirements of this section shall also apply to those tests for approval of materials, for mix designs, and for quality control of materials as performed by the testing laboratories employed by the Contractor.

SECTION 01555
TRAFFIC CONTROL AND REGULATION

PART 1 GENERAL

1.0 SECTION INCLUDES

- 1.1 Requirements for signs, signals, control devices, flares, lights and traffic signals, as well as construction parking control, designated haul routes and bridging of trenches and excavations.
- 1.2 Requirement for and qualifications of flagmen.

2.0 SUBMITTALS

- 2.1 A traffic control plan responsive to the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and sealed by a Registered Professional Engineer is incorporated into the Drawings. If the Contractor proposes to implement traffic control without modification to the plan provided, he shall submit a letter confirming that decision. If the Contractor proposes to implement traffic control different than the plan provided, he shall submit a traffic control plan in conformance with the TMUTCD and sealed by a Registered Professional Engineer.
- 2.2 For both the traffic control plan and flagmen use, submit schedules of values within 30 days following the Notice to Proceed. Refer to Section 01292 - Schedule of Values.

(PWE web link)

http://pweccms.cityofhouston.net/forms-amp-policies/search_result-2.html

- 2.3 The Contractor shall provide such information and records regarding the use of qualified flagmen to verify that the Contractor's use of "peace officers" as flagmen is in compliance with the Contract Documents and Texas law, including but not limited to, Article 4413 (29bb), commonly referred to as the Private Investigators and Private Security Agencies Act, and Article 2.12, Texas Code of Criminal Procedure.
- 2.4. The Contractor shall provide such information and records regarding the use of qualified flagmen to verify that the Contractor's use of "certified flagmen" as flagmen is in compliance with the Contract Documents and applicable City ordinance.
- 2.5. Make submittals in accordance with Section 01330 - Submittal Procedures. (page 41)

3.0 UNIT PRICES

- 3.1. Traffic Control and Regulation. Measurement is on a lump sum basis for traffic control and regulation, including submittal of a traffic control plan if different from the plan shown on the Drawings, provision of traffic control devices, and provision of equipment and personnel as necessary to protect the work and the public. The amount invoiced shall be determined based on the schedule of values submitted for traffic control and regulation.
- 3.2 Flagmen. Measurement is on a lump sum basis for flagmen as required for the Project. The amount invoiced shall be determined based on the schedule of values submitted for flagmen.
- 3.3 Refer to Section 01270 - Measurement and Payment for unit price procedures. (pg 29)

4.0 FLAGMEN

- 4.1. Use flagmen, qualified as described under paragraph 4.2, Uniformed Peace Officers, or paragraph 4.4, Certified Flagmen, to control, regulate, and direct the even flow or movement of vehicular or pedestrian traffic when construction operations encroach on public traffic lanes.
- 4.2. Uniformed Peace Officer: A person who has full-time employment as a peace officer and who receives compensation as a flagman for private employment as an individual employee or independent contractor. Private employment may be either an employee-employer relationship or on an individual basis. A flagman may not be in the employ of another peace officer and may not be a reserve peace officer.
 - 4.2.1 A peace officer is defined as:
 - 4.2.1.1 Sheriffs and their deputies;
 - 4.2.1.2 Constables and deputy constables;
 - 4.2.1.3 Marshals or police officers of an incorporated city, town, or village; or
 - 4.2.1.4 As otherwise provided by Article 2.12, Code of Criminal Procedure, as amended.
- 4.3 A person who has full-time employment as a peace officer is one who is actively employed in a full-time capacity as a peace officer working, on average, a minimum of 32 paid hours per week, being paid at a rate of pay not less than the prevailing minimum hourly wage rate as set by the federal Wage and Hour Act and entitled to the full benefits of participation in any retirement plan, vacation, holidays, and insurance benefits. A reserve peace officer does not qualify, under this definition, as a peace officer.
- 4.4 Certified Flagman: A person who receives compensation as a flagman and who meets the following qualifications and requirements:
 - 4.4.1 Formally trained and certified in traffic control procedures through the City's Department of Public Works & Engineering's E. B. Cape Center.
 - 4.4.2 Required to wear a distinctive uniform, bright-colored vest, and be equipped with appropriate flagging and communication devices.
 - 4.4.3 English speaking, with Spanish as an advantageous, but not required, primary or secondary language.
 - 4.4.4 Paid as a Certified Flagman, equivalent to the hourly wage rate set for Rough Carpenter under, Wage Scale for Engineering Construction, "SECTION B-3".
 - 4.4.5 Required to carry proof of training / certification, such as photographic identification card issued by the training institute, to allow the City Engineer to easily determine that necessary full-time traffic control is actually provided, when and where construction work encroaches upon traffic lanes.

SECTION 01555
TRAFFIC CONTROL AND REGULATION

PART 2 PRODUCTS

1.0 SIGNS, SIGNALS, AND DEVICES

- 1.1 Comply with Texas State Manual on Uniform Traffic Control Devices.
- 1.2 Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.

PART 3 EXECUTION

1.0 PUBLIC ROADS

- 1.1 Abide by laws and regulations of governing authorities when using public roads. If the Contractor's work requires that public roads be temporarily impeded or closed, approvals shall be obtained from governing authorities and permits paid for before starting any work. Coordinate activities with the City Engineer.
- 1.2 Contractor shall maintain at all times a 10-foot-wide all-weather lane adjacent to work areas which shall be kept free of construction equipment and debris and shall be for the use of emergency vehicles, or as otherwise provided in the traffic control plan.
- 1.3 Contractor shall not obstruct the normal flow of traffic from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. on designated major arterials or as directed by the City Engineer.
- 1.4 Contractor shall maintain local driveway access to residential and commercial properties adjacent to work areas at all times.
- 1.5 Cleanliness of Surrounding Streets:
 - 1.5.1 Keep streets used for entering or leaving the job area free of excavated material, debris, and any foreign material resulting from construction operations. Comply with City of Houston Ordinance No. 5705, Construction or Demolishing Privileges.

2.0 CONSTRUCTION PARKING CONTROL

- 2.1 Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and City's operations.
- 2.2 Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- 2.3 Prevent parking on or adjacent to access roads or in non-designated areas.

3.0 FLARES AND LIGHTS

- 3.1 Provide flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

SECTION 01555
TRAFFIC CONTROL AND REGULATION

4.0 HAUL ROUTES

- 4.1 Utilize haul routes designated by authorities or shown on the Drawings for construction traffic.
- 4.2 Confine construction traffic to designated haul routes.
- 4.3 Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

5.0 TRAFFIC SIGNS AND SIGNALS

- 5.1 Install traffic control devices at approaches to the site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- 5.2 Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
- 5.3 Relocate traffic signs and signals as Work progresses to maintain effective traffic control.

6.0 BRIDGING TRENCHES AND EXCAVATIONS

- 6.1 Whenever necessary, bridge trenches and excavation to permit an unobstructed flow of traffic.
- 6.2 Secure bridging against displacement by using adjustable cleats, angles, bolts or other devices whenever bridge is installed:
 - 6.2.1 On an existing bus route;
 - 6.2.2 When more than five percent of daily traffic is comprised of commercial or truck traffic;
 - 6.2.3 When more than two separate plates are used for the bridge; or
 - 6.2.4 When bridge is to be used for more than five consecutive days.
- 6.3 Install bridging to operate with minimum noise.
- 6.4 Adequately shore the trench or excavation to support bridge and traffic.
- 6.5 Extend steel plates used for bridging a minimum of one foot beyond edges of trench or excavation. Use temporary paving materials (premix) to feather edges of plates to minimize wheel impact on secured bridging.
- 6.6 Use steel plates of sufficient thickness to support H-20 loading, truck or lane, that produces maximum stress.

SECTION 01555
TRAFFIC CONTROL AND REGULATION

7.0 REMOVAL

7.1 Remove equipment and devices when no longer required.

7.2 Repair damage caused by installation.

7.3 Remove post settings to a depth of 2 feet.

**THE FOLLOWING ITEMS SHOULD BE CHECKED
FOR COORDINATION DURING DESIGN:**

1.0 Coordinate this specification with other related specifications including the following related Sections.

2.0 RELATED SECTIONS

2.1 Section 01270 - Measurement and Payment: Unit price procedures (pg 29)

2.2 Section 01292 - Schedule of Values (**PWE web link**)

http://pwecms.cityofhouston.net/forms-amp-policies/search_result-2.html

2.3 Section 01330 – Submittals (page 41)

SECTION 01576
WASTE MATERIAL DISPOSAL

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Disposal of waste material and salvageable material.

2.0 UNIT PRICES

2.1 No separate payment will be made for waste material disposal under this Section. Include payment in unit price for related sections.

3.0 SUBMITTALS

3.1 Submittals shall conform to requirements of Section 01330 - Submittal Procedures, on page 41.

3.2 Submit a copy of an approved "Development Permit", as defined in Chapter 19 of the Flood Plain Ordinance (City Ordinance Number 81-914 and Number 85-1705), prior to disposal of excess material in areas designated as being in a "100-year Flood Hazard Area" within the City. Contact the City of Houston Floodplain Manager, 3300 Main Street, at (713) 525-7605 for floodplain information.

3.3 Obtain and submit disposal permits for proposed disposal sites if required by local ordinances.

3.4 Submit a copy of written permission from property owner, along with description of property, prior to disposal of excess material adjacent to the Project. Submit a written and signed release from property owner upon completion of disposal work.

*PART 2 PRODUCTS -*** Not Used****

PART 3 EXECUTION

1.0 SALVAGEABLE MATERIAL

1.1 Excavated Material: When indicated on Drawings, load, haul, and deposit excavated material at a location or locations shown on Drawings outside the limits of Project.

1.2 Base, Surface, and Bedding Material: Load shell, gravel, bituminous, or other base and surfacing material designated for salvage into City of Houston trucks.

1.3 Pipe Culvert: Load culverts designated for salvage into City of Houston trucks.

SECTION 01576
WASTE MATERIAL DISPOSAL

1.4 Other Salvageable Materials: Conform to requirements of individual Specification Sections.

1.5 Coordinate loading of salvageable material on City of Houston trucks with City Engineer.

2.0 EXCESS MATERIAL

2.1 Vegetation, rubble, broken concrete, debris, asphaltic concrete pavement, excess soil, and other materials not designated for salvage, shall become the property of Contractor and shall be removed from the job site and legally disposed of.

2.2 Excess soil may be deposited on private property adjacent to the Project when written permission is obtained from property owner. See Paragraph 1.03 D above.

2.3 Verify the flood plain status of any proposed disposal site. Do not dispose of excavated materials in an area designated as within the 100-year Flood Hazard Area unless a "Development Permit" has been obtained. Excess material placed in a "100-year Flood Hazard Area" within the City, without a "Development Permit", shall be removed by Contractor at no additional cost to the City.

2.4 Waste materials shall be removed from the site on a daily basis, such that the site is maintained in a neat and orderly condition.

SECTION 01610
BASIC PRODUCT REQUIREMENTS

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Requirements for transportation, delivery, handling, and storage of material and equipment.

2.0 PRODUCTS

2.1 Products: Means material, equipment, or systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components designated for reuse.

2.2 Do not reuse materials and equipment, designated to be removed, except as specified by the Contract Documents.

2.3 Provide equipment and components from the fewest number of manufacturers as is practical, in order to simplify spare parts inventory and to allow for maximum interchangeability of components. For multiple components of the same size, type or application, use the same make and model of component throughout the project.

3.0 TRANSPORTATION

3.1 Make arrangements for transportation, delivery, and handling of equipment and materials required for timely completion of the Work.

3.2 Transport and handle products in accordance with instructions.

3.3 Consign and address shipping documents to the proper party giving name of Project, street number, and City. Shipments shall be delivered to the Contractor.

4.0 DELIVERY

4.0 Arrange deliveries of products to accommodate the short term site completion schedules and in ample time to facilitate inspection prior to installation. Avoid deliveries that cause lengthy storage or overburden of limited storage space.

4.1 Coordinate deliveries to avoid conflict with Work and conditions at the site and to accommodate the following:

4.1.1 Work of other contractors or the City.

4.1.2 Limitations of storage space.

SECTION 01610
BASIC PRODUCT REQUIREMENTS

4.1.3 Availability of equipment and personnel for handling products.

4.1.4 City's use of premises.

4.2 Have products delivered to the site in manufacturer's original, unopened, labeled containers.

4.3 Immediately upon delivery, inspect shipment to assure:

4.3.1 Product complies with requirements of Contract Documents.

4.3.2 Quantities are correct.

4.3.3 Containers and packages are intact; labels are legible.

4.3.4 Products are properly protected and undamaged.

5.0 PRODUCT HANDLING

5.1 Coordinate the off-loading of materials and equipment delivered to the job site. If necessary to move stored materials and equipment during construction, Contractor shall relocate materials and equipment at no additional cost to the City.

5.2 Provide equipment and personnel necessary to handle products, including those provided by the City, by methods to prevent damage to products or packaging.

5.3 Provide additional protection during handling as necessary to prevent breaking, scraping, marring, or otherwise damaging products or surrounding areas.

5.4 Handle products by methods to prevent over bending or overstressing.

5.5 Lift heavy components only at designated lifting points.

5.6 Handle materials and equipment in accordance with Manufacturer's recommendations.

5.7 Do not drop, roll, or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

6.0 STORAGE OF MATERIAL

6.1 Store and protect materials in accordance with manufacturer's recommendations and requirements of these Specifications.

6.2 Make necessary provisions for safe storage of materials and equipment. Place loose soil materials, and materials to be incorporated into the Work to prevent damage to any part of the Work or existing facilities and to maintain free access at all times to all parts of the Work and to utility service company installations in

- the vicinity of the Work. Keep materials and equipment neatly and compactly stored in locations that will cause a minimum of inconvenience to other contractors, public travel, adjoining owners, tenants, and occupants. Arrange storage in a manner to provide easy access for inspection.
- 6.3 Restrict storage to areas available on the construction site for storage of material and equipment as shown on Drawings or approved by the City Engineer.
 - 6.4 Provide off-site storage and protection when on-site storage is not adequate.
 - 6.5 Do not use lawns, grass plots, or other private property for storage purposes without written permission of the owner or other person in possession or control of such premises.
 - 6.6 Protect stored materials and equipment against loss or damage.
 - 6.7 Store in manufacturers' unopened containers.
 - 6.8 Materials delivered and stored along the line of the Work shall be neatly, safely, and compactly stacked along the work site in such manner as to cause the least inconvenience and damage to property owners and the general public, and shall be not closer than 3 feet to any fire hydrant. Public and private drives and street crossings shall be kept open.
 - 6.9 Damage to lawns, sidewalks, streets or other improvements shall be repaired or replaced to the satisfaction of the City Engineer. The total length which materials may be distributed along the route of construction at any one time is 1000 lineal feet, unless otherwise approved in writing by the City Engineer.

*PART 2 PRODUCTS -*** Not Used****

*PART 3 EXECUTION -*** Not Used****

SECTION 01725
FIELD SURVEYING

PART 1 GENERAL

1.0 QUALITY CONTROL

- 1.1 Conform to State of Texas laws for surveys requiring licensed surveyors. Employ a land surveyor acceptable to City Engineer, if required.

2.0 SUBMITTALS

- 2.1 Submit to City Engineer the name, address, and telephone number of Surveyor before starting survey work.
- 2.2 Submit documentation verifying accuracy of survey work on request.
- 2.3 Submit certificate signed by surveyor, that the elevations and locations of the Work are in conformance with Contract Documents.
- 2.4 Submit information under provisions of Section 01330 - Submittal Procedures, on page 41.

3.0 PROJECT RECORD DOCUMENTS

- 3.1 Maintain a complete and accurate log of control and survey work as it progresses.
- 3.2 Prepare a certified survey setting forth dimensions, locations, angles, and elevations of construction and site Work upon completion of foundation walls and major site improvements.
- 3.3 Submit Record Documents under provisions of Section 01785 - Project Record Documents. (page 80)

4.0 EXAMINATION

- 4.1 Verify locations of survey control points prior to starting Work.
- 4.2 Notify City Engineer immediately of any discrepancies discovered.

5.0 SURVEY REFERENCE POINTS

- 5.1 Control datum for survey is that established by City-provided survey as required in the General Conditions and indicated on Drawings.
“REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700”
- 5.2 Locate and protect survey control points prior to starting site work; preserve permanent reference points during construction.
- 5.3 Notify City Engineer 48 hours in advance of need for relocation of reference points due to changes in grades or other reasons.

SECTION 01725
FIELD SURVEYING

- 5.4 Report promptly to City Engineer the loss or destruction of any reference point.
- 5.5 Contractor shall reimburse City for cost of re-establishment of permanent reference points disturbed by Contractor's operations.

6.0 SURVEY REQUIREMENTS

- 6.1 Utilize recognized engineering survey practices.
- 6.2 Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on Project Record Documents.
- 6.3 Establish elevations, lines and levels to provide quantities required for measurement and payment and to provide appropriate controls for the Work. Locate and lay out by instrumentation and similar appropriate means:
 - 6.3.1 Site improvements including pavements; stakes for grading; fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 6.3.2 Grid or axis for structures.
 - 6.3.3 Building foundation, column locations, ground floor elevations.
- 6.4 Verify periodically layouts by same means.

SECTION 01770
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.0 SECTION INCLUDES

- 1.1 Substantial Completion Procedures.
- 1.2 Closeout procedures for final submittals, operation and maintenance data, warranties, spare parts and maintenance materials.
- 1.3 Texas Department of Licensing and Regulation (TDLR) inspection for ADA compliance.

2.0 SUBSTANTIAL COMPLETION

- 2.1 Comply with Document 00700 - General Conditions, regarding substantial completion when Contractor considers the Work, or portion thereof designated by City Engineer, to be substantially complete.
“REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700”

2.1.1 Insure the following items have been completed when included in the Work, prior to presenting a list of items to be inspected by Project Manager for issuance of a Certificate of Substantial Completion:

- 2.1.1.1 cutting, plugging, and abandoning of water, wastewater, and storm sewer lines, as required by specifications for each item;
- 2.1.1.2 construction of, and repairs to, pavement, driveways, sidewalks, and curbs and gutters;
- 2.1.1.3 sodding and hydromulch seeding, unless waived by City Engineer in writing;
- 2.1.1.4 general clean up including pavement markings, transfer of services, successful testing and landscape;
- 2.1.1.5 installation of all bid items, and
- 2.1.1.6 any additional requirements in Section 01110-Summary of Work on page 18.

- 2.2 Assist Project Manager with inspection of Contractor's list of items and complete or correct the items, including items added by project Manager, within a time period of 30 days or as mutually agreed.
- 2.3 Should Project Manager's inspection show failure of Contractor to comply with substantial completion requirements, including those items in Paragraph 2.1.1 of this specification, Contractor shall complete or correct the items, before requesting another inspection by Project Manager.

SECTION 01770
CLOSEOUT PROCEDURES

- 2.4 Comply with Document 00700 - General Conditions, Iregarding Final Completion and Final Payment when Work is complete and ready for City Engineer's final inspection.
"REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700"
- 2.5 Provide Project Record Documents in accordance with Section 01785 - Project Record Documents on page 80.
- 2.6 Complete or correct items on punch list, with no new items added. Address new items during warranty period.
- 2.7 City will occupy portions of Work as specified in other Sections.

3.0 FINAL CLEANING

- 3.1 Execute final cleaning prior to final inspection.
- 3.2 For facilities, clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- 3.3 Clean equipment and fixtures to sanitary condition.
- 3.4 Clean or replace filters of operating equipment.
- 3.5 Clean debris from roofs, gutters, down spouts, and drainage systems.
- 3.6 Clean site; sweep paved areas, rake landscaped surfaces clean.
- 3.7 Remove waste and surplus materials, rubbish, and temporary construction facilities from site following final test of utilities and completion of Work.

4.0 ADJUSTING

- 4.1 Adjust operating equipment to ensure smooth and unhindered operation. Value of this testing and adjusting is 5 percent of Lump Sum Price in Schedule of Values for item being tested.

5.0 OPERATION AND MAINTENANCE DATA

- 5.1 Submit operations and maintenance data as noted in Section 01330 - Submittal Procedures on page 41.
- 5.2 Five percent of lump sum amount of each piece of equipment as indicated in Schedule of Unit Price Work or Schedule of Values shall be paid after required O&M data submissions are received and approved by City Engineer.

6.0 WARRANTIES

- 6.1 Provide one original and two copies of each warranty from subcontractors, suppliers, and manufacturers.
- 6.2 Provide Table of Contents and assemble warranties in 3-ring/D binder with durable plastic cover.
- 6.3 Submit warranties prior to final progress payment.
- 6.4 Warranties shall commence in accordance with requirements in Document 00700 - General Conditions.
"REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700"

7.0 SPARE PARTS AND MAINTENANCE MATERIALS

- 7.1 Provide products, spare parts, maintenance and extra materials in quantities specified in individual Specification sections.
- 7.2 Deliver to location within City limits as directed by City Engineer; obtain receipt prior to final Payment Application.

8.0 TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR) INSPECTION

- 8.1 Contact TDLR's Houston Regional Office, 5425 Polk Street, Houston, Texas, 77023, telephone 713-924-6303, fax 713-921-3106, to verify schedule an inspection for ADA compliance prior to final completion.
- 8.2 Provide results of TDLR's inspection to City prior to final inspection.

9.0 FINAL PHOTOS

- 9.1 Provide per Specification Section 01322 - Construction Photographs for Facility Projects. **(PWE web link)**
http://pwecms.cityofhouston.net/forms-and-policies/search_result-2.html

10.0 PROJECT RECORD DOCUMENTS

- 10.1 Provide per Specification Section 01785 - Project Record Documents. (page 80)

*PART 2 PRODUCTS -***Not Used****

*PART 3 EXECUTION -*** Not Used****

SECTION 01785
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Maintenance and Submittal of Record Documents and Samples.

2.0 MAINTENANCE OF DOCUMENTS AND SAMPLES

2.1 Maintain one record copy of documents at the site in accordance with Document 00700 - General Conditions, paragraph 3.14, Documents and Samples at the Site.

"REFER TO E-BID SYSTEM, VENDOR LOG IN, SEE DOCUMENT 00700"

2.2 Store Record Documents and samples in field office if a field office is required by Contract Documents, or in a secure location. Provide files, racks, and secure storage for Record Documents and samples.

2.3 Label each document "PROJECT RECORD" in neat, large, printed letters.

2.4 Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.

2.5 Keep Record Documents and Samples available for inspection by City Engineer.

3.0 RECORDING

3.1 Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

3.2 Contract Drawings and Shop Drawings: Legibly mark each item to record all actual construction, or "as built" conditions, including:

3.2.1 Measured depths of elements of foundation in relation to finish first floor datum.

3.2.2 Measured horizontal locations and elevations of underground utilities and appurtenances, referenced to permanent surface improvements.

3.2.3 Elevations of underground utilities referenced to City of Houston bench mark utilized for project.

3.2.4 Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.

3.3 Field changes of dimension and detail.

3.3.1 Changes made by modifications.

3.3.2 Details not on original contract drawings.

3.3.3 References to related shop drawings and Modifications.

SECTION 01785
PROJECT RECORD DOCUMENTS

3.4 Record information with a red felt-tip marking pen on a set of blue line opaque drawings, provided by City Engineer.

4.0 SUBMITTALS

4.1 At contract closeout, deliver Project Record Documents to City Engineer.

*PART 2 PRODUCTS - ***Not Used****

*PART 3 EXECUTION - ***Not Used****

SECTION 02952
MUDJACKING (SLABJACKING) RIGID PAVEMENTS

PART 1 GENERAL

1.0 SECTION INCLUDES

1.1 Mudjacking Rigid Pavement.

2.0 MEASUREMENT AND PAYMENT

2.1 Measurement shall be made of the actual number of holes drilled necessary to accomplish the work and the area in square feet raised by this process.

2.2 Payment at the unit price shall be full compensation for furnishing all labor, equipment, tools, materials, constructing and filling the holes. In addition, waste material shall be removed and surrounding area restored.

2.3 Payment shall be made at the unit price bid per item.

3.0 REFERENCE

3.1 TxDOT Tex 120-E – Unconfined Compressive Strength.

PART 2 PRODUCTS

1.0 MATERIALS

1.1 Grout Mixtures: Portland cement grout mixture used for slabjacking shall consist of Portland cement, pozzolan or fly ash, limestone dust, sand, and water. The mix shall contain a minimum of 2 sacks of cement per cubic yard of grout, providing a minimum compressive strength of 650 psi at 7 days following TxDOT Tex 120-E. The use of accelerators, high range water reducers and fluidifiers are subject to the approval of the City Engineer.

1.2 Mineral Aggregate: Aggregate to be used for slabjacking may consist of natural sand, manufactured sand, or a combination of natural and manufactured sand and limestone dust. If the aggregate is a combination of separately processed sized from the same or different sources, or a blend of different materials, the different components shall be batched separately or blended prior to delivery to the batching plant under approved conditions.

2.0 EQUIPMENT

2.1 Grout Plant: The grout plant shall consist of a positive displacement grout injection pump capable of applying up to 250 psi pressure, a high speed colloidal mixing machine, and a grout mill connected to the cone-shaped

SECTION 02952
MUDJACKING (SLABJACKING) RIGID PAVEMENTS

bottom or a cylindrical dram. The colloidal mill shall operate between 800 to 2,000 RPM, creating a high shearing action and subsequent pressure release to make a homogeneous mixture. The injection system shall be capable of continuously pumping grout at rates as low as 1-1/2 gallons per minute and shall be equipped with pressure monitoring devices and a quick action valve system that can be closed instantly and provide for the grout to be re-circulated through the system.

PART 3 EXECUTION

1.0 PREPARATION

- 1.1 General Requirements: The Contractor shall furnish all equipment, tools, and other apparatus necessary for the proper construction and acceptable completion of the work specified under this contract. The equipment shall be approved by the City Engineer prior to starting the work, and maintained in good working condition by the Contractor during the progress of the work.
- 1.2 Pavement Inspection: Prior to jacking any pavement, the slabs shall be closely examined for any existing cracks. A representative of the Contractor and the City Engineer shall perform this investigation, and both parties shall satisfy themselves as to the existing condition of the pavement, and all existing cracks noted or marked.

2.0 EXECUTION

- 2.1 Drilling Holes for Grout Injection: Grout injection holes shall be drilled in a pattern as shown on the plans or as directed by the City Engineer. Holes shall not be larger than 2 inches in diameter drilled vertically to a depth sufficient to penetrate through any chemically stabilized base, but not more than three inches into the subgrade. Spacing of holes shall be a maximum of 24 inches on center. Holes shall be drilled in such a manner that breakout shall not occur at the bottom of the slab.
- 2.2 Drilling An air compressor and rock drills or other device capable of drilling the grout injections holes through the pavement and base material shall be provided. The holes are vertical and round. Down-feed pressure whether by hand or mechanical equipment shall be in good condition and operated in such a manner that the means shall not exceed 200 psi. Holes shall be drilled in such a manner so as to prevent breakout at the bottom of the pavement. All necessary hoses, valving and valve manifolds and positive cut-off and bypass provisions to control pressure and volume, pressure gauges with gauge protectors, expanding packers for positive seal grout injection, wood plugs, hole washing tools, drill steel and bits shall be provided by the Contractor.

SECTION 02952
MUDJACKING (SLABJACKING) RIGID PAVEMENTS

- 2.3 Jacking: Prior to jacking operations the Contractor shall erect string lines that will be blocked up from the pavement high points to monitor movement. An expanding rubber packer or other approved device providing a positive seal and connected to the discharge hose on the grout plant shall be lowered into the holes. The discharge end of the packer or hose shall not extend below the lower surface of the concrete pavement. The Contractor shall pump in a pattern and in the amount required to raise the pavement to within 0.01 foot from a string line grade. Grade tolerances shown in this section shall be applicable to transverse grades as well as longitudinal grades. Continuous pressures to 200 psi will be permitted. Pressures to 300 psi will be allowed only for short periods. Loss of grout through cracks, joints, other injection holes, or from back pressure in the hose or in the shoulder area will not be tolerated. Grout held in the mixer or in the injection pump or hose for more than one hour after mixing shall not be used for jacking.
- 2.4 Raising of Slabs: The slabs shall not be raised more than ¼ inch when pumping in any one hole at any time. No part of the slab shall lead any other part of the slab or any adjacent slab more than ¼ inch at a time. The entire slab and all adjacent slabs shall be kept on the same plane at all times, within the ¼ inch tolerance. The Contractor shall make observations to assure that when pumping from one hole, the grout flows to adjacent holes to insure that all voids are filled. The Contractor may cut a slab to prevent breakage when it is bound against an adjoining slab. If the temperature is 27 degrees C, 80 degrees F, or higher during the jacking operation, the slabs shall be sufficiently moistened to prevent expansion of the slabs.
- 2.5 Plan Grade Requirements: At all times during the raising of the slabs, the Contractor shall furnish and utilize qualified personnel and equipment for determining the proper elevations required to conform to the plan elevations. Upon completion of jacking operations, all slabs within the work area shall present an even grade at each joint and shall not vary from the plan elevations by more than (0.02) foot. If slabs are found that are lower than the specified tolerance from the plan grade, these slabs shall be further jacked until the tolerance is met. (If slabs are found that are higher than the specified tolerance, the Contractor shall raise the grade of the surrounding pavement, as determined by the City Engineer, to a newly established grade.) (Individual sections of pavement that are raised about the specified tolerances shall be brought to grade by grinding.) Should the over-jacking be greater than ¼ inch, the City Engineer has the option to require removal and replacement of the pavement. These repairs shall be accomplished at no additional cost to the City.
- 2.6 Sealing of Injection Holes: After jacking has been completed at any one hole, the packer shall be removed and the hole temporarily plugged immediately with a tapered wooden plug. The temporary wooden plugs shall not be removed until sufficient time has elapsed to permit the grout to set sufficiently so that back pressure will not force it through the holes. Each hole shall be

SECTION 02952
MUDJACKING (SLABJACKING) RIGID PAVEMENTS

permanently sealed flush with the pavement surface with a fast setting sand/cement or other patch material approved by the City Engineer. The patch material shall have a minimum thickness of 3 inches.

3.0 PROTECTION OF PAVEMENT

- 3.1 Weather Limitations: Pavement slabjacking shall be performed when the ambient temperature at the bottom of the pavement slab is less than 5 degrees C, 40 degrees F, or when the subgrade or subbase is frozen.
- 3.2 Traffic: Traffic shall not be permitted on the pavement until the grout has obtained a minimum set in 12 hours.
- 3.3 Replacing and Repair of Damaged Pavement: The Contractor shall replace or repair any slabs broken due to jacking as determined by the City Engineer at no cost to the City.

SECTION 02953
CRACK SEALING

PART 1 GENERAL

1.0 SECTION INCLUDES

- 1.1 Sealing Asphaltic Concrete Pavement Cracks.
- 1.2 Sealing Portland Cement Concrete Pavement Cracks.
- 1.3 MEASUREMENT AND PAYMENT
- 1.4 Measurement will be made by the linear foot of crack cleaned and sealed.
- 1.5 The work performed and material furnished as prescribed by this item at the unit price bid for Crack Sealing shall be full compensation for cleaning, furnishing and placing all materials and for all labor, equipment and incidentals necessary to complete the work.

PART 2 PRODUCTS

1.0 MATERIALS

- 1.1 2SS-IP Polymer Emulsion: This shall be a slow-setting anionic emulsion produced from a polymer-modified asphalt and shall be suitable for sealing fine cracks in asphaltic concrete pavement.
- 1.2 HFRS-2P High Float Emulsion: This shall be a rapid-setting anionic emulsion produced from a polymer-modified asphalt and shall be suitable for sealing fine cracks in asphaltic concrete pavement.
- 1.3 Rubber Asphalt Crack Sealing Compound: This material shall be a blend of rubber and asphalt and shall be suitable for sealing 1/8-inch or larger width cracks in Portland Cement concrete pavement. It shall be capable of being melted and applied by suitable oil-jacketed kettle equipped with pressure pump, hose and nozzle at a temperature of 400 F. or less. It shall contain no water or highly-volatile matter and shall not track by traffic as soon as cooled to road temperature.

2.0 EQUIPMENT

- 2.1 A reservoir, pump, hose, nozzle, and squeegee system capable of handling and applying the asphalt emulsion at ambient temperatures of 40 F. Or above in such a manner that it will seal cracks 1/16 to 1/8 inch in width. The City Engineer shall approve the system prior to use.
- 2.2 An oil jacketed kettle equipped with a pressure pump, hose and nozzle capable of applying the rubber asphalt crack sealing compound at the temperature of 400 or less. The equipment shall be approved by the City Engineer.

SECTION 02953
CRACK SEALING

- 2.3 Other equipment, tools and machinery necessary for proper prosecution of the work shall be on the project and approved by the City Engineer prior to beginning of joint sealing operations.

PART 3 EXECUTION

1.0 PREPARATION

- 1.1 Cracks 1/16- to 1/8-inch-width shall be blown out with compressed air and sealed with polymer-modified emulsion by a method satisfactory to the Engineer. If directed by the Engineer, a light coating of fmc sand shall be applied to the emulsion treated cracks prior to opening to traffic to prevent tracking.
- 1.2 Cracks 1/8 inch and larger than 1/8 inch width shall be cleaned of infiltrated material and blown dry with compressed air. The rubber asphalt material shall then be heated and applied to seal the cracks in a manner satisfactory to the City Engineer.
- 1.3 No sealing of any cracks shall be done unless the pavement temperature is above 40F and pavement and cracks are dry.

SECTION 02954
SAWED JOINTS

PART 1 GENERAL

1.0 SECTION INCLUDES

- 1.1 Sawing a joint to provide a clean break with a straight neat edge for removal of concrete pavement, concrete base and asphaltic concrete resurfacing, concrete curb or concrete curb and gutter.
- 1.2 Bid Line Items 4 and 5 (repair of concrete curbs and driveways) are covered by this specification.
- 1.3 If limit of removal of existing concrete or asphaltic pavement does not fall on existing joint, depth of saw cut shall be minimum of 1-1/2-inch to provide a straight, smooth joint surface without chipping, spalling, or cracking.
- 1.4 Sawing for full depth of pavement as required by plan drawings or as directed by the City shall provide a straight, smooth joint surface without chipping, spalling or cracking.

2.0 MEASUREMENT AND PAYMENT

- 2.1 Measurement for saw-cutting existing concrete pavement, concrete base asphaltic surfacing shall be by linear foot.
- 2.2 Saw-cutting existing standard concrete curbs will be considered as 1.5 linear feet and existing standard concrete curb and gutter as 3 linear feet.
- 2.3 Bid Items 5 and 6 are covered by this specification. Payment will depend upon 1-1/2-inch cut depth or full pavement cut depth. Payment at the respective unit price bid shall be full compensation for furnishing all labor, equipment, tools, materials and incidentals to complete the work.
- 2.4 Contraction joints and longitudinal weakened plane joints constructed in new pavement by saw-cutting will be considered incidental to the unit price for Concrete Pavement.
- 2.5 Joints for Curb, Curb and Gutters, Concrete Sidewalks, Concrete Pavement, Concrete Driveways and Wheel Chair Ramps constructed by saw-cutting in new construction will be considered incidental to the unit price for that application item.

3.0 SUBMITTALS

- 3.1 Submit Manufacturer's data and specifications for saw cutting equipment.

*PART 2 PRODUCTS – ***NOT USED****

SECTION 02954
SAWED JOINTS

PART 3 EXECUTION

1.0 **SAW-CUT METHOD**

- 1.1 Sawed joints shall be cut with a power-driven concrete pavement saw.
- 1.2 Circular cutter shall be capable of cutting straight line groove of minimum ½ inch width.
- 1.3 Concrete saw: Provide sawing equipment adequate in power to complete sawing to required dimensions and within required time. Provide at least one standby saw that is in good working order. Maintain an ample supply of saw blades at work site at all times during sawing operations. Sawing equipment shall be on job at all times during concrete placement.
- 1.4 Sawed joints may also be used as an alternate to formed contraction or weakened plane joints in newly constructed concrete pavement, curbs, curb and gutters, sidewalks and driveways. Ref to 2.2 above.
- 1.5 Circular cutter shall be capable of cutting straight line groove minimum of ½ inch wide. Depth shall be 1-1/2 inches or full depth according to plans or as directed by the City Engineer.
- 1.6 For newly constructed pavement, commence sawing as soon as concrete has hardened sufficiently to permit cutting without chipping, spalling or tearing and prior to initiation of cracks. Once sawing has commenced, it shall be continued until completed. Make saw cut with one pass. Complete sawing within 24 hours of new concrete placement. Saw joints at required spacing consecutively in sequence of concrete placement.

Section 03931
CONCRETE REPAIR AND REHABILITATION

PART 1 G E N E R A L

1.01 SECTION INCLUDES

- A. Repair of cracks, holes and surface defects, and repair of deteriorated concrete surfaces.
- B. Installation of embedded items into existing concrete.

1.02 UNIT PRICES

- A. Measurement for repair materials is on a lump-sum basis for each structure as bid. Payment includes work performed on these structures in accordance with related sections included in the Contract Documents.
- B. Measurement for extra removal of deteriorated concrete and placement of repair mortar is on a cubic-foot basis. Measurement for other repair materials is as defined in the appropriate related sections. Payment includes associated work performed in accordance with related sections included in the Contract Documents.
- C. Refer to Section 01270 - Measurement and Payment for unit price procedures.

1.03 REFERENCES

- A. ASTM C 109 - Compressive Strength of Hydraulic Cement Mortars.
- B. ASTM C 881 - Epoxy-Resin-Base Bonding Systems for Concrete.
- C. ASTM C 882 - Bond Strength of Epoxy-Resin Systems Used with Concrete.

1.04 SUBMITTALS

- A. Under provisions of Section 01330 -Submittal Procedures, submit manufacturer's product information, installation instructions and recommendations, and certification of compliance with required properties for all repair materials.

1.05 REPAIR SCOPE

- A. Patch and fill openings in existing concrete indicated to be patched or filled.
- B. Patch, fill holes in and otherwise repair damage to concrete and concrete surfaces resulting from removal of penetrating pipes and other embedded items, from installation of pipes or other items embedded in or passed through concrete, and from other construction activities.
- C. Crack Repair: Repair the full length of cracks in concrete members in new structures, and in existing structures as follows:
- D. Deteriorated Concrete:
 - 1. Repair interior concrete surfaces showing signs of deterioration in the following existing structures:
 - 2. The level of deterioration of the concrete varies within each of the listed structures. For bidding purposes, average depth of deteriorated concrete walls and undersides of top slabs is assumed to be one inch. Repair for the portion exceeding one inch in depth, as measured from the existing wall surface, will be paid as extra work as defined above.
- E. Make other repairs to existing structures as follows:

1.06 QUALITY ASSURANCE

- F. Field Tests of Cement-based Grouts:
 - 1. Compression test specimens will be prepared during construction by the City Engineer, or his authorized representative, from the first placement of each type of mortar or grout, and at intervals thereafter as determined by the City Engineer, to ensure continued compliance with these specifications.
 - 2. Specimen preparation and compression testing for repair mortar and non-shrink grout will be performed as specified in ASTM C 109. A set of three specimens will be made for testing at 7 days, 28 days, and additional testing as appropriate.
 - 3. Material failing to meet Contract requirements is subject to removal, and replacement with new material meeting requirements, at no additional cost to the City.
 - 4. Cost of laboratory tests on mortar and grout will be borne by the City, except Contractor shall pay for tests failed, and additional testing and investigation work performed because of work not meeting Contract requirements.

- 5. Contractor shall supply all materials necessary for fabricating test specimens and assist the Project Manager in obtaining specimens for testing.
- B. Repair concrete shall be tested as required in **Section 03311 - Structural Concrete**.
- C. Epoxy grout shall be tested as required in **Section 02956 - Structural Grout**.
- D. Chemical Grout:
 - 1. Installer: A waterproofing contractor with a minimum of 3 years experience in the installation of chemical grout systems as specified herein, and shall be certified or approved by the manufacturer.
 - 2. Waterproofing contractor shall submit a list of 5 previous jobs successfully completed by that firm that successfully utilized the specified chemical grout system.
- G. Construction Tolerances: As specified in Section 03100 - Concrete Formwork, and Section 03350 - Concrete Finishing, except as otherwise indicated.

PART 2 PRODUCTS

2.01 REPAIR MORTAR

- A. Repair Mortar: Prepackaged polymer-modified cement-based product specifically formulated for repair of surface defects in concrete, having the following properties:

<u>Physical Property</u>	<u>Value</u>	<u>ASTM Standard</u>
Compressive Strength (minimum)		C 109
1 day	2000 psi	
28 days	6000 psi	
Bond Strength (minimum)		C 882 (modified)
1 day	1200 psi	
7 days	2000 psi	

- B. Manufacturer and Product: Emaco by Master Builders, SR93 by Euclid Chemical Company, Sikacem by Sika Corporation, Five Star Structural Concrete by Five Star Products, Inc., or equal. Where the manufacturer

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offers products in formulations intended for specific application conditions such as overhead and shotcrete application, use the formulation recommended by the manufacturer for the condition required.

- C. Minimum Repair Thickness: 0.50 inch.

2.02 NON-SHRINK GROUT

- A Non-shrink Grout: Comply with requirements of Section 03600 - Structural Grout.

2.03 CONCRETE MATERIALS

- A. Cement: Type II Portland cement, unless indicated otherwise. Where repairs are made on wall surfaces exposed to view and above normal water surface elevation, blend white Portland cement with Type II cement as needed to match the color of adjacent existing concrete surface.
- B. Repair Concrete: Class A (4000 psi) concrete with one-inch maximum coarse aggregate, complying with Section 03310 - Structural Concrete; minimum repair thickness, 2 inches.
- C. Cement Grout: Comply with Section 03600 - Structural Grout; minimum repair thickness, one inch.
- D. Curing Materials, Bonding Agents, and Other Miscellaneous Materials: Comply with Section 03310 - Structural Concrete and Section 03390 - Concrete Curing.

2.04 AGGREGATE

- A. Aggregate for Extending Repair Mortar and Non-shrink Grout Products: 3/8 inch clean, washed gravel or crushed stone complying with Section 03390 - Concrete Curing.

2.05 CHEMICAL GROUT

- A. Chemical Grout: Hydrophobic urethane or polyurethane material of low viscosity suitable for pumped injection into cracks, which reacts with water to form a closed-cell foam material that completely fills and seals all cracks against leakage. Cured material shall remain elastic and maintain an expansive pressure through repeated wet-dry cycles.
- B. Manufacturer and Product: Scotch Seal 5600 by the Adhesives, Coatings, and Sealers Division of 3M Products; Flex LV by De Neef America, Inc.; SikaFix by Sika Corporation; or equal. Use different formulations in the same family of

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materials, accelerators, and other materials necessary for installation where recommended by the manufacturer for specific application conditions.

- C. Reacted and cured chemical grout shall be resistant to organic solvents, mild acids, alkali and micro-organisms. Cured material shall be approved for use with potable water by the appropriate federal, state, or local government agency.

2.06 EPOXY PRODUCTS

- A. Epoxy Grout: Comply with Section 03600 - Structural Grout, modified as specified herein.
- B. Epoxy for Crack Injection: ASTM C 881, Type IV; low viscosity, moisture-insensitive material specifically formulated for that use; 2500 psi minimum bond strength when tested in accordance with ASTM C 882 at 14 days, moist cured.

2.07 SEALANT

- A. Sealant: 2-part polyurethane.

2.08 FORMWORK

- A. Formwork, Where Needed: Comply with Section 03100 - Concrete Formwork.

2.09 REINFORCEMENT

- 6 Reinforcement, Where Required: Comply with **Section 03210 - Reinforcing Steel**.

2.10 RESILIENT WATERSTOP

- 5 Resilient Waterstop.

PART 3 EXECUTION

3.01 PREPARATION AND CURING

- A. Where repairs are made on wall surfaces exposed to view and above normal water surface elevation, installed repair material shall match adjacent concrete surface in color.
- B. Surface Preparation:
 - 1. Clean entire area to be repaired of laitance, foreign material and loose or deteriorated concrete by chipping, hydroblasting or sandblasting;

further roughen surfaces as specified herein. Where non-shrink grout or repair mortar is used, perform any additional surface preparation steps recommended by the manufacturer.

2. Where cementitious repair materials are used, maintain surfaces to be repaired in a saturated surface dry condition and prevent concrete from drying until repair operations are completed. Re-wet surfaces to be repaired by water spray on at least a daily basis. Remove standing water in areas to be repaired prior to placement of repair material. Provide means to remove excess water from the structure.
 3. Where repair material manufacturer recommends use of an epoxy bonding agent, follow recommendations of both the repair material and epoxy bonding agent manufacturers.
- C. Fully consolidate repair material, completely filling all portions of areas to be filled.
- D. Bring repair surfaces into alignment with adjacent existing surfaces to provide uniform, even surfaces. Unless indicated otherwise, repair surfaces shall match adjacent existing surfaces in texture and receive coatings or surface treatments provided for adjacent existing surfaces.
- E. Curing:
1. Cure repair mortar and non-shrink grout according to manufacturer's recommendations, except that minimum cure period shall be 3 days.
 2. Cure other materials in accordance with Section 03390 - Concrete Curing.
 3. If manufacturer recommends use of a curing compound, use no material that would interfere with the bond of any coating or adhesive required to be applied to the surface.

3.02 TREATMENT OF SURFACE DEFECTS

- A. Definition - Surface Defects: Depressions in concrete surfaces not extending all the way through a member, caused by physical damage, unrepaired rock pockets created during original placement, spalling due to corroded reinforcing steel or other embeds, or removal of embedded items or intersecting concrete members.
- B. Preparation:
1. Remove loose, damaged concrete by chipping to sound material.
 2. Where existing reinforcing bars are exposed, remove concrete at least one inch deep all around the exposed bars. If the existing bars are cut

through, cracked, or cross-sectional area is reduced by more than 25 percent, notify City Engineer immediately.

C. Repair Material:

1. Use only repair mortar to repair surface defects in members normally in contact with water or soil, and defects in interior surfaces of structures which are intended to contain water.
2. Repair of other surface defects may be by application of repair mortar, repair concrete or cement grout, as appropriate.

3.03 PATCHING OF HOLES IN CONCRETE

A. General:

1. Definition - Holes: For the purposes of this section, holes are defined as penetrations completely through a concrete member, with interior surfaces approximately perpendicular to the surface of the existing member. Chip interior surface areas which are inclined and do not meet this criterion as necessary to meet this requirement.
2. Perimeter of holes at the surface shall form a regular shape composed of curved or straight line segments. Provide at least the minimum placement depth specified for the material used at all locations. Score existing concrete by sawcutting and chip as needed to meet this requirement.
3. Roughen the interior surface of holes less than 12 inches in diameter to at least 0.125 inch amplitude. Roughen larger holes to at least 0.25 inch amplitude.
4. At holes not filled with repair mortar or non-shrink grout, and where otherwise recommended by the repair material manufacturer, coat existing surfaces to be repaired with epoxy bonding agent.
5. Where a surface of a member is exposed to view and the repair material cannot be adjusted to match the color of the existing concrete, hold back the repair material 2 inches from the surface. Fill the remaining 2 inches with color-adjusted cement grout. Roughen the surface of the repair material when placed to improve bond with the cement grout.

B. Patching Small Holes:

1. Fill holes less than 12 inches in least dimension and extending completely through concrete members with repair mortar or non-shrink grout.

2. Fill holes in members normally in contact with water or soil with Class I non-shrink grout in accordance with Section 03600 - Structural Grout.

C. Patching Large Holes:

1. Fill holes larger than 12 inches in least dimension with repair concrete, repair mortar or non-shrink grout.
2. Provide large holes normally in contact with water or soil and not filled with Class I non-shrink grout with resilient waterstop placed in a groove approximately 0.25 inch deep ground into the interior edge of the hole at the center of the wall providing a smooth surface in which to place the resilient waterstop. Alternatively, bond bentonite waterstop to the surface using an epoxy grout which completely fills all voids and irregularities beneath the waterstop material.
4. Provide reinforcing steel in layers matching existing reinforcement locations, except provide concrete cover required by the Contract Documents for the applicable service condition.
5. For holes smaller than 48 inches, reinforcement shall be at least #5 bars on 12 inch centers in each layer required. At all holes larger than 30 inches, drill and grout the reinforcement into the existing concrete.
6. For holes larger than 48 inches, see the drawings for reinforcement details.

3.04 PATCHING OF LINED HOLES

- A. These provisions apply to openings which have embedded material over all or a portion of the inside edge. Requirements for repairing holes in concrete specified above shall apply as modified herein. The City Engineer will determine when the embedded material is allowed to remain.
- B. Where embedded material is allowed to remain, trim it back a minimum of 2 inches from the concrete surface. Roughen or abrade the embedded material to promote good bonding to the repair material. Completely remove any substance that interferes with good bonding.
- C. Completely remove embedded items not securely and permanently anchored in the concrete.
- F. Completely remove embedded items larger than 12 inches in least dimension unless composed of a metal to which reinforcing steel can be welded. Where reinforcement is required, weld it to the embedded metal.
- G. The following additional requirements apply to concrete in contact with water or soil.

1. Fill lined openings less than 4 inches in least dimension with epoxy grout.
2. Coat lined openings greater than 4 inches but less than 12 inches in least dimension with an epoxy bonding agent prior to filling with Class I non-shrink grout.
3. Coat lined openings greater than 12 inches in least dimension with an epoxy bonding agent and bond bentonite waterstop to the interior of the opening prior to filling with approved repair material.

3.05 INSTALLATION OF PIPES AND FRAMES

- A. The following applies to installation of permanent pipes and frames in openings cut into existing concrete members.
- B. Cut opening to a size which is a minimum of one inch and a maximum of 3 inches larger than the outside edge of the embedded item. At openings with sharp corners, take care not to sawcut beyond the opening so as to damage existing reinforcing bars. At openings which are greater than 24 inches in least dimension, chip a keyway into the center of the wall. Keyway shall be at least 1.5 inches in depth and from 3 inches to 1/3 the member thickness in width. All surfaces except at the keyway shall be perpendicular to the member surface as specified herein for patching holes.
- C. Provide embedded items with a flange or other positive means of anchorage to repaired members. At members in contact with soil or water, provide continuous waterstop flanges around embeds. Where concrete pipe will be embedded, provide resilient waterstop around pipe at wall centerline.
- D. Roughen the interior surface of openings to at least 1/4-inch amplitude. Sandblast the embed surface to be in contact with concrete clean to promote good bonding to the repair material.
- E. Fill the space between the frame and the existing concrete with Class I non-shrink grout.
- F. Where surface of a member is exposed to view and the repair material cannot be adjusted to match the color of the existing material, hold back the repair material 2 inches from the surface. Fill the remaining 2 inches with color-adjusted cement grout.

3.06 NON-FIXED INSTALLATION OF PIPES

- A. The following applies to installation through existing concrete of piping to be sealed with adjustable linked seals, resilient connectors, or packing and sealant. When more appropriate, City Engineer may require installation of a sleeve instead of the core-drilled hole specified herein.

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- B. Size core-drilled opening to permit installation of the required seal; locate to minimize cutting of existing reinforcing steel.
- C. Where linked or resilient seals are to be installed, coat the interior surface of the opening with epoxy at least 1/8 inch thick for a smooth and even surface promoting a good seal.
- D. Where packing and sealant are required, seal exposed reinforcing bars with at least an 1/8-inch thick layer of epoxy extending 1/2 inch beyond the bars on all sides. Prepare the surface of the cut concrete and the pipe as recommended by the sealant manufacturer.

3.07 GENERAL CRACK REPAIR

- A. Repair cracks identified by the Project Manager as caused by shrinkage or thermal movement by injection with chemical grout as specified herein.
- B. Repair cracks not caused by shrinkage or thermal movement by epoxy injection or as otherwise directed by the Project Manager.

3.08 CHEMICAL GROUT CRACK REPAIR

- A. Inject chemical grout into all cracks as directed by the Project Manager in those structures included in the scope of work listed herein in accordance with the chemical grout manufacturer's installation instructions and recommendations.
- B. Location of Injection Ports: Locate injection ports as recommended by the chemical grout manufacturer and as needed to insure complete penetration of the joint or crack with the grout. Spacing of injection ports shall not exceed 2 feet.
- C. Drilling Ports: Drill holes for injection ports to the depth needed for proper distribution of the chemical grout. Take care to not damage any reinforcing steel.
- D. Port preparation: Clean holes for injection ports of all debris and fit with an injection fitting as provided by the manufacturer of the chemical grout, or equal. Install injection fittings in accordance with manufacturer's instructions; allow fittings to remain in place until chemical grout injection work is complete in that area. Install caps or valves at injection ports to prevent back flow of uncured chemical grout after it has been injected.
- E. Chemical Grout Injection:
 - 1. Follow instructions and recommendations of the chemical grout manufacturer and its representatives for chemical grout mixing and injection procedures.

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2. Seal cracks at the surface where needed to assure complete penetration of injected chemical grout and prevent loss of material.
3. Prior to chemical grout injection, inject water into ports to provide water for the reaction process, flush out foreign matter and verify continuity between adjacent ports. Inject water into each port until it begins to flow from an adjacent or nearby port.
4. If the water injection procedure indicates the potential presence of voids within members or behind members resting against soil, notify the Project Manager immediately.
5. Beginning at the lowest injection port, inject chemical grout until the grout begins to flow from an adjacent or nearby port. Repeat the process until the crack is completely filled. In general, port-to-port travel of the injection process will be from low to high in a continuous operation.
6. If port-to-port continuity does not occur at locations where continuity was verified through water injection, mark location and notify the Project Manager.
7. Avoid sudden application of high pressure during the injection process.
8. After completion of the grouting operation, remove all ports and surface sealing materials leaving an undamaged surface.

3.09 EPOXY CRACK REPAIR

- A. Inject epoxy into all cracks in damaged concrete as indicated by the City Engineer in structures included in the scope of work listed herein. Follow installation instructions and recommendations of the epoxy manufacturer.
- B. Inject cracks with sufficient pressure to ensure full penetration of epoxy but without causing further damage.
- C. Location, drilling and preparation of ports for injection: As specified for chemical grout herein.
- D. Epoxy Injection:
 1. Follow instructions of the epoxy manufacturer and its representatives for all mixing and injection procedures.
 2. Seal all cracks at the surface where needed to provide for complete penetration of the injected epoxy and to prevent loss of material.
 3. Beginning at the lowest injection port, inject the epoxy until it begins to flow from an adjacent or nearby port. Repeat the process until the crack is completely filled.

4. If port-to-port continuity does not occur, mark the location and notify Project Manager.
5. Avoid sudden application of high pressure during the injection process.
6. After completion of injection operations, remove all ports and surface sealing materials to leave an undamaged surface.

3.10 REPAIR OF DETERIORATED CONCRETE

- A. These provisions pertain to concrete damaged by abrasion, chemical attack or corrosion of reinforcing steel. The only material acceptable for surface repair is repair mortar as specified herein. Where the repaired surface is to be subsequently covered with a PVC liner or other protective material, coordinate finishing details with the liner material manufacturer.
- B. Surface Preparation:
 1. Remove loose, broken, softened and acid-contaminated concrete to sound, uncontaminated concrete.
 2. Notify the City Engineer when removal of deteriorated concrete is complete. Schedule two weeks for the City Engineer to inspect the surface, perform testing for acid contamination, determine if additional concrete must be removed, and to develop any special repair details that may be needed. Should it be determined that additional concrete must be removed to reach sound, uncontaminated material, schedule another two week period for further evaluation after completion of the additional removal.
 3. Follow repair mortar manufacturer's instructions for additional surface preparation.
- C. Repair Mortar Placement:
 1. Follow manufacturer's recommendations for mixing and placement of repair mortar. After the initial mixing of the repair mortar, do not add additional water to change the consistency should the mix begin to stiffen.
 2. Place repair mortar to the minimum thickness recommended by manufacturer but not less than 1/2 inch. Should there be areas where less than the minimum repair mortar depth of concrete is removed, Contractor may remove additional concrete to attain the minimum repair mortar thickness or may place repair mortar so as to increase the original thickness of the member. In any case, add repair mortar so that minimum cover over existing reinforcing steel is 2 inches. Do not place repair mortar so as to create locally raised areas. Where there is a transition with wall surfaces which are not in need of repair,

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do not feather the repair mortar at the transition. Sawcut a score line to not less than the minimum repair mortar depth and chip concrete out to it to form the transition. Take care not to cut or otherwise damage reinforcing steel.

3. Finish repair mortar in an even, uniform plane to restore the member to its original surface. Out-of-plane tolerance: No localized depressions or projections; 0.25 inch maximum gap between repair mortar surface and a 10-foot straight edge in any orientation at any location.

D. Finishing:

1. Apply a smooth magnesium float finish to repair mortar.
2. When completed: No sharp edges. Exterior corners, such as at penetrations: One-inch radius. Interior corners: Square, except 2-inch repair mortar fillet at corners to receive PVC lining.

THE FOLLOWING ITEMS SHOULD BE CHECKED FOR COORDINATION DURING DESIGN:

- A. Coordinate this specification with other related specifications including the following related Sections.

RELATED SECTIONS

Section 03100 - Concrete Formwork
Section 03211 - Reinforcing Steel
Section 03310 - Structural Concrete
Section 03350 - Concrete Finishing
Section 03390 - Concrete Curing
Section 03600 - Structural Grout

- B. Include this section whenever there are existing structures in the project which require repair. Modify the scope of work section to include all such structures and the types of repairs needed. Several types of repair are included; where a project does not require a particular form of repair, the appropriate paragraphs should be removed and the remaining specification adjusted accordingly.
- C. Paragraph 1.05C. Carefully and thoroughly document existing structures having cracks to be repaired, listing structures to be repaired and describing the crack repairs under the Paragraph below, or delete the Paragraph below and refer to the Drawings, if crack repair requirements in existing structures are sufficiently indicated there. Re-letter the remaining Paragraph(s) as required. Coordinate with Paragraph 3.9A.
- D. Paragraph 1.05D. The following is for concrete attacked chemically, usually by hydrogen sulfides which have turned into sulfuric acid. Repair is usually done to prepare for placement of a PVC liner or some other form of protective coating. Revise subparagraph 1 below to define repair scope, carefully describing areas to be repaired and the extent of repairs; refer to drawings if necessary. If possible, engage a testing lab during design to take core samples, test for sulfate levels at depth increments, and determine how much concrete must be removed to reach sound uncontaminated material. If that is done, revise subparagraph 2 below to define the amount of concrete to be removed; if testing ahead of time is not possible, revise subparagraph 2 as necessary to state the estimated amount of concrete to be removed.
- E. Paragraph 1.05E. Carefully and thoroughly document the extent of other repairs required to existing structures, listing the existing structures to be repaired and describing the nature of those repairs under the Paragraph below, or delete the Paragraph below and refer to the Drawings, if repair areas in existing structures are sufficiently indicated there.

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- F. Paragraph 2.01A. Repair mortars with faster strength gain and greater 28-day strengths are available if needed for a specific application. Some products listed below greatly exceed specified values. Contact manufacturers listed and adjust the required properties to suit what is available and appropriate.

- G. Paragraph 3.02. Add Paragraph 3.02B.3 below if reinforcing bars are known to be corroded or otherwise damaged to the point where replacement is necessary. Define such areas on the drawings, and add provisions in this section (or in Section 03310 - Structural Concrete) specifying repair by welding in replacement bars. The other subparagraphs in 3.02B are intended to cover situations where loss of rebar is not anticipated
 - 1. Score cut perimeter of damaged area at least one-half inch deep, to a maximum depth so as not to cut existing reinforcing steel. Chip existing concrete up to the score line so that minimum thickness of repair mortar is one-half inch.

- H. Paragraph 3.10C.3. Use tolerances and finish specified below for sheet PVC liner applied to concrete surface. Other liners or coatings may require a different level of finish or tolerance. Edit the following paragraphs to reflect the level of finish needed for the protection system selected for the project.

END OF DOCUMENT

**SECTION B-1
STANDARD DRAWINGS FOR CONCRETE PAVEMENT REPAIR**

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Table of Contents

This is a Work Order contract. Additional drawings may be provided to the Contractor with each Work Order, and at that time will become part of the Contract Documents.

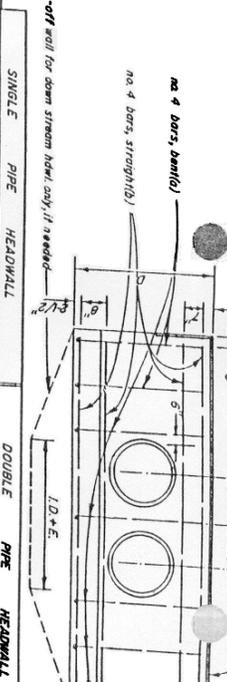
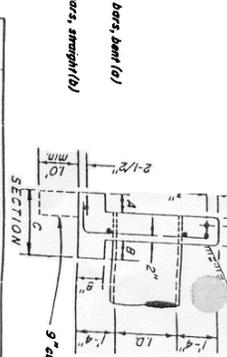
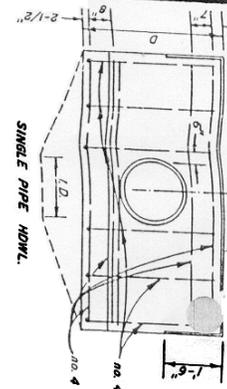
Sheet Number	Drawing Title	
547-S	Concrete Headwalls Details (Attachment A)	
02751-01	Concrete Pavement Details	
02754-01	Driveway Details (Streets with Curbs)	
02754-02	Driveway Details (Open Ditches)	
02775-02	Wheelchair Ramp Details	
2902-01	Pavement Repair Detail	
100	<i>Fire Station Driveway: 8" Driveway</i>	1
101	<i>Communications Bldg. Slab</i>	5
102	<i>Grade Beam</i>	1
103	<i>Foundation Repair</i>	1
104	<i>Generator Bldg. Slab</i>	2
105	<i>Typical Guard Post Detail</i>	1
106	<i>Pipe Protector Detail</i>	1
107	<i>Storm Inlet Detail</i>	1
108	<i>Trench Detail</i>	1
109	<i>Storm Pipe Detail</i>	1
110	<i>Trench & Inlet Detail</i>	1
COHTA1-2	<i>Type-A Grate Inlet</i>	1
110A	<i>Reinforced Concrete Culvert Pipe</i>	2
111	<i>Typical drilled pier</i>	1
112	<i>Typical existing foundation, new stabilizing pier</i>	1
113	<i>Slotted drain</i>	5
114	<i>Pavement under-cut detail where drive meets street</i>	2
115	<i>Pavement detail where drive meets street</i>	1

**TYPICAL SECTIONS FOR:
STRAIGHT, "L" AND "U" TYPE
INFORCED CONCRETE
ADWALLS**

OF HOUSTON

DEPARTMENT OF PUBLIC WORKS
APPROVALS
ASST. DIRECTOR OF PUBLIC WORKS
DESIGNED BY: A.H.D.
DRAWN BY: Baird
SHEET NO. 1 OF 1 SHEETS
DWG. NO.

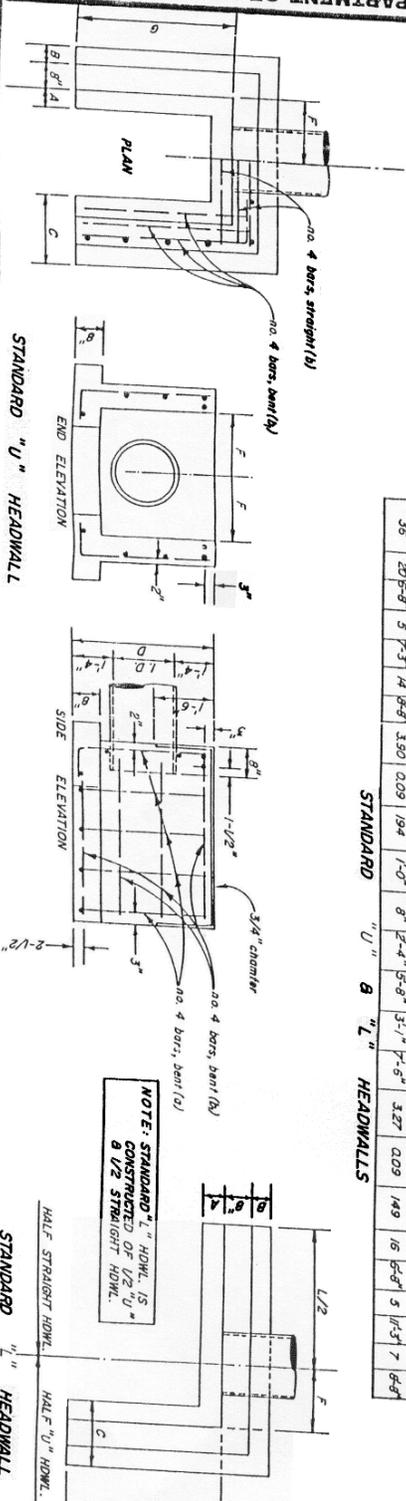
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SCALE: None
SUBMITTED: Montgomery

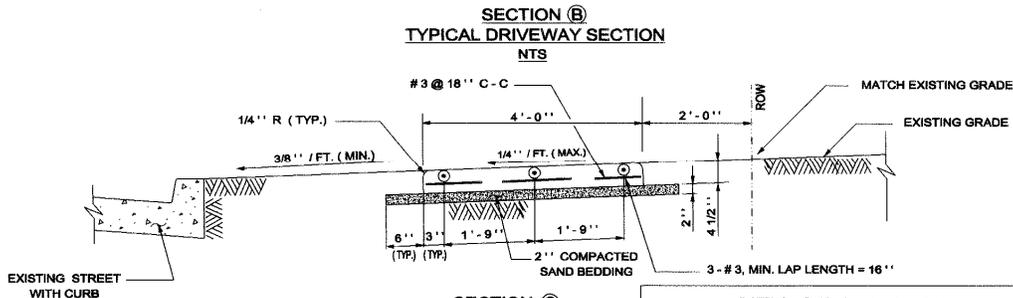
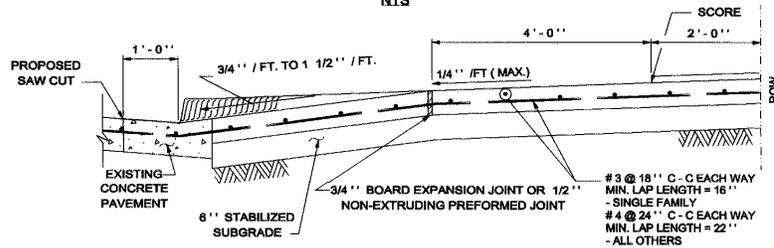
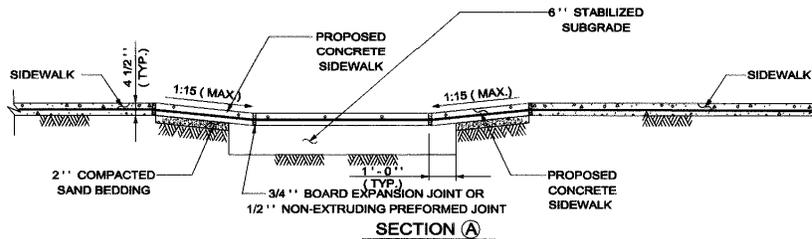
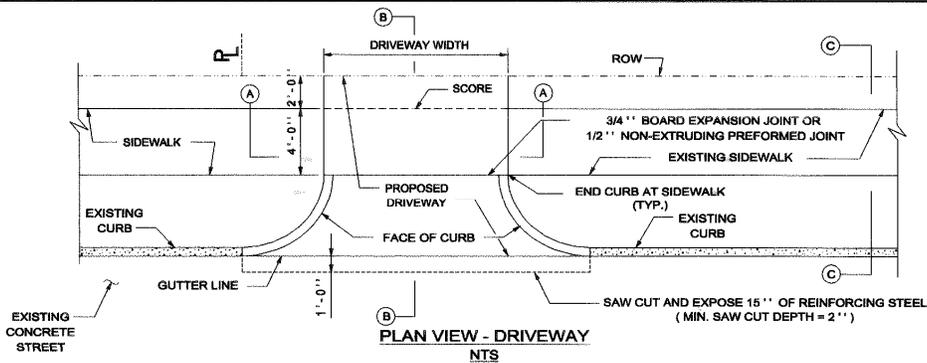


L.D.	DIMENSIONS										SINGLE PIPE HEADWALL		DOUBLE PIPE HEADWALL	
	A	B	C	D	E	L	L+E	REIN. FOR CONC. C.Y.	STEEL NUMBER & BARS	REIN. FOR CONC. C.Y.	STEEL NUMBER & BARS	REIN. FOR CONC. C.Y.	STEEL NUMBER & BARS	
18"	5"	1'-8"	4'-2"	2'-6"	9'-6"	12'-2"	1.17	0.03	NO. 4	NO. 4	NO. 4	NO. 4	NO. 4	
24"	8"	2'-0"	4'-8"	3'-6"	11'-6"	15'-0"	1.64	0.04	NO. 4	NO. 4	NO. 4	NO. 4	NO. 4	
30"	8"	2'-0"	5'-2"	4'-4"	13'-6"	17'-10"	2.05	0.06	NO. 4	NO. 4	NO. 4	NO. 4	NO. 4	
36"	1'-0"	8"	2'-4"	5'-2"	15'-6"	20'-8"	2.63	0.09	NO. 4	NO. 4	NO. 4	NO. 4	NO. 4	

L.D.	DIMENSIONS										SINGLE PIPE HEADWALL		DOUBLE PIPE HEADWALL	
	A	B	C	D	E	L	L+E	REIN. FOR CONC. C.Y.	STEEL NUMBER & BARS	REIN. FOR CONC. C.Y.	STEEL NUMBER & BARS	REIN. FOR CONC. C.Y.	STEEL NUMBER & BARS	
18"	12	4'-6"	5	4'-3"	10	5'-6"	1.68	0.03	NO. 4	NO. 4	NO. 4	NO. 4	NO. 4	
24"	14	5'-4"	5	5'-3"	12	5'-6"	2.37	0.04	NO. 4	NO. 4	NO. 4	NO. 4	NO. 4	
30"	18	5'-0"	5	5'-3"	12	5'-6"	3.01	0.06	NO. 4	NO. 4	NO. 4	NO. 4	NO. 4	
36"	20	5'-6"	5	5'-3"	14	6'-6"	3.90	0.09	NO. 4	NO. 4	NO. 4	NO. 4	NO. 4	

NOTE: STANDARD "L" HEADW. IS COMPOSED OF 1/2 "U" & 1/2 "U" STRAIGHT HEADW.

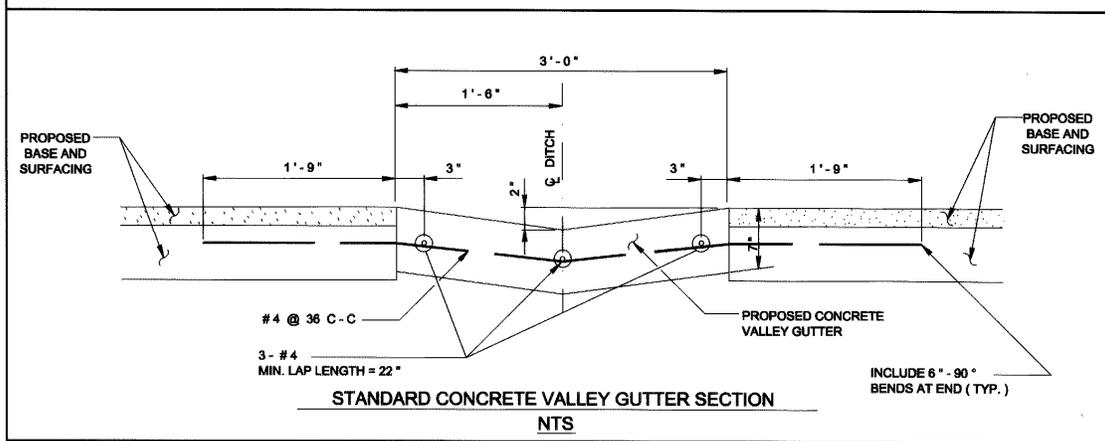
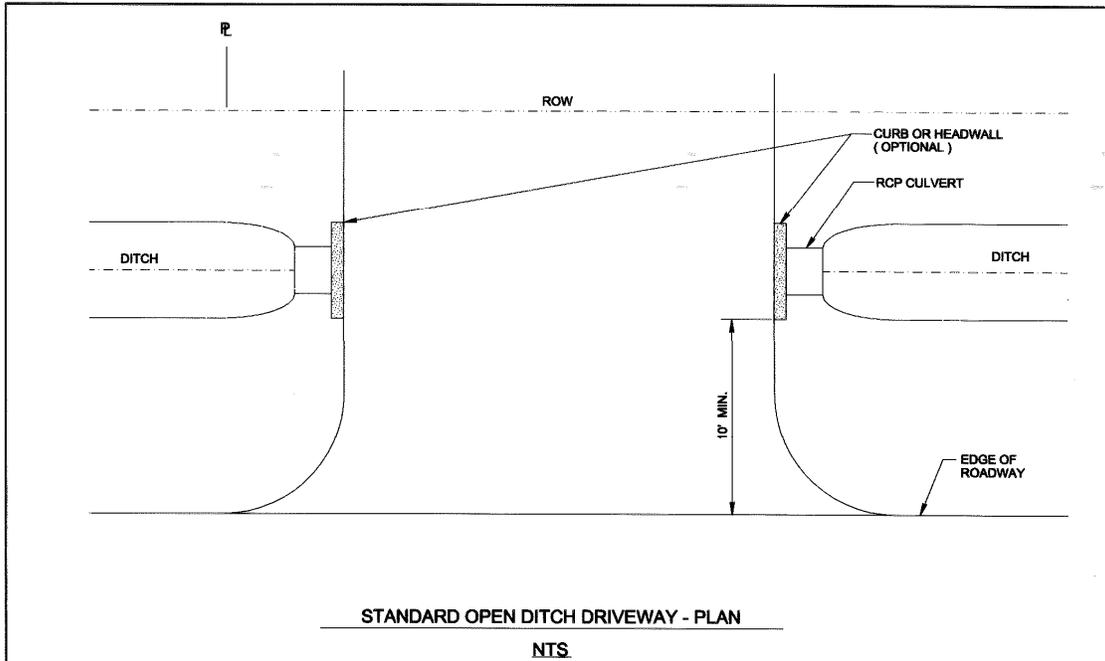




NOTES:

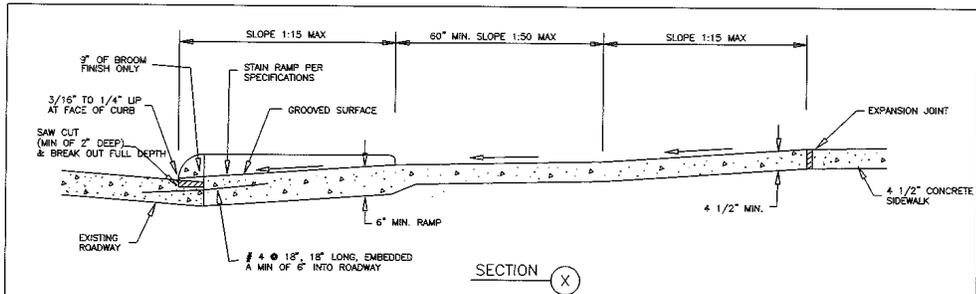
- 1 - DRIVEWAYS SHALL BE 6" THICK FOR SINGLE FAMILY USE AND 7" THICK FOR ALL OTHERS (I. E. COMMERCIAL, INDUSTRIAL, ETC.)
- 2 - DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 - 1/2 SACKS OF CEMENT PER PUBLIC YARD OF CONCRETE.
- 3 - 6 X 6 - W 2.9 X W 2.9 WELDED WIRE FABRIC MAY BE USED IN LIEU OF THE REINFORCING STEEL.
- 4 - EXPANSION & CONSTRUCTION JOINTS ALONG SIDEWALKS SHALL BE ACCORDING TO DRAWING NO. 02752-02

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
REINFORCED CONCRETE DRIVEWAY AND SIDEWALK DETAILS ON CURBED TYPE STREETS	
APPROVED BY: <i>[Signature]</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
DATE: 05 - 23 - 03	
DWG NO: 02754 - 01	DWG NO: 17201-1 <small>(BUILDING CODE)</small>

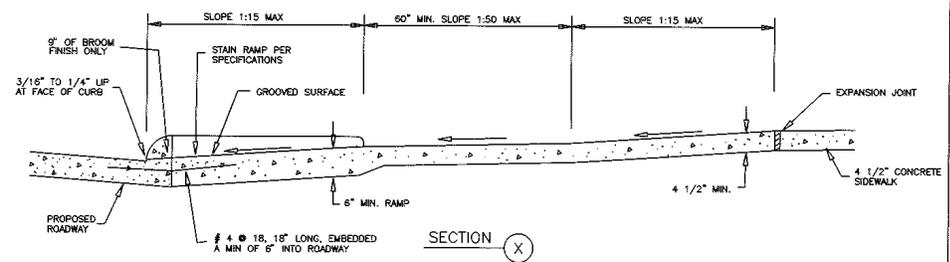


1. REINFORCED CONCRETE PIPE (RCP) CULVERTS AND CONCRETE VALLEY GUTTER GRADES SHALL BE SET BY CITY ENGINEER. PROFILE SHOWING THE PROPOSED AND EXISTING DITCH FLOWLINE WILL BE REQUIRED WHERE CONCRETE VALLEY GUTTERS ARE TO BE CONSTRUCTED IN LIEU OF CULVERTS.
2. CULVERT SIZE WILL BE APPROVED BY CITY ENGINEER WITH 18 " DIAMETER MINIMUM.
3. SPACING OF TYPE "D" OR "D - 1" INLETS SHALL BE DETERMINED BY CITY ENGINEER. SEE DRAWING NO. 02632 - 07 FOR TYPE "D" OR DRAWING NO. 02632 - 08 FOR TYPE "D - 1".
4. DRIVEWAY MAY BE CONCRETE, ASPHALT OR ANY OTHER MATERIAL WHICH WILL NOT PERMIT WIND OR WATERBORNE EROSION.
5. A 3 - FOOT CONCRETE VALLEY GUTTER SECTION SHALL BE CONSTRUCTED THROUGH THE PROPOSED DRIVEWAY WHERE THE CITY ENGINEER DETERMINES THE INSTALLATION OF DITCH CULVERTS TO BE IMPRACTICAL DUE TO INSUFFICIENT DEPTH. THE VALLEY GUTTER SECTION WILL BE CONSTRUCTED OF 5 - 1/2 SACK CEMENT PER CUBIC YARD OF CONCRETE.

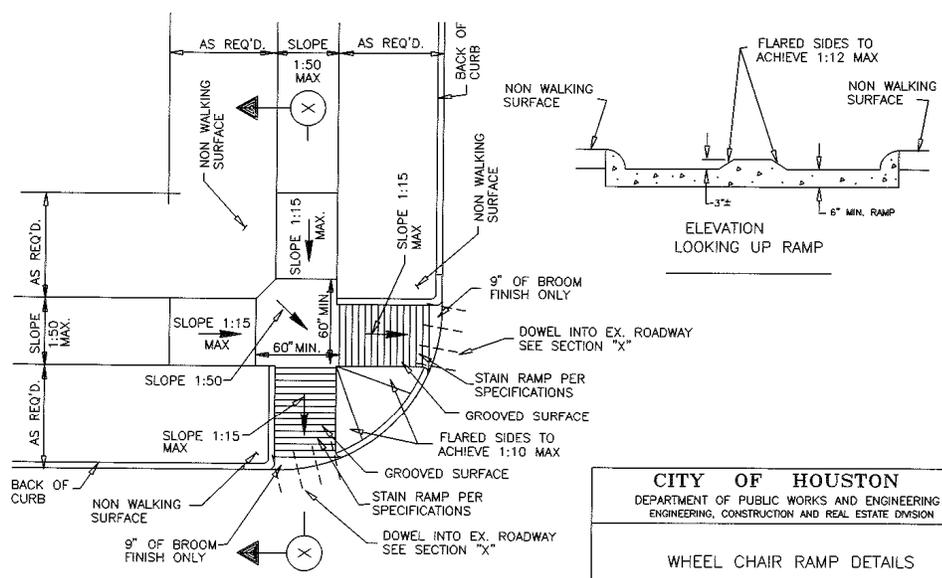
CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
DRIVEWAYS WITH CULVERTS OR VALLEY GUTTERS ON OPEN DITCH TYPE STREETS	
APPROVED BY: <i>Brandagiri</i> CITY ENGINEER	APPROVED BY: <i>Tom C. [Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
DATE: 05 - 23 - 03	
DWG NO: 02754 - 02	DWG NO: 17201 - 2 (BUILDING CODE)



SECTION X
EXISTING CONCRETE PAVEMENT CONSTRUCTION

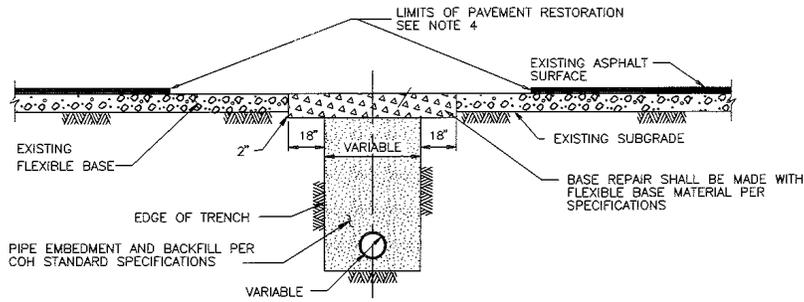


SECTION X
NEW CONCRETE PAVEMENT CONSTRUCTION



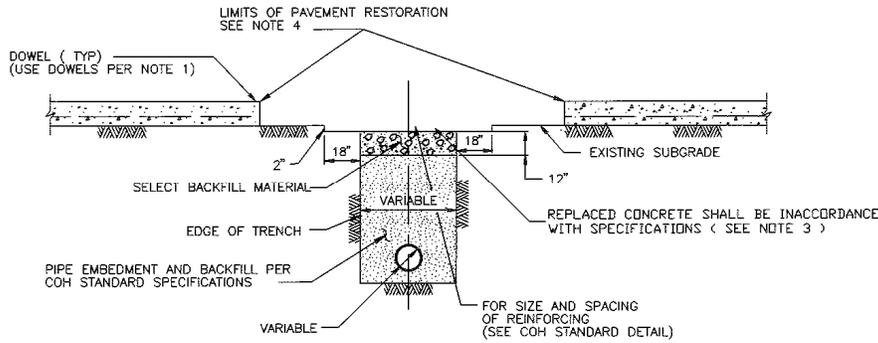
RESIDENTIAL & RURAL CONDITIONS
N.T.S.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
WHEEL CHAIR RAMP DETAILS (NOT TO SCALE)	
APPROVED BY: <i>Braudner</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATED CT-01-2002	DWG NO: 02775-02



SECTION (A)

REPAIR OF FLEXIBLE BASE PAVEMENT



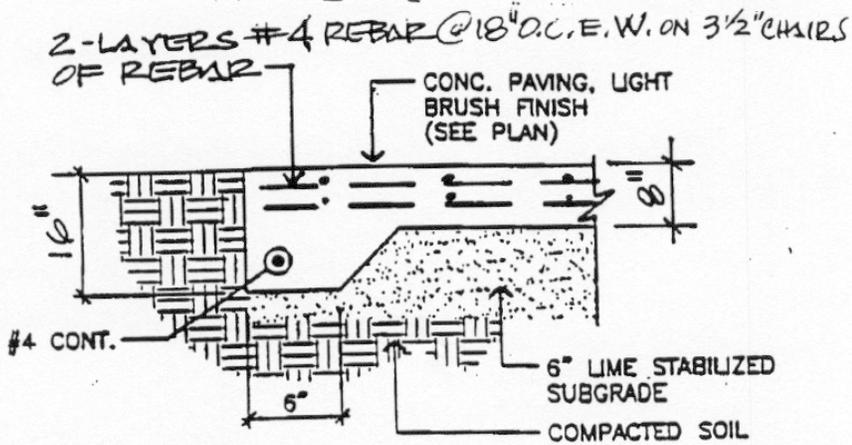
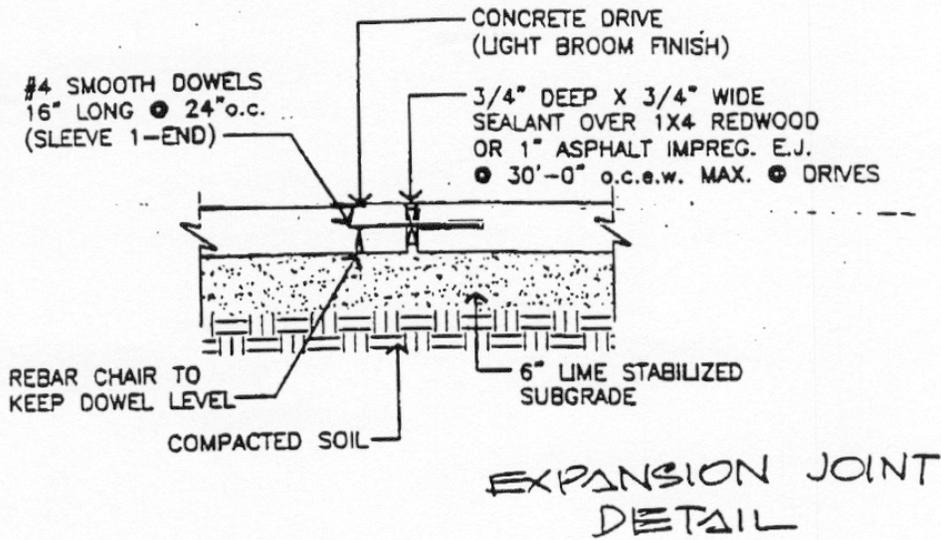
SECTION (B)

REPAIR OF REINFORCED CONCRETE PAVEMENT

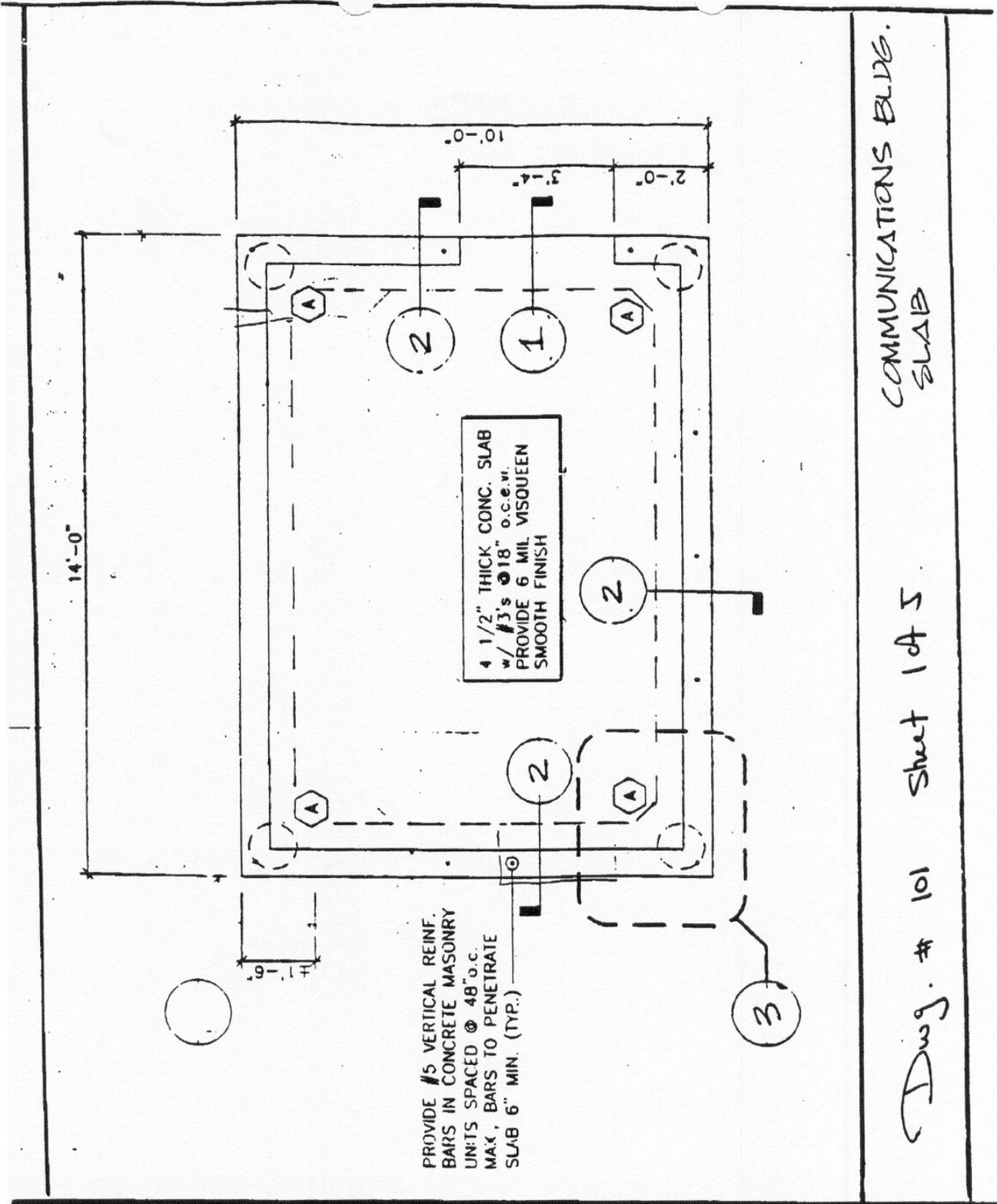
NOTE:

1. EXPOSE 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE # 6 BARS, 24" LONG, 24" C-C, DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB. WITH "PO ROC" OR EQUAL.
2. IF REINFORCED CONCRETE IS OVERLAYED WITH ASPHALT, REPLACE WITH 2" MIN HMAC SURFACING.
3. REFER TO STANDARD DETAIL 02751-01 FOR REINFORCING STEEL REQUIREMENTS
4. REFER TO STANDARD DETAIL 02951-01 FOR PAVEMENT RESTORATION LIMITS.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
PAVEMENT REPAIR DETAILS FOR STREET CUTS (NOT TO SCALE)	
APPROVED BY: <i>S. S. S. S.</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02902-01

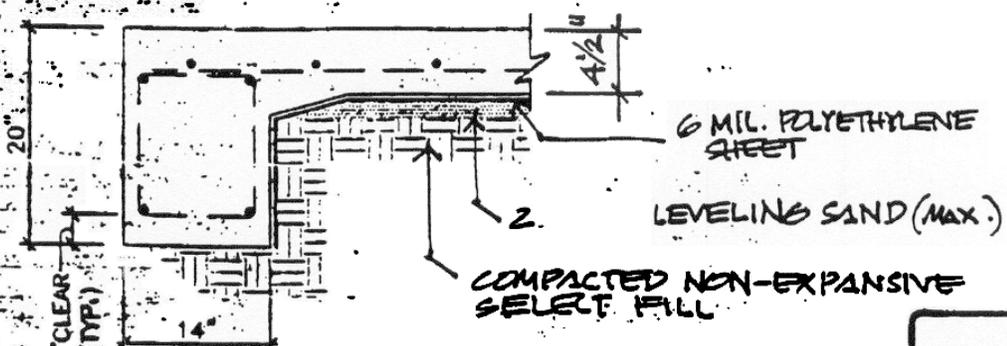


Sheet 1 of 1 Fire Station Driveway
Dwg. # 100



GRADE BEAM

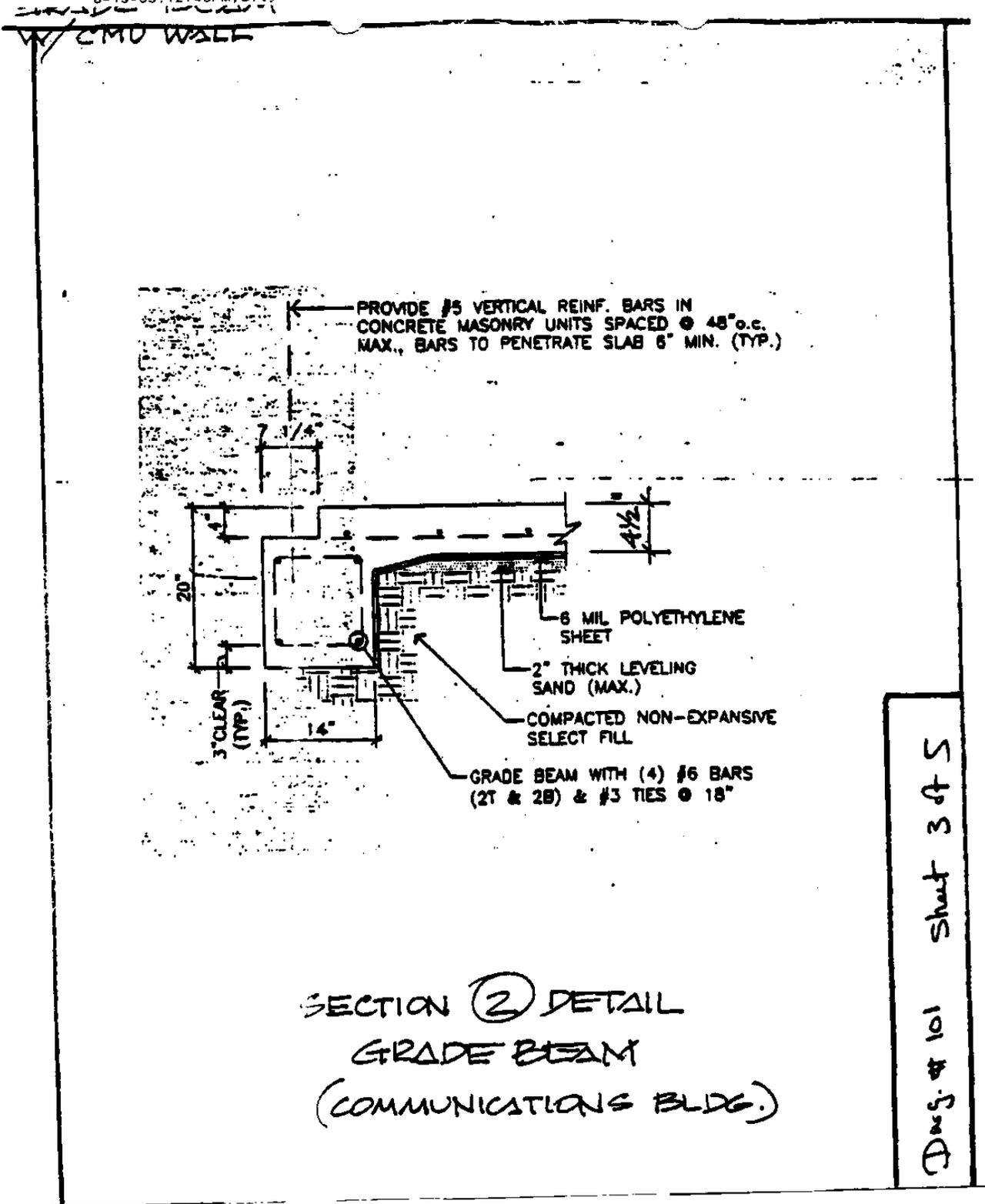
NOTE: ADDITIONAL FILL MATERIAL WITHIN THE BUILDING AREA SHOULD BE A SILTY OR SANDY CLAY HAVING A PLASTICITY INDEX (P.I.) OF TEN (10) TO TWENTY (20) AND A LIQUID LIMIT OF 28 OR MORE. FILL MATERIALS SHOULD BE PLACED IN SIX (6) TO EIGHT (8) INCH LOOSE LIFTS AND COMPACTED TO NINETY-FIVE (95) PERCENT OF THEIR MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM D 698).



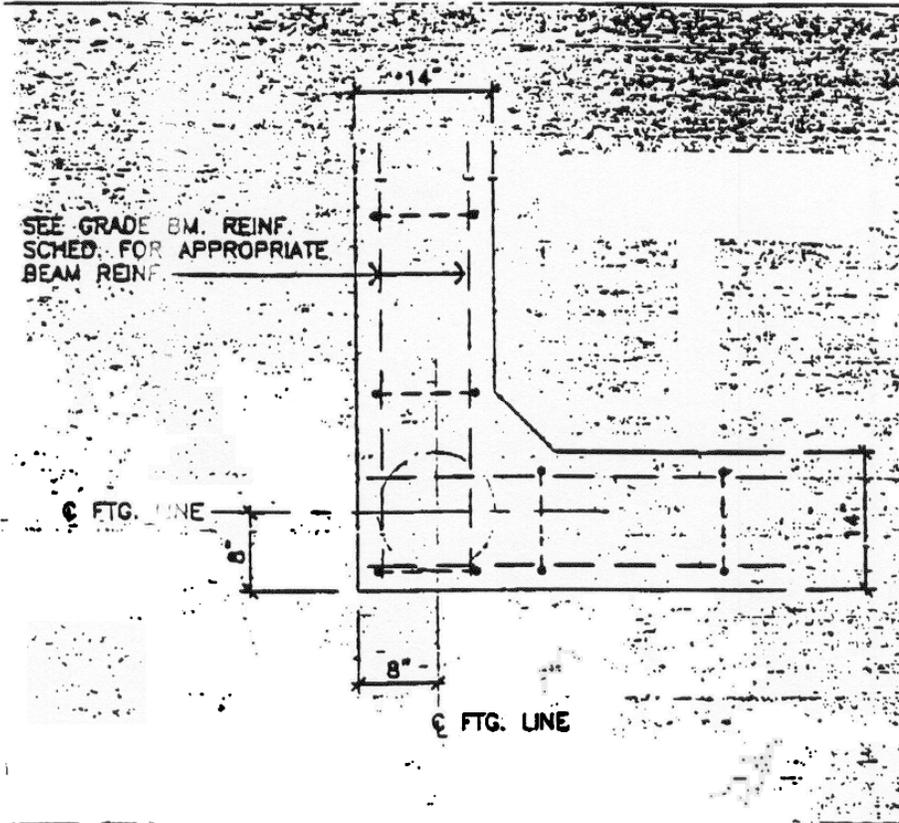
SECTION (1) DETAIL
GRADE BEAM

Draw. # 101
 Sheet 2 of 5

Change sentence at top of drawing to read: "Provide #5 vertical reinforcement bars in concrete masonry units spaced 32" o.c. maximum, bars to penetrate slab 6" minimum (typical).



NOTE: PROVIDE CORNER BARS EQUAL IN SIZE AND NUMBER TO THE ONE IT LAPS WITH. CORNER BAR TO BE 3 FT. LONG (EACH LEG), IN EXTERIOR FACE OF BEAMS.

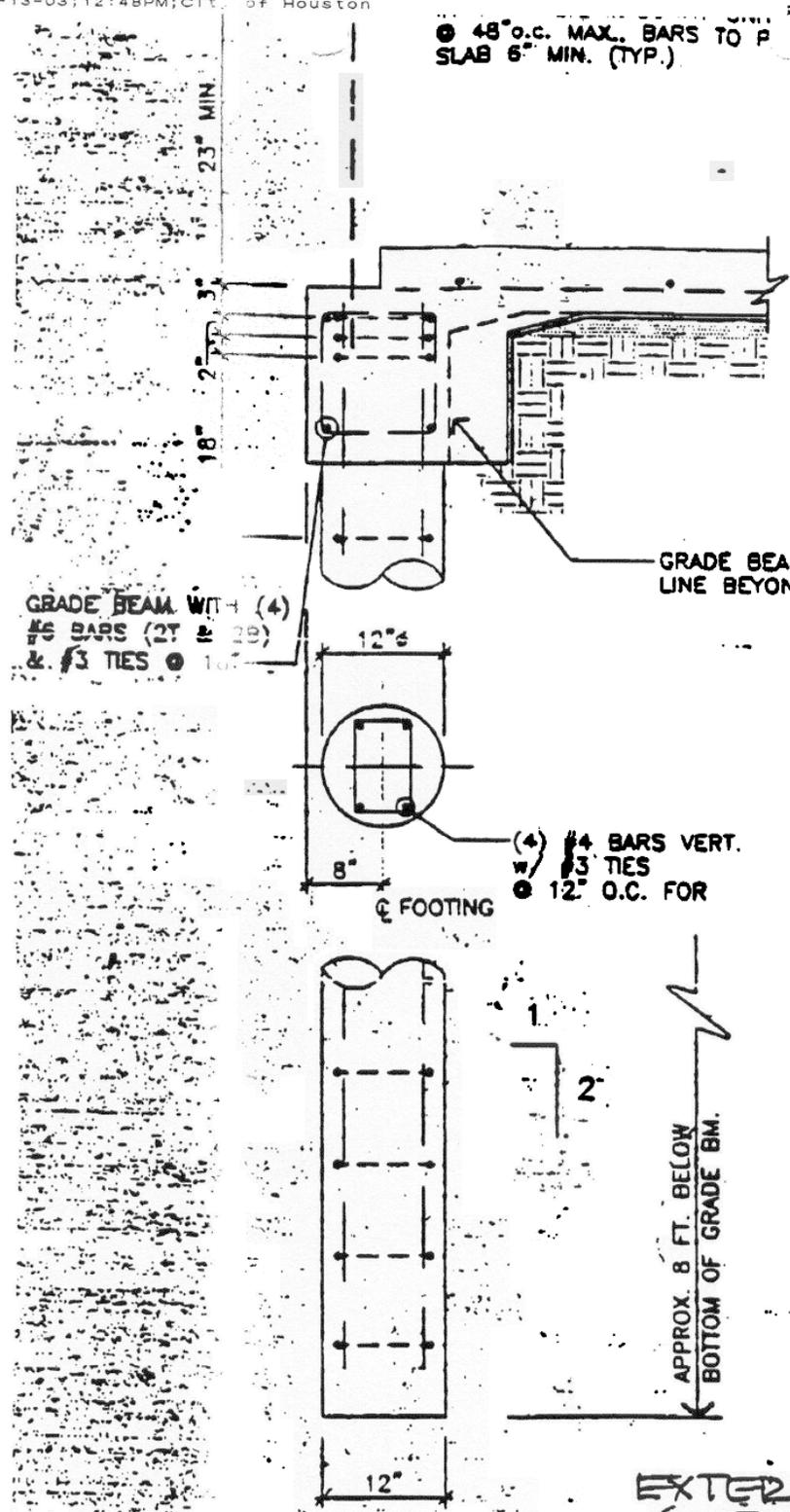


③ HAUNCH PLAN VIEW
(COMMUNICATIONS SLAB)

Dwg. # 101 Sheet 4 of 5

REVISED 12/7/2011

48" O.C. MAX. BARS TO PERMITS
SLAB 6" MIN. (TYP.)



GRADE BEAM WITH (4)
#5 BARS (2T & 2B)
& #3 TIES @ 12"

GRADE BEAM
LINE BEYOND

(4) #4 BARS VERT.
w/ #3 TIES
@ 12" O.C. FOR

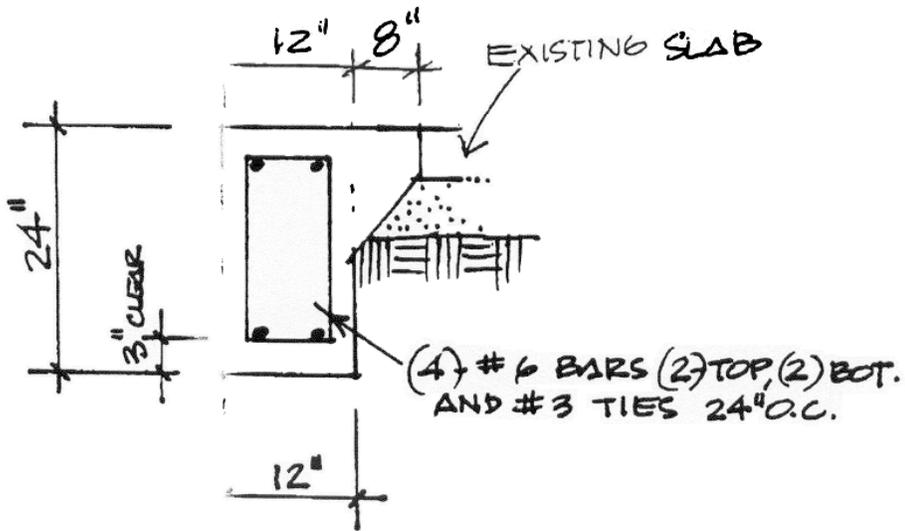
FOOTING

APPROX. 8 FT. BELOW
BOTTOM OF GRADE BM.

EXTERIOR FOOTING
(PIERS)
AT HAUNCH
(COMMUNICATIONS BLDG.)

Dwg. # 101 Sheet 5 of 5

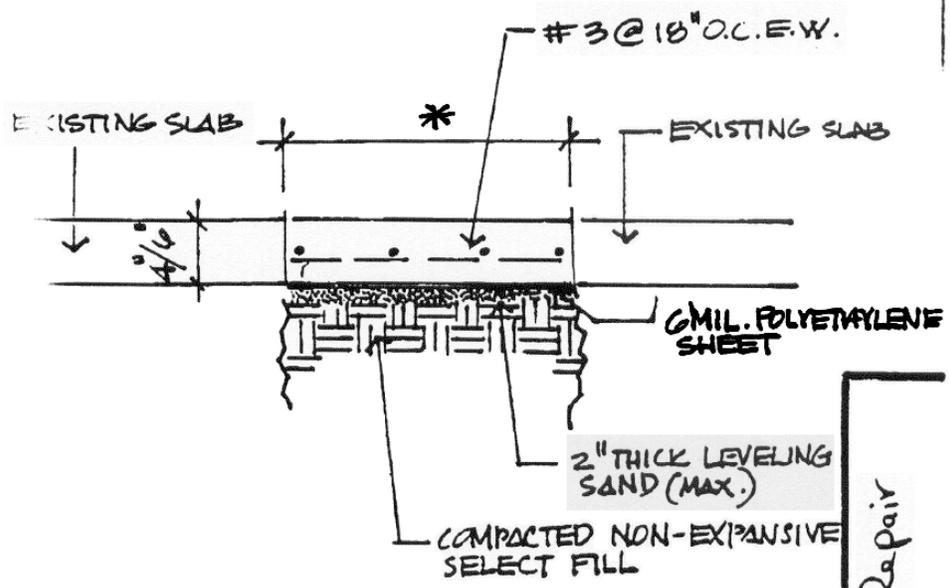
TYPICAL G IRON BEAM



Grade Beam

Sheet 1 of 1

Dwg. # 102

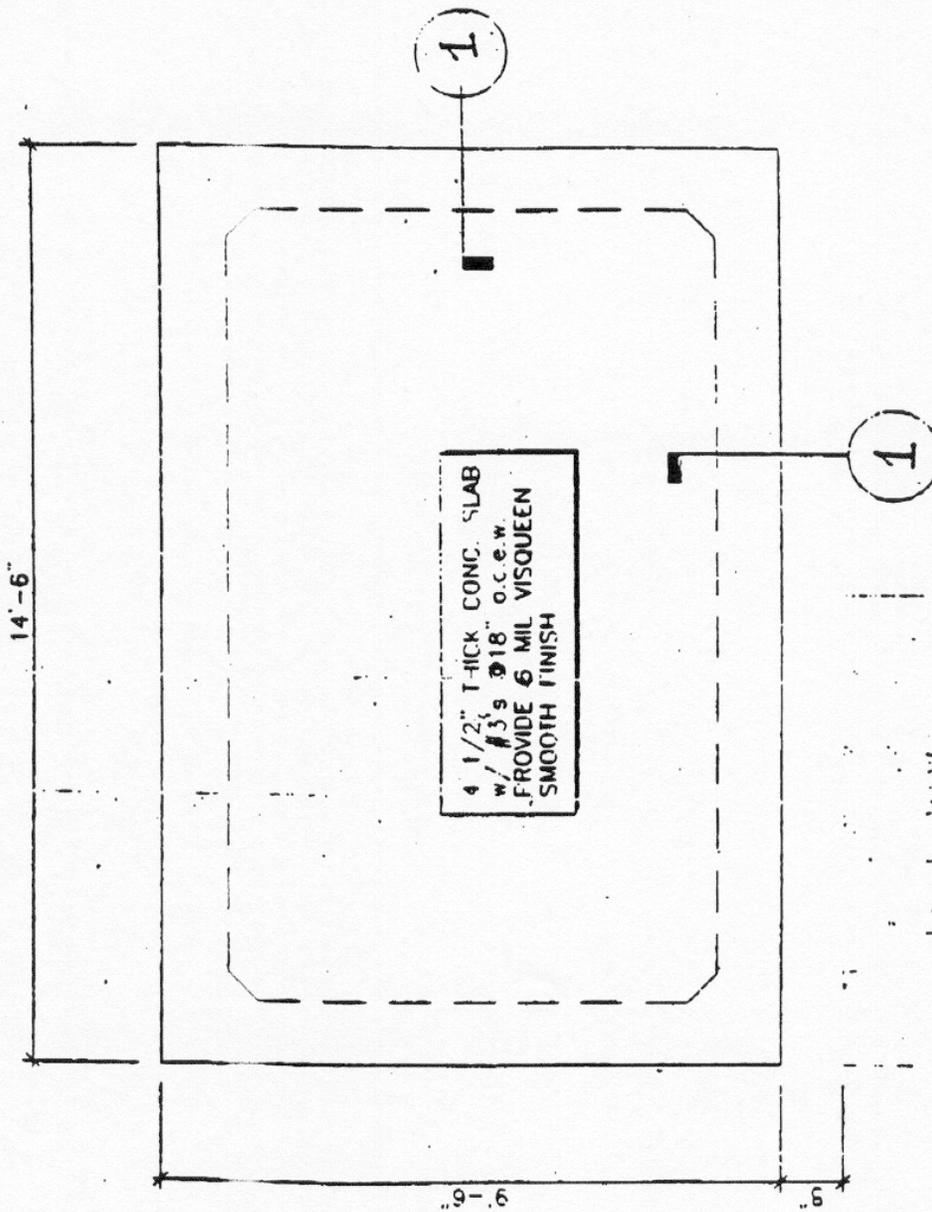


* SQUARE FOOTAGE VARIES.
FIELD MEASURE AT SITE.

NOTE: LOCATION INSIDE BUILDING
RESTRICTS ACCESS.
WHEELING CONCRETE IN
WHEN NECESSARY.

Dwg. # 103 Foundation Repair
sheet 1 of 1

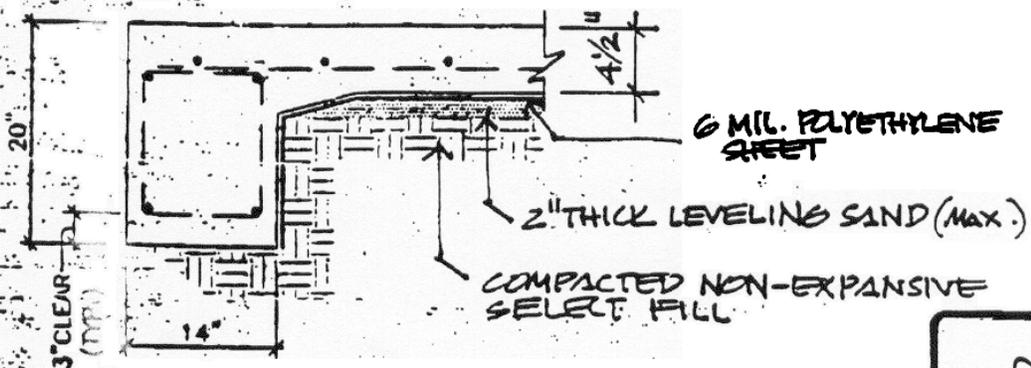
REVISED 12/7/2011



GENERATOR BLDG.
SLAB

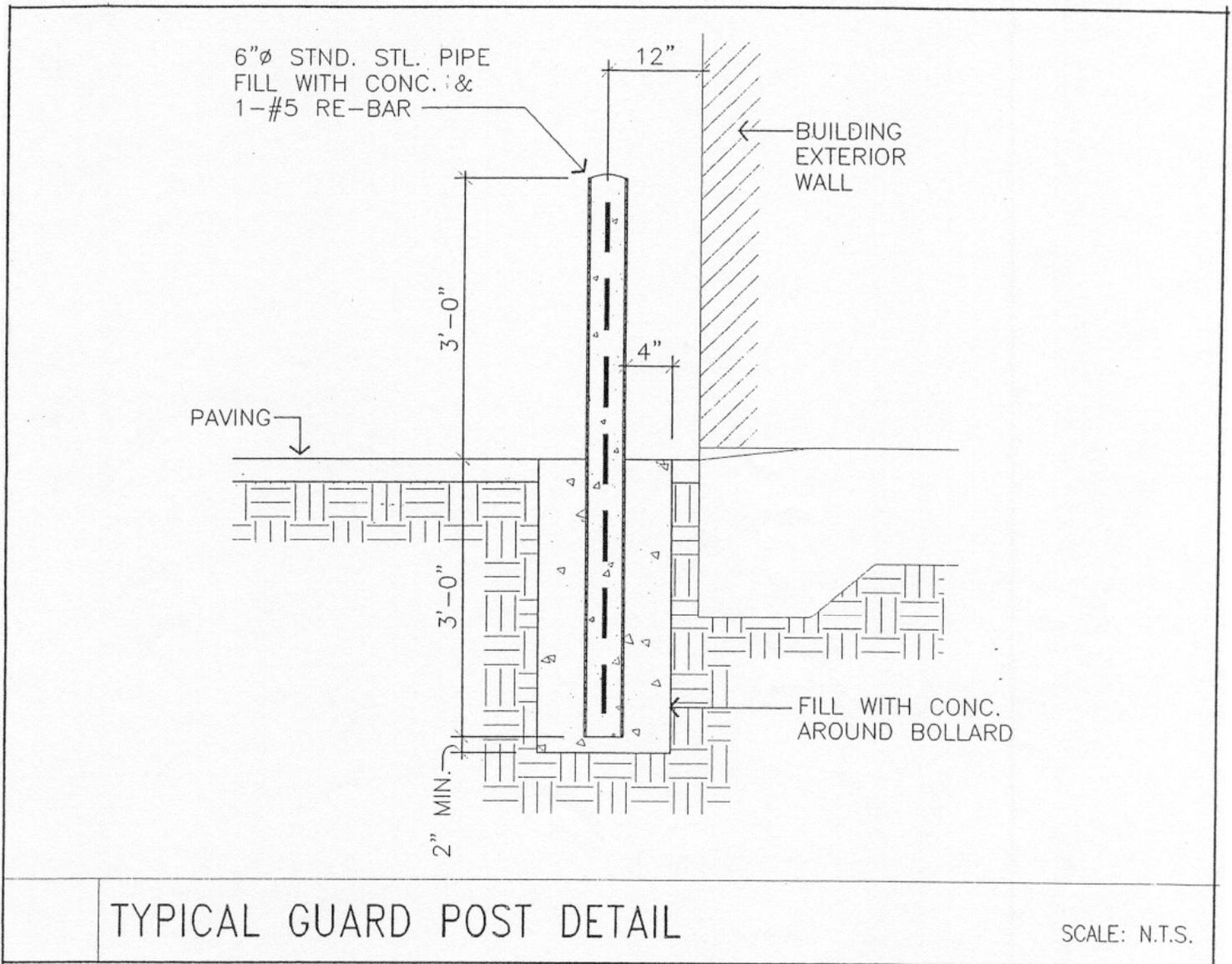
Dwg. # 104 Sheet 1 of 2

NOTE: ADDITIONAL FILL MATERIAL WITHIN THE BUILDING AREA SHOULD BE A SILTY OR SANDY CLAY HAVING A PLASTICITY INDEX (P.I.) OF TEN (10) TO TWENTY (20) AND A LIQUID LIMIT OF 28 OR MORE. FILL MATERIALS SHOULD BE PLACED IN SIX (6) TO EIGHT (8) INCH LOOSE LIFTS AND COMPACTED TO NINETY-FIVE (95) PERCENT OF THEIR MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM D 698).

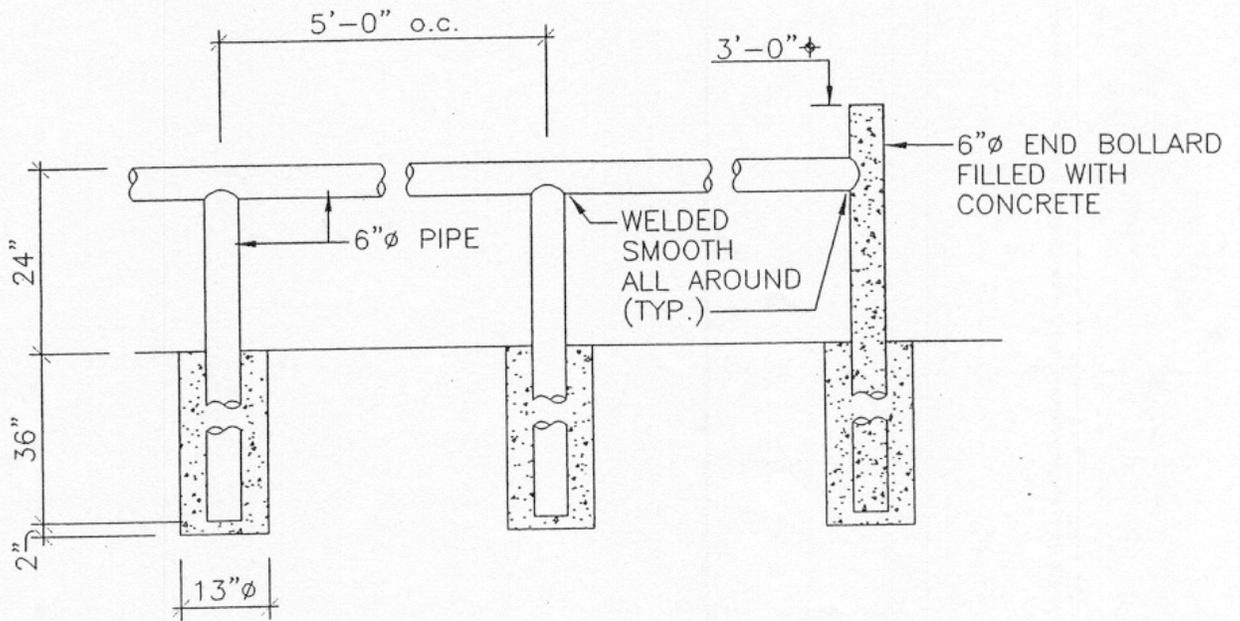


SECTION (1) DETAIL
GRADE BEAM

Dwg. # 104 Sheet 2 of 2



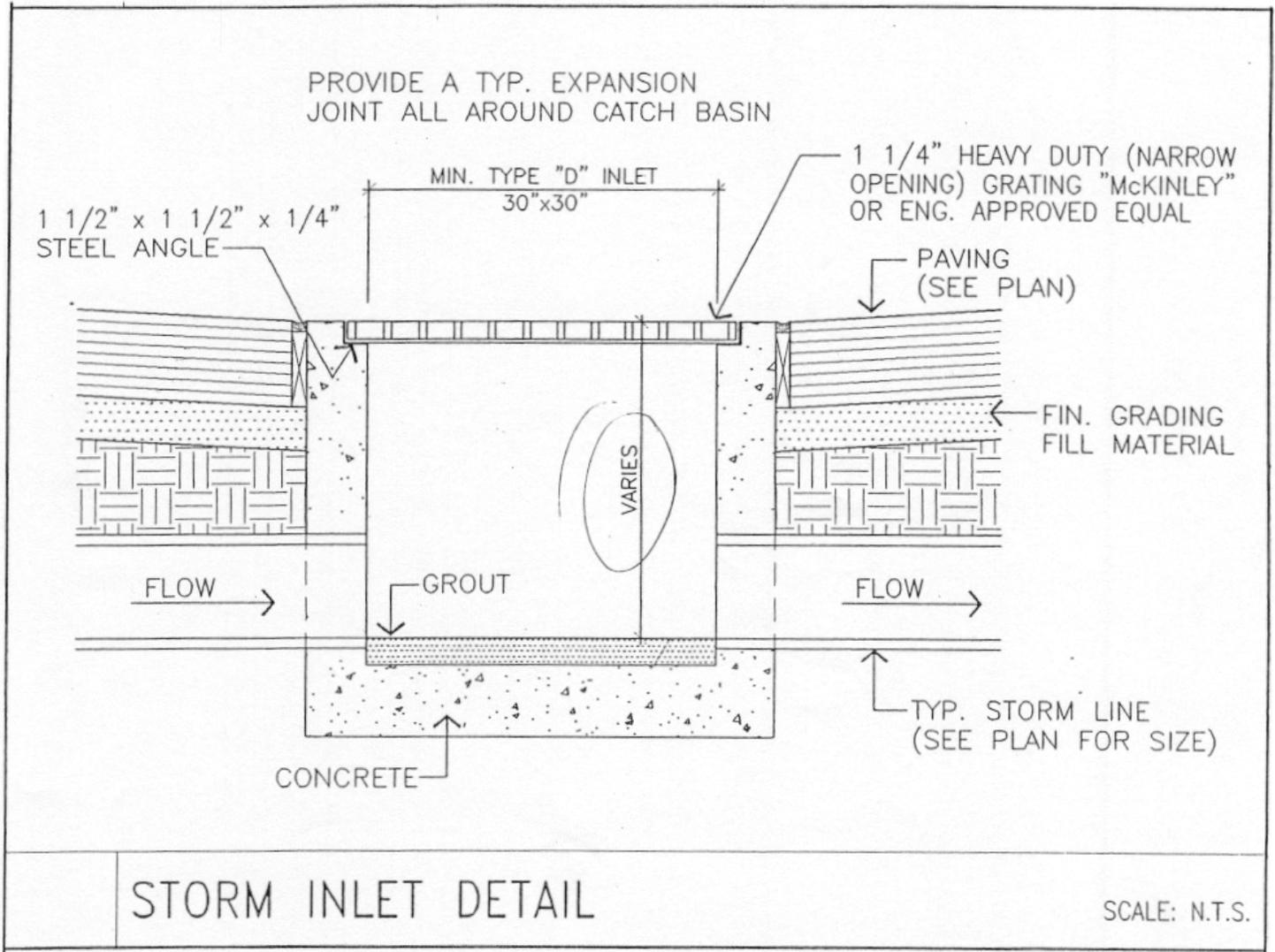
DRAWING No. 105



PIPE PROTECTOR DETAIL

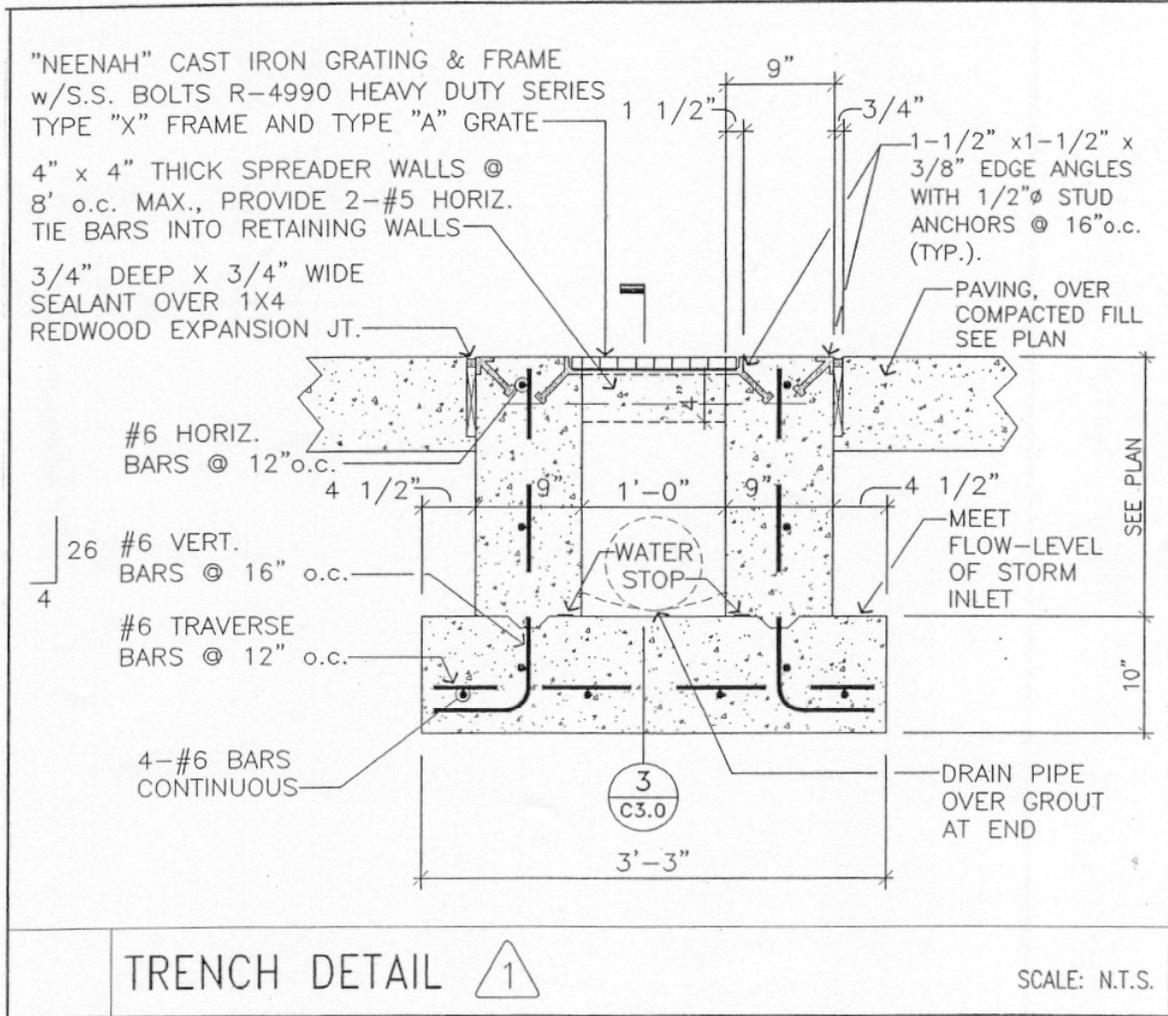
SCALE: N.T.S.

DRAWING No. 106



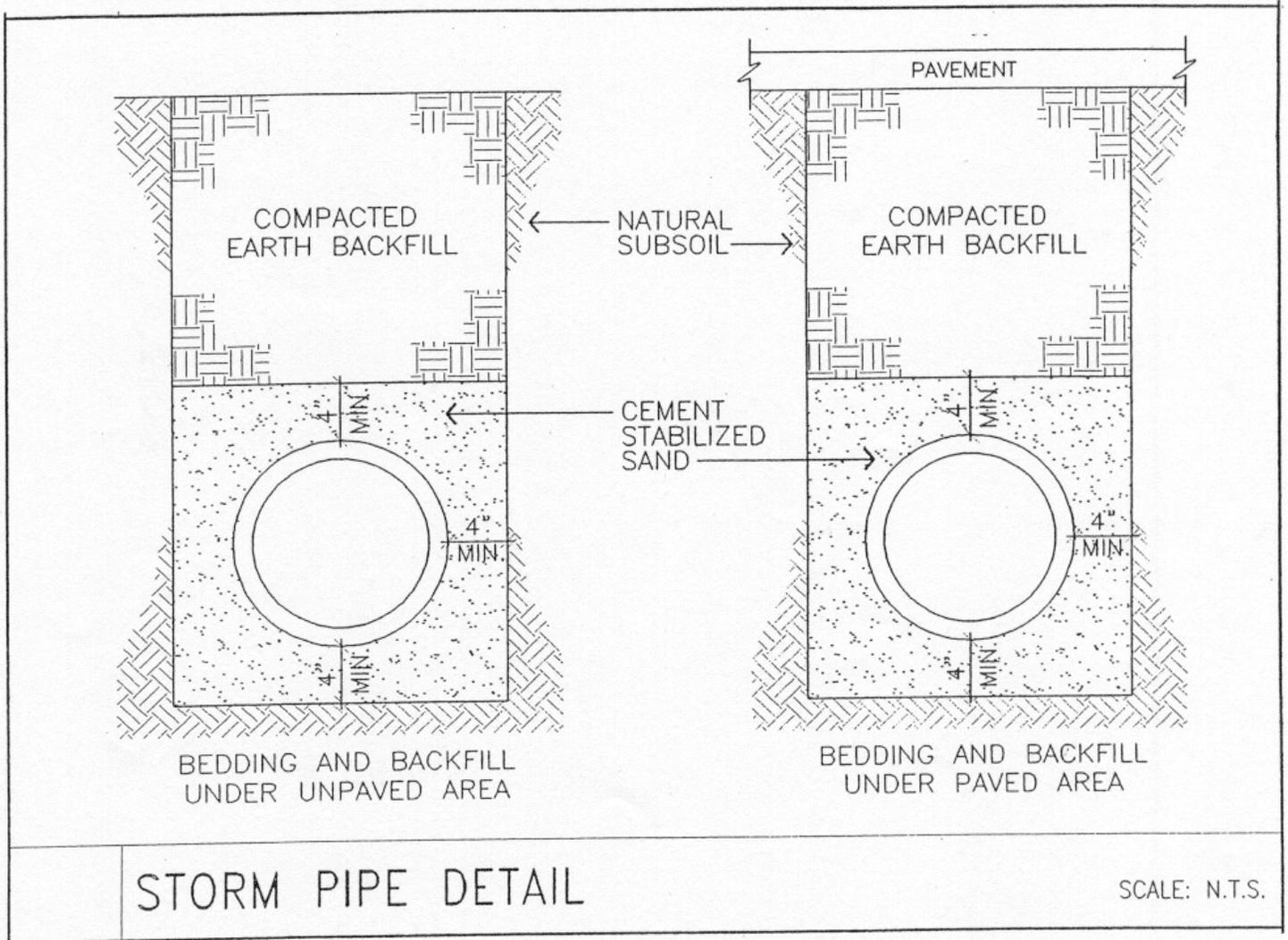
See drawing No. 110 for Storm Inlet connection with Trench Drain.

DRAWING No. 107

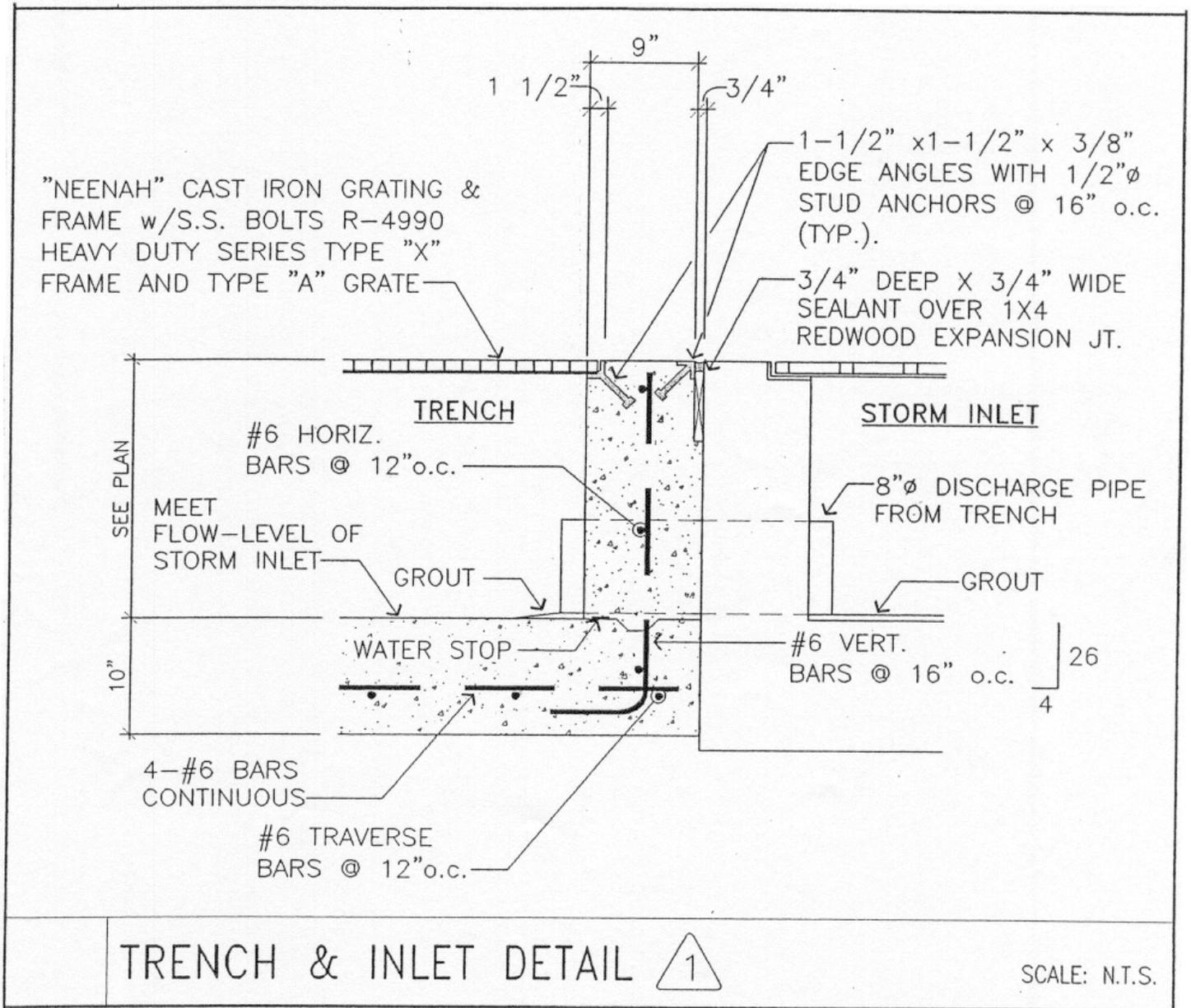


See drawing No. 110 for Trench Drain connection with Storm Inlet.

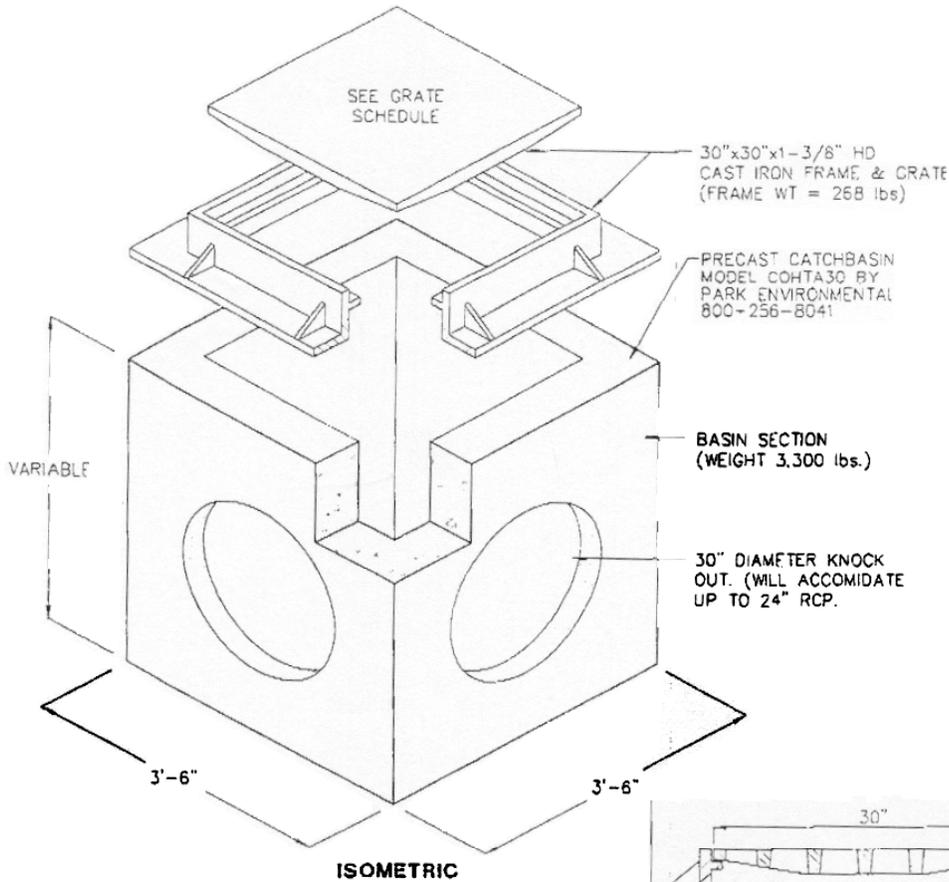
DRAWING No. 108



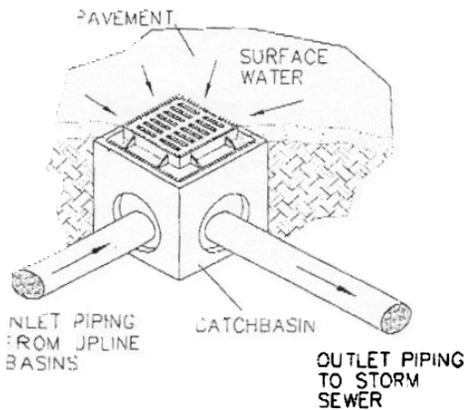
DRAWING No. 109



DRAWING No. 110

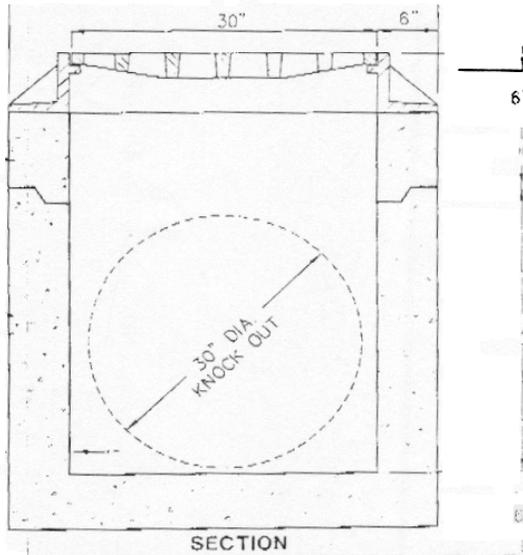


GRATE SCHEDULE	
	MODEL No. V4880
GRATE = 200 lbs OPEN AREA = 489 in ²	
	MODEL No. V4880-3
GRATE = 240 lbs OPEN AREA = 434 in ²	
	MODEL No. V4880-4
GRATE = 270 lbs OPEN AREA = 387 in ²	



RISER

BASIN



SPECIFICATIONS

CONCRETE : Class 1 concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.

REINFORCEMENT: Grade 60 reinforced with steel rebar to conform to ASTM A615 on required centers or equal.

C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

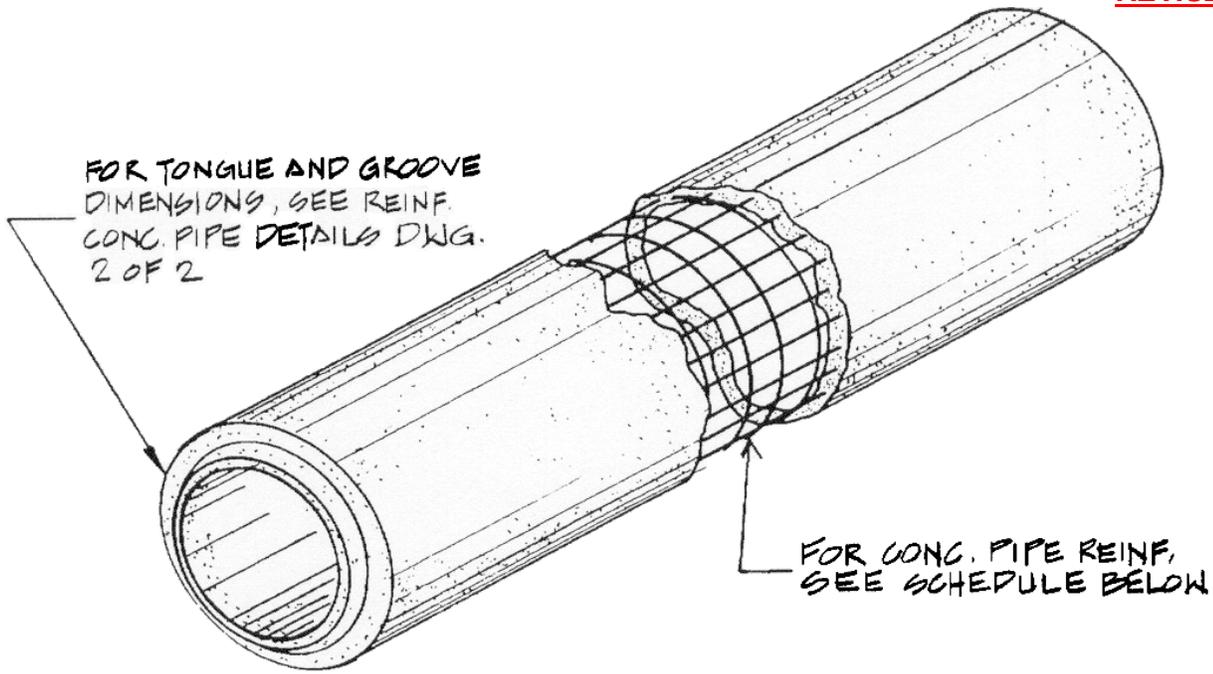


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**TYPE-A GRATE INLET
SIZE 30"**

SCALE	NONE	DWG. NO.	
DATE	01/02	COHTA-2	A

06/23/2003 05:47 FAX 0000000000



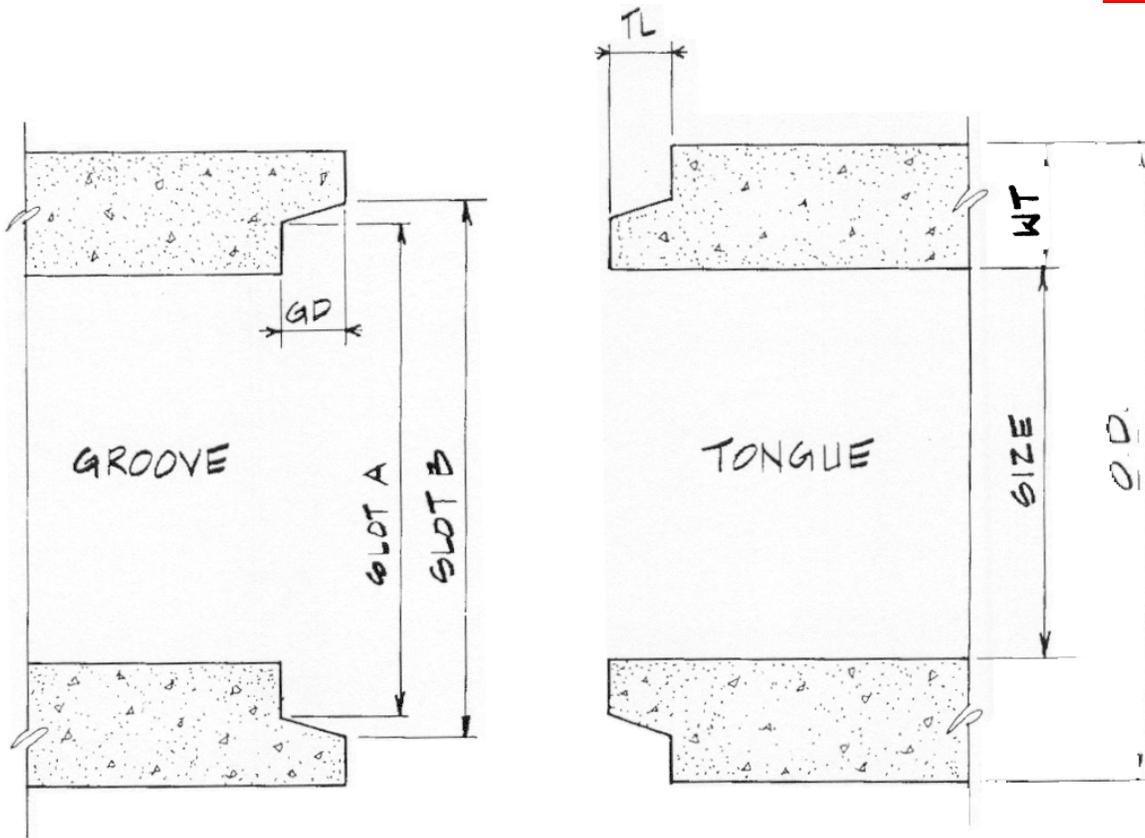
PIPE REINFORCEMENT SCHEDULE			
I.D.	O.D.	WT./FT.	REINFORCEMENT
12"	16"	100#	W 2.0x2.5 3"x8"
15"	19 1/2"	125#	W 2.0x2.5 3"x8"
18"	23"	160#	W 2.0x2.5 3"x8"
24"	30"	260#	W 2.0x2.5 3"x8"
30"	37 1/4"	395#	W 3.0x2.0 2"x8"
36"	44"	520#	W 3.5x2.0 2"x8"

NOTE: ALL PIPE AVAILABLE IN 6 FOOT LENGTH
(12" INCH - 24" INCH IN 4 FOOT LENGTHS)

CONG. NOTE: R.C.P. ASTM DESIGNATION: C76
CLASS III WALL B

DWG. 1 OF 2

REINFORCED CONCRETE
CULVERT PIPE



DIMENSION SCHEDULE OF C-76 T&G. PIPE						
SIZE	OUTSIDE DIM.	WALL THICKNESS	TONGUE LENGTH	GROOVE DEPTH	SLOT DIM.	
					A	B
12"	16"	2"	2"	2"	13 1/2"	14 1/8"
15"	19 1/2"	2 1/4"	2 1/8"	2 1/8"	16 1/2"	17 3/8"
18"	23"	2 1/2"	2"	2 1/4"	19 5/8"	20 1/2"
24"	30"	3"	2 3/8"	2 3/4"	26 3/8"	27 3/8"
30"	37 1/4"	3 5/8"	3 3/8"	3 1/2"	31 3/4"	33 3/8"
36"	44"	4"	2"	2 1/4"	32 3/4"	34 3/8"

CONC. NOTE: ASTM DESIGNATION: C-76
CLASS III WALL B PIPE

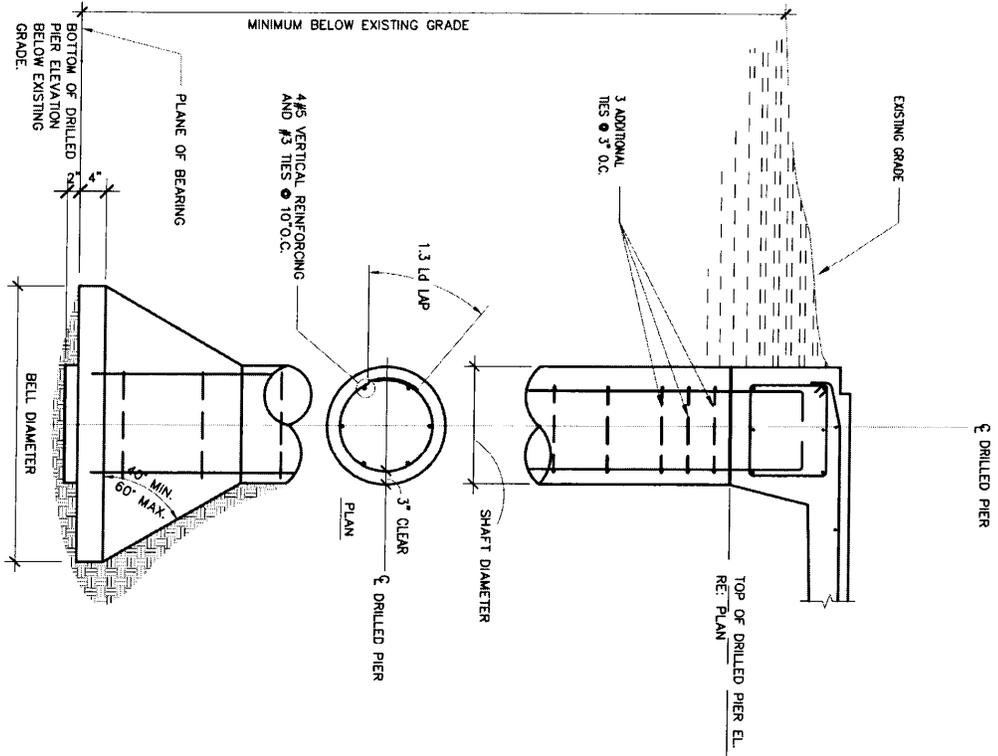
DWG. 2 OF 2

REINFORCED CONG. PIPE
DIMENSION DETAILS

828 GENOA RED BLUFF • HOUSTON, TEXAS 77034 • P. O. BOX 101 • (713) 946-2831
SOUTH HOUSTON, TEXAS 77587

SHEET 2 of 2

Drawing # 110A – RE-INFORCED CONCRETE CULVERT PIPE

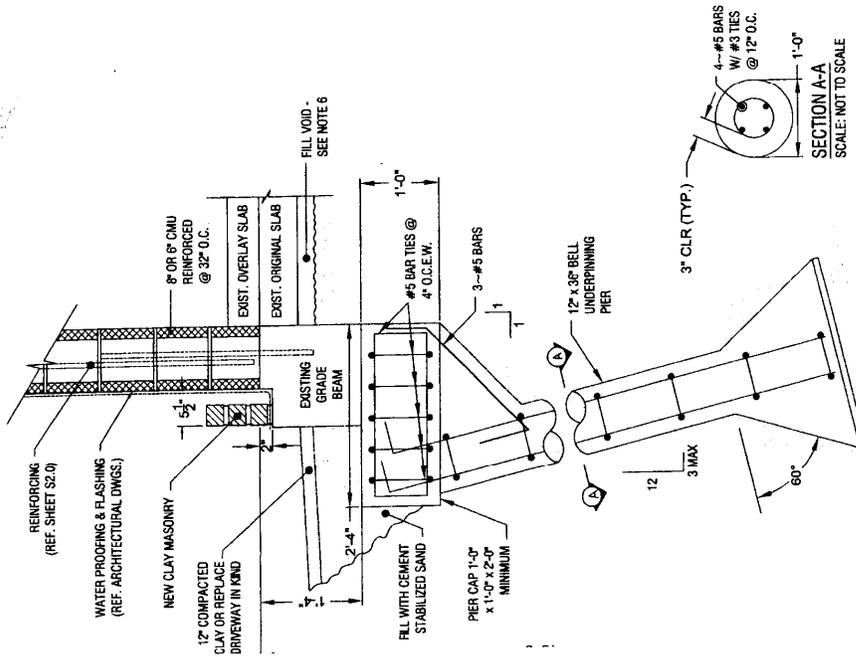


DRILLED PIER GENERAL NOTES

1. A GEOTECHNICAL REPORT IS NOT AVAILABLE FOR REVIEW.
2. DRILLED PIERS ARE DESIGNED FOR AN ALLOWABLE END BEARING PRESSURE OF 6000 PSF UNDER TOTAL LOAD AND 4000 PSF UNDER DEAD PLUS SUSTAINED LIVE LOAD.
3. THE INDEPENDENT TESTING LABORATORY SHALL CONFIRM THE ALLOWABLE SOIL BEARING CAPACITY IN THE FIELD AT THE ELEVATION DESIGNATED AS THE PLANE OF BEARING FOR THE DRILLED PIER.
4. THE INDEPENDENT TESTING LABORATORY SHALL INSPECT THE BOTTOM AND SIDES OF THE DRILLED PIER PRIOR TO PLACING REINFORCING AND CONCRETE.
5. CENTER ALL DRILLED PIERS UNDER THEIR COLUMNS OR GRADE BEAM, UON.
6. USE ACCURATE DRILLING PRACTICES TO ACHIEVE CLOSE TOLERANCES WITH THE REINFORCING STEEL AND THE ANCHOR ROD TEMPLATE.
7. ALL REINFORCING STEEL FOR DRILLED PIERS SHALL BE DEFORMED NEW BILLET STEEL CONFORMING TO ASTM A615, GRADE 60.
8. ALL SCHEDULED REINFORCEMENT SHALL BE UNIFORMLY DISTRIBUTED.
9. DEPOSIT CONCRETE TO ITS FINAL POSITION BY THE USE OF A TREMIE.
10. CONSOLIDATE CONCRETE IN ITS FINAL POSITION BY VIBRATING.

BID NOTE: DEPTH, SHAFT DIAMETER AND BELL SIZES WILL VARY FOR EACH PROJECT PER ENGINEERS DESIGN.

Drawing # 111 – TYPICAL BELL BOTTOM PIER FOR NEW BUILDING CONSTRUCTION



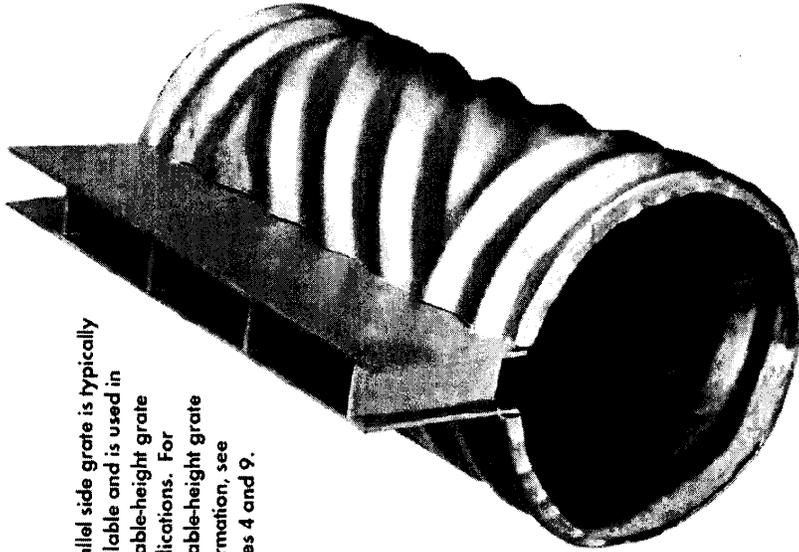
FOUNDATION NOTES

1. CONCRETE FOR PIERS SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
2. PIERS SHALL REACH 4,000 PSI COMPRESSIVE STRENGTH BEFORE SUPPORTING GRADE BEAMS.
3. EXISTING PIERS BEAR @ 8" BELOW GRADE. SHAFTS OF PIERS SHALL BE INSTALLED AS CLOSE TO EXISTING BELLS AS POSSIBLE WITHOUT HITTING EXISTING BELLS. FIELD PROBING OR EXCAVATION MAY BE NECESSARY TO LOCATE EXISTING PIERS.
4. UNLESS OTHERWISE NOTED, SHAFTS OF EXISTING PIERS SHALL BE CUT OR BROKEN LOOSE FROM GRADE BEAMS AFTER NEW PIERS HAVE CURED AND ARE SUPPORTING GRADE BEAMS.
5. EXISTING VOID BOXES AND CONCRETE LIPS SHALL BE REMOVED AT PIER LOCATIONS.

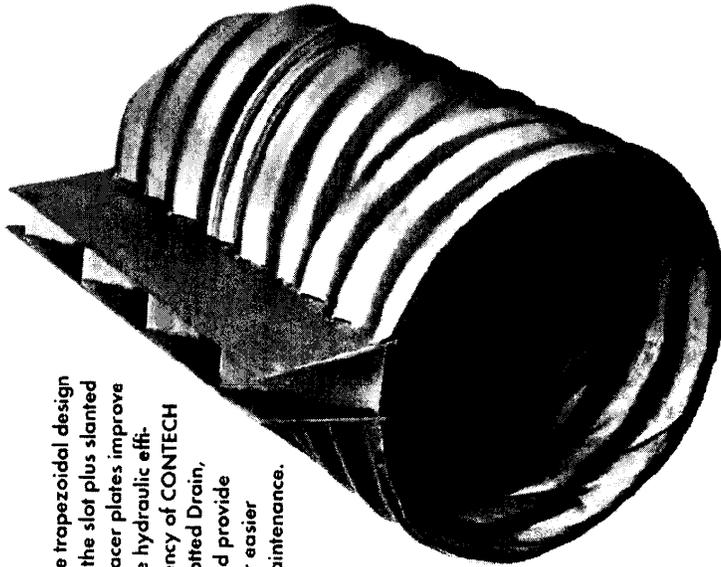
BID NOTE: DEPTH, SHAFT DIAMETER AND BELL SIZES WILL VARY FOR EACH PROJECT PER ENGINEERS DESIGN.

SECTION A
DRILL PIER DETAIL
 SCALE: NOT TO SCALE

Drawing # 112 – TYPICAL BELL BOTTOM PIER FOR FOUNDATION LIFT & STABILIZE



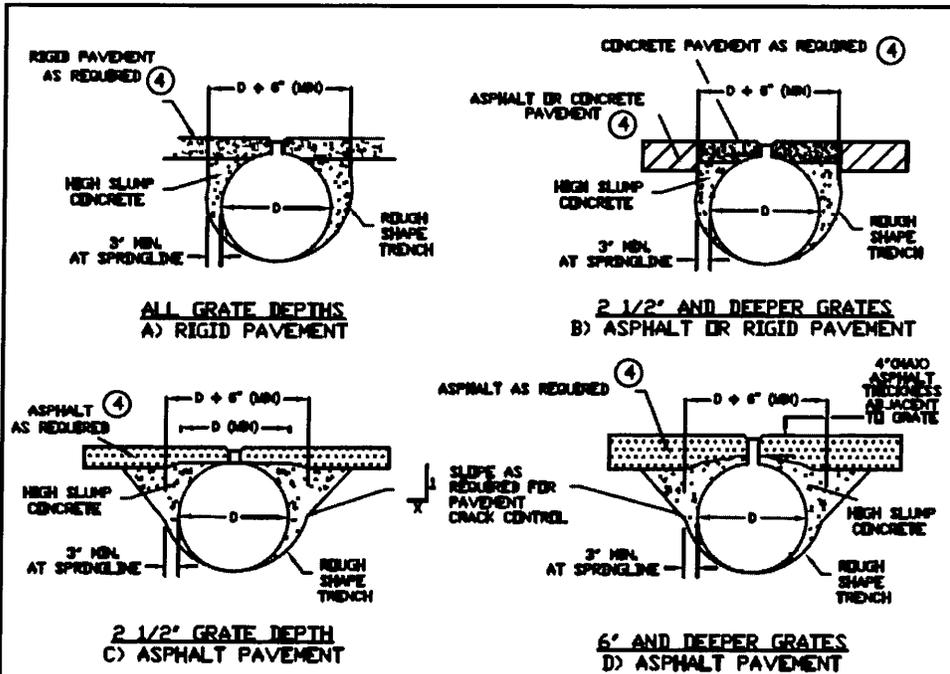
Parallel side grate is typically available and is used in variable-height grate applications. For variable-height grate information, see Pages 4 and 9.



The trapezoidal design of the slot plus slanted spacer plates improve the hydraulic efficiency of CONTECH Slotted Drain, and provide for easier maintenance.

SHEET 1 of 5

Drawing # 113 – TWO TYPICAL TYPES OF SLOTTED DRAINS



REQUIREMENTS:

- ① EITHER 2-1/2" OR 6" DEEP GRATING IS ACCEPTABLE FOR STANDARD HIGHWAY (H10 THROUGH H25) LOADS USING THE GAGES IN TABLE 1, SEE DRAWING N1009776. HIGH SLUMP CONCRETE BACKFILL IS REQUIRED, WITH THE ENVELOPE EXTENDING A MINIMUM OF 3 INCHES BEYOND THE SPRINGLINE, AS SHOWN ABOVE. THE HIGH SLUMP CONCRETE MUST PROVIDE A MINIMUM 750 psi COMPRESSIVE STRENGTH.
- ② FOR INSTALLATIONS SUBJECTED TO OCCASIONAL LIGHT VEHICLE (LESS THAN H10) LOADS, SELECT GRANULAR BACKFILL MAY BE USED. HOWEVER, THE DRAIN MUST BE SET IN A TRENCH WIDE ENOUGH TO PROPERLY HAUNCH THE PIPE (TYPICALLY D + 36"). THE GRANULAR BACKFILL MUST BE A CLEAN, NON-PLASTIC, WELL GRADED MATERIAL, COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- ③ DURING INSTALLATION, RECESS THE TOP OF THE GRATE 1/4" BELOW THE FINISHED GRADE OF THE PAVEMENT.
- ④ PAVEMENT DESIGNS AS REQUIRED FOR LOADING CONDITIONS. FOR REINFORCED CONCRETE PAVEMENTS, CONTINUE THE REINFORCEMENT OVER THE SLOTTED DRAIN. FOR UNREINFORCED CONCRETE PAVEMENTS, MINIMUM SHRINKAGE STEEL IS RECOMMENDED.
- ⑤ HEAVIER WHEEL LOADS DICTATE THE USE OF A MINIMUM 6" DEEP GRATING AND TYPICALLY A LARGER HIGH SLUMP CONCRETE EMBEDMENT ZONE. (SEE DRAWING 1008136)

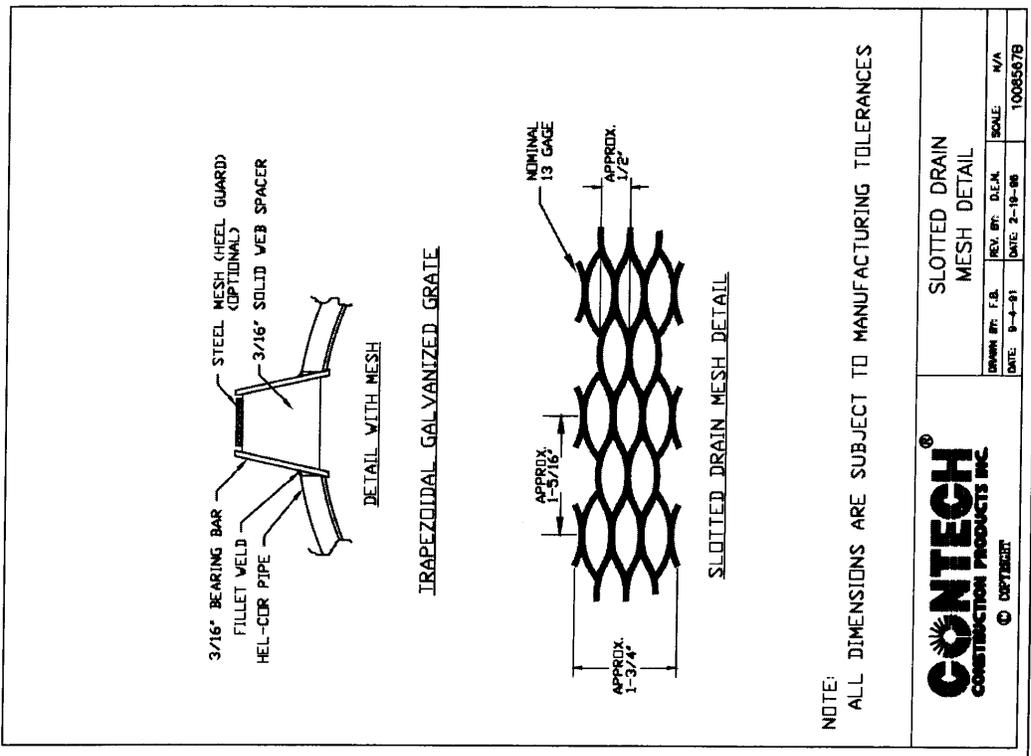


**SLOTTED DRAIN INSTALLATION
HIGHWAY WHEEL LOADINGS**

DRAWN BY: P.B.	REV. BY: D.E.N.	SCALE: N/A
DATE: 3-20-82	DATE: 7-19-85	1008607C

SHEET 2 of 5

Drawing # 113 – HWY LOADING

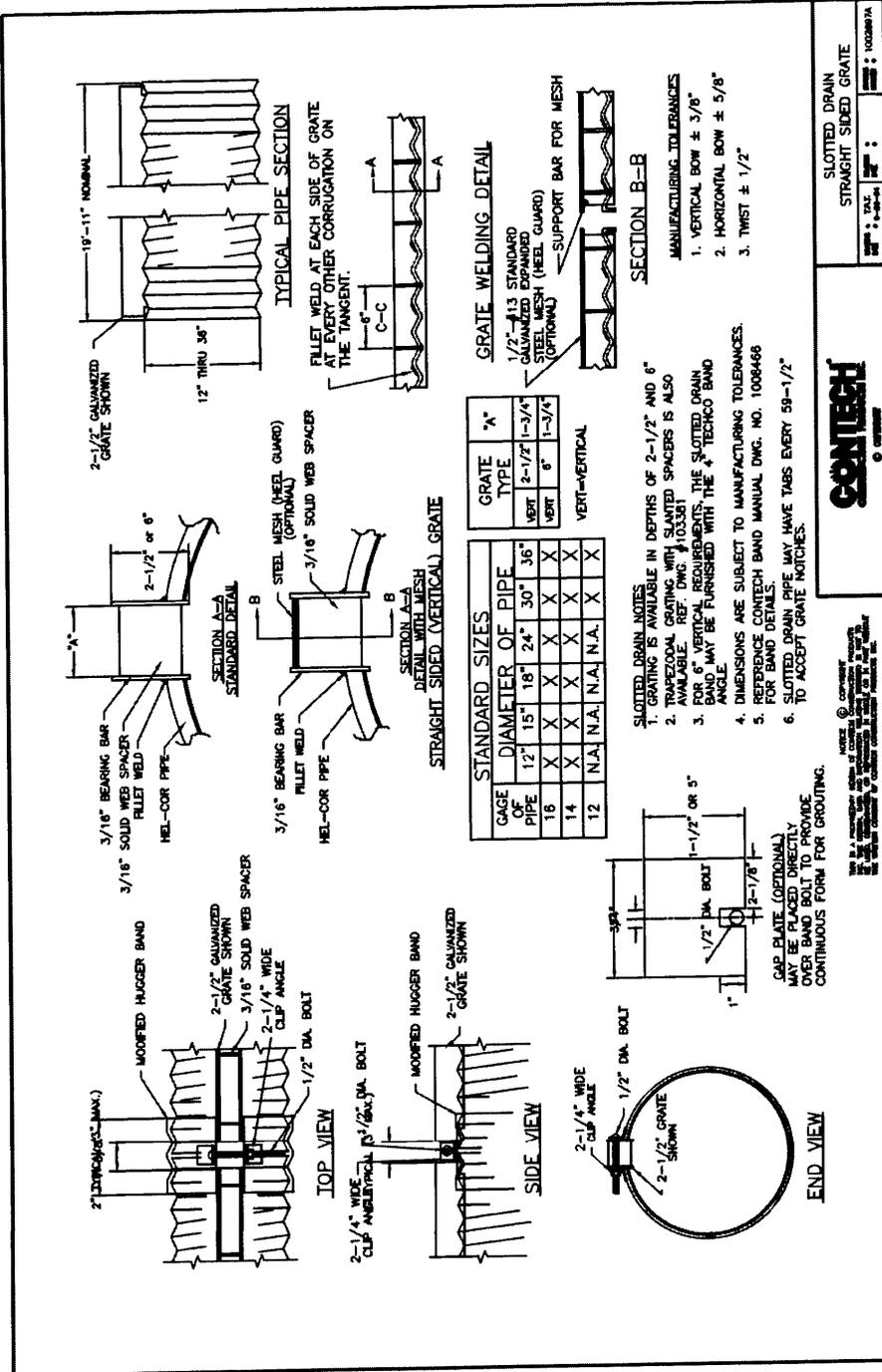


NOTE:
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

	SLOTTED DRAIN MESH DETAIL		
	DRAWN BY: F.S. DATE: 9-4-91	REV. BY: D.E.N. DATE: 2-19-98	SCALE: N/A 10085079

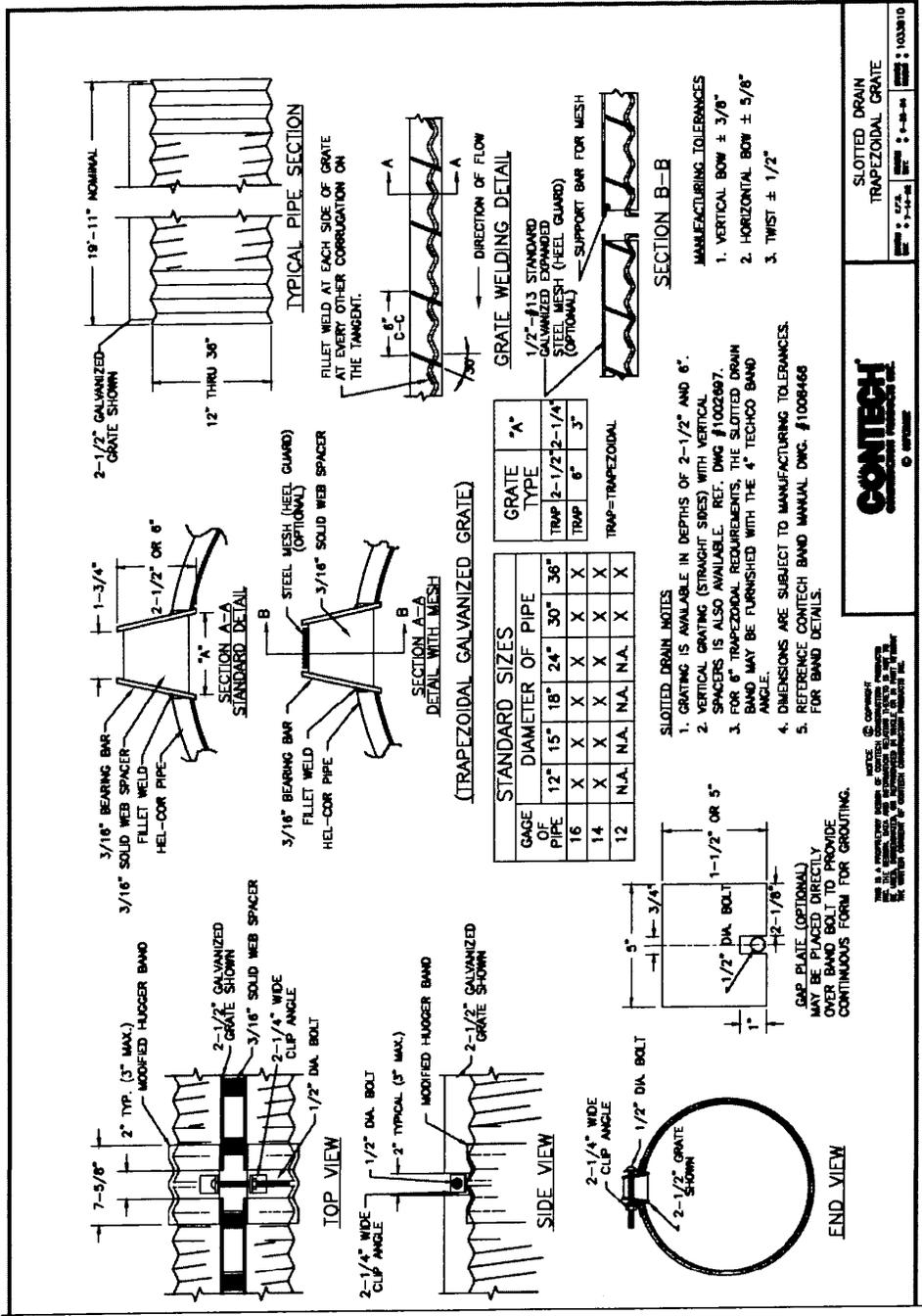
SHEET 3 of 5

Drawing # 113 – MESH DETAIL



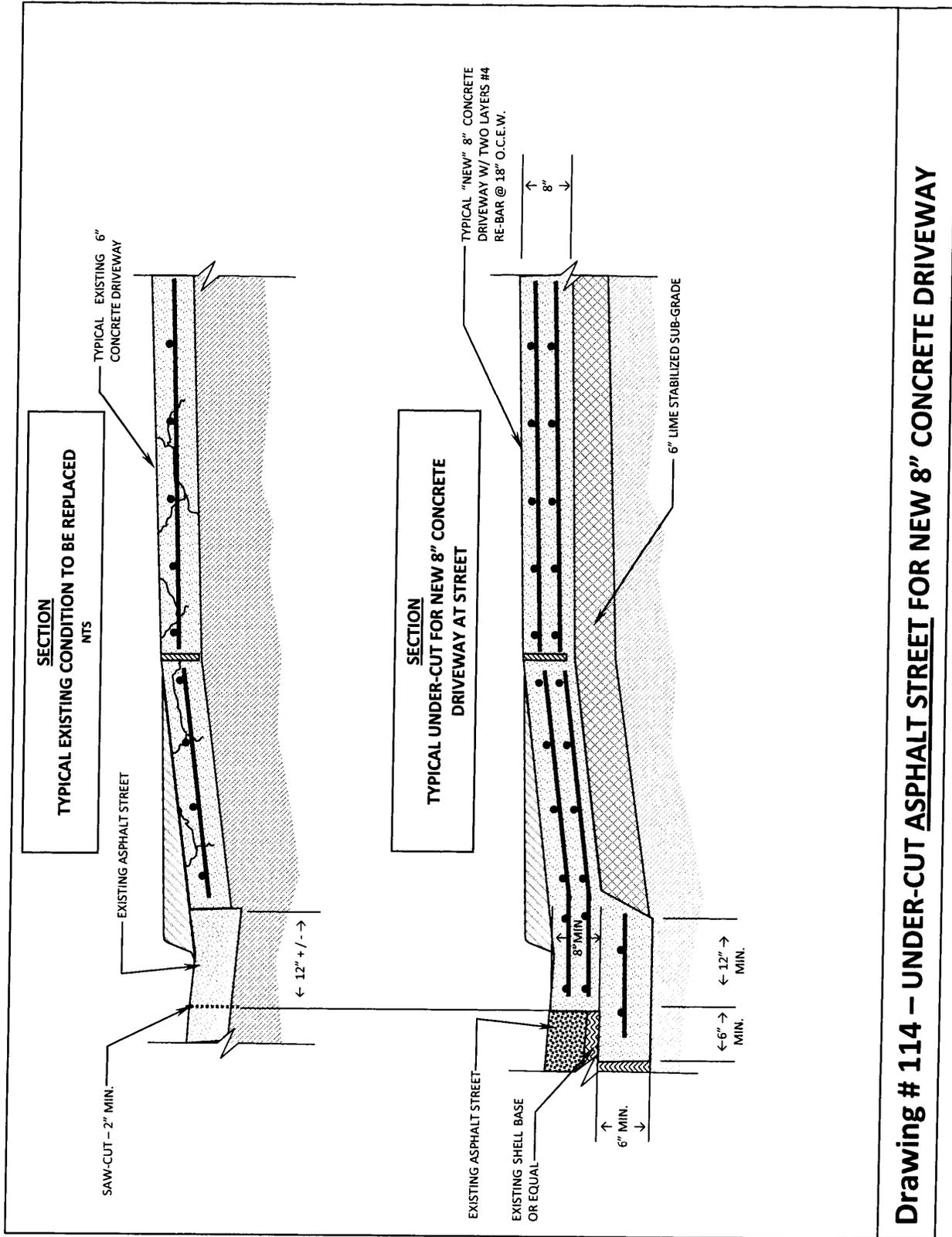
SHEET 4 of 5

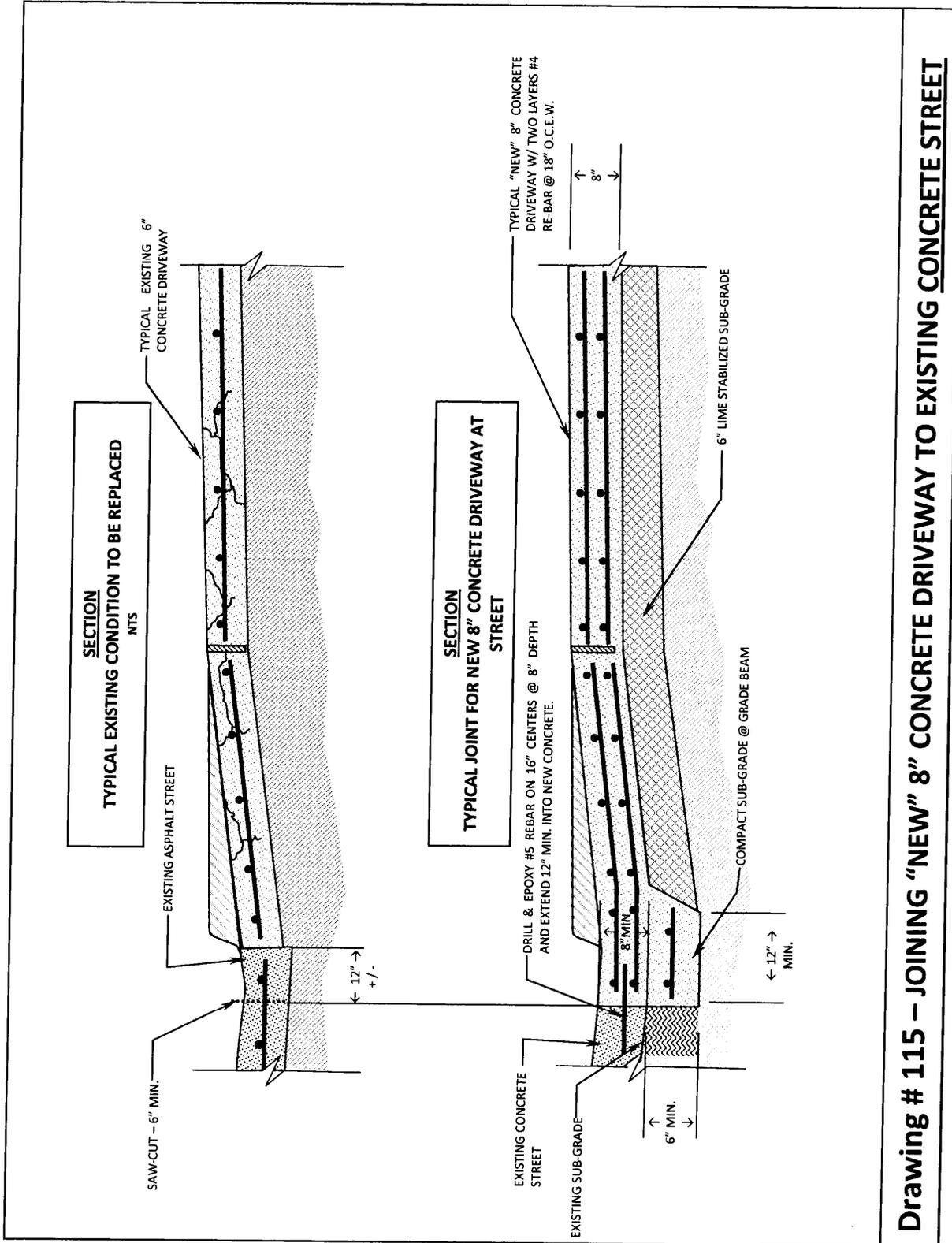
Drawing # 113 - STRAIGHT SIDED GRATE



SHEET 5 of 5

Drawing # 113 - TRAPEZOIDAL GRATE DETAIL





Drawing # 115 - JOINING "NEW" 8" CONCRETE DRIVEWAY TO EXISTING CONCRETE STREET

SECTION B-2
WAGE SCALE FOR ENGINEERING CONSTRUCTION

- 1.1 In accordance with the Prevailing Wage Law on Public Works (Article 5159-a of the Revised Civil Statutes of Texas), the public body awarding the contract does hereby specify the following to be the general prevailing rates in the locality in which the work is being performed.
- 1.2 This prevailing wage rate does not prohibit the payment of more than the rates stated.
- 1.3 The wage scale for engineering construction is to be applied to all site work greater than 5 feet from an exterior wall of new building under construction or from an exterior wall of an existing building.

2011 Labor Classifications and Prevailing Wage Rates
For
Engineering Construction

Refer to the following web link:

https://purchasing.houstontx.gov/bids/C23560/Construction_2011_Engineering_Wage_Rate.pdf

**SECTION B-3
DOCUMENT 00512**

WORK ORDER (NO. _____)

The Owner: THE CITY OF HOUSTON, 901 Bagby Street, Houston, Texas 77002 (the City)

The Contractor:

Address:

Project GFS Number:

Project Title:

Project Location:

City Engineer:

Address:

Project Engineer:

DESCRIPTION OF THE WORK

The Work to be performed under this Work Order includes:
[Brief Description of Work to be done]

All necessary Drawings or Specifications are attached and incorporated herein as part of the Work Order.

DATE OF COMMENCEMENT

The Date of Commencement of this Work order under the Project is _____, On such date the Contractor is to start performing its obligations under the Work Order in accordance with the Contract Documents. The Contract Time for this Work Order is _____ days; the date on which Liquidated Damages shall commence is established as _____, 20_____, subject to adjustments of the Contract Time as provided in the Contract Documents.

Should Contractor fail to achieve substantial completion of the Work within the Contract Time, the Contractor agrees to pay liquidated damages as stipulated in Supplementary Conditions.

CONTRACT PRICE

Subject to all the terms and conditions of the Contract Documents, the City shall pay the Contractor in current funds for the Contractor's performance of the Work described in this Work Order, the Work Order estimated price of _____ Dollars (\$_____). The Work Order price is calculated in bid document - Quantity Analysis, which is subject to adjustment upon completion of the Work due to variation in quantities of units of Work actually incorporated in the completed Work and other adjustment as provided in Contract Documents.

The Contract Price is based, in whole or in part, on those unit price items of Work which are listed in bid document. The Contract Price is subject to adjustment due to variation in quantities of units of work actually incorporated in the completed Work and other adjustment as provided in the Contract Documents.

This Work Order is a Contract Document. Work performed and payments made pursuant to this Work Order shall be subject to the terms and conditions of all other Contract Documents except as otherwise provided, including but not limited to Document 00700 - General Conditions and Document 00800 - Supplementary Conditions.

Attachments to this Work Order are as follows:

<u>Document No.</u>	<u>Title</u>
00408	Quantity Analysis
00220	Geotechnical Information
00230	Existing Conditions Drawings and/or Location Maps Supplementary Specifications

Drawings are identified by Drawing No. _____ and Bound Separately.

Additional terms, instructions, and conditions which pertain to this Work Order:

City of Houston

By: [City Engineer]

Acknowledged:

Contractor

SECTION C
AGREEMENT BETWEEN THE CITY OF HOUSTON AND CONTRACTOR

Owner: THE CITY OF HOUSTON, 901 Bagby Street, Houston, Texas 77002 (the City)

Contractor: _____

Address: _____

Project No.: S50-C23560

The Project Title: Job Order Contract for Concrete Repair Services
for the City of Houston

The Project Location: Citywide

The City Engineer is: Humberto Bautiste

(Address for Written Notice) 611 Walker, Houston, Texas 77002

The Architect/Engineer is:

(Address)

THE OWNER AND THE CONTRACTOR AGREE AS SET FORTH BELOW:

ARTICLE 1
WORK OF THIS CONTRACT

1.1 The Contractor shall execute the Work in accordance with the provisions of the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others, or as otherwise provided herein. Work shall be described in the Work Order. More than one Work Order may be issued at anytime under the Contract or no Work Orders may be issued under the Contract.

ARTICLE 2
CONTRACT TERM AND CONTRACT TIME

2.1 The effective date is the date of countersignature by the City Controller. The Contract Term shall begin on the date specified in the Notice to Proceed issued by the City Purchasing Agent and shall continue for **three years thereafter, with two one year options**. Upon expiration of the Initial Term, and so long as the City makes sufficient supplemental allocations, this Agreement will be automatically renewed for two successive one-year terms on the same terms and conditions. If the Director/Chief of the City Department elects not to renew this Agreement, the City Purchasing Agent shall notify Contractor in written of non-renewal at least 30 days before the expiration of the then current term.

2.2 The Date of Commencement of the Work, as defined in General Conditions, is the date from which the Contract Time is measured, which date is established by the Work Order.

2.3 The Contractor shall achieve substantial completion of the Work during the Contract Time, subject to adjustments as provided in Contract Documents.

2.4 The Contract Term shall not exceed three years, except as otherwise provided herein. During this time, City from time-to-time may issue Work Orders specifying the Work to be completed and Contract Time within which Contractor must achieve Substantial Completion.

- 2.5 Should Contractor fail to achieve substantial completion of the Work within that Contract Time, the Contractor agrees to pay liquidated damages as stipulated in Supplementary Conditions.
- 2.6 Should the Department(s) requests an extension of time to complete its performance, then the City Purchasing Agent may, in his or her sole discretion, extend the time so long as the extension does not exceed 90 days. The extension must be in writing but does not require amendment of this Agreement. The Contractor is not entitled to damages for delay(s) regardless of the cause of the delay(s).

**ARTICLE 3
THE CONTRACT PRICE**

- 3.1 The City's duty to pay money to the Contractor for any purpose under the Contract is limited in its entirety by this Article 3.
- 3.2 (1) The City's duty to pay money to Contractor under this Agreement is limited in its entirety by the provisions of this Section.
 (2) In order to comply with Article II, Section 19 and 19a of the City's Charter and Article XI, Section 5 of the Texas Constitution, the City has appropriated and allocated the sum of \$_____ to pay money due under this Agreement (the "Original Allocation"). The executive and legislative officers of the City, in their discretion, may allocate supplemental funds for this Agreement, but they are not obligated to do so. Therefore, the parties have agreed to the following procedures and remedies:
 (3) The City makes a supplemental allocation by sending a notice signed by the Director and the City Controller to Contractor in substantially the following form:

"NOTICE OF SUPPLEMENTAL ALLOCATIONS OF FUNDS"

TO: [Name of Contractor]
 FROM: City of Houston, Texas (the "City")
 DATE: [Date of notice]

SUBJECT: Supplemental allocation of funds for the purpose of the "[title of this Agreement]" between the City and (name of Contractor) countersigned by the City Controller on (Date of Countersignature) (the "Agreement").

I, (name of the City Controller), City Controller of the City of Houston, certify that the supplemental sum of \$_____, upon the request of the below-signed Director, has been allocated for the purposes of the Agreement out of funds appropriated for this purpose by the City Council of the City of Houston. This supplemental allocation has been charged to such appropriation.

The aggregate of all sums allocated for the purpose of such Contract, including the Original Allocation, and all supplemental allocations (including this one), as of the date of this notice, is \$_____.

SIGNED:
(Signature of the City Controller)
 City Controller of the City

REQUESTED:
(Signature of the Director)
 Director

(4) The City Council delegates to the Director the authority to approve up to \$_____ in Supplemental Allocations without further City Council approval.

(5) The Original Allocation plus all supplemental allocations are the Allocated Funds. The City shall never be obligated to pay any money under this Agreement in excess of the Allocated Funds. Contractor must assure itself that sufficient allocations have been made to pay for

services it provides. If Allocated Funds are exhausted, Contractor's only remedy is suspension or termination of its performance under this Agreement, and it has no other remedy in law or in equity against the City and no right to damages of any kind.

- 3.3 Subject to all the terms and conditions of the Contract Documents, the City shall pay the Contract Price to the Contractor in current funds for the Contractor's performance of the Work, as provided in the Work Order.
- 3.4 The Contract Amount, for those unit price items of Work listed in the Fee Schedule for Concrete Repair Services is subject to adjustment at completion of the Work due to variation in quantities of units of work actually incorporated in the completed Work and other adjustments as provided in Contract Documents.

ARTICLE 4 PAYMENTS

- 4.1 The City shall make progress payments to the Contractor on account of the Contract Price included in the Work Order as provided in this Article 4 and elsewhere in the Contract Documents.
- 4.2 The City Engineer will issue a Certificate for Payment and the City will make a progress payment on the basis of such Certificate as provided in the General Conditions.
- 4.3 Final payment, constituting the entire unpaid balance of the Contract Price due under the Work Order, shall be made by the City to the Contractor as provided in the General Conditions.

ARTICLE 5 MISCELLANEOUS PROVISIONS

- 5.1 Where reference is made in this Agreement to a provision of the General Conditions or other Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.
- 5.2 The Contract may be terminated by the City or by the Contractor as provided in the General Conditions.
- 5.3 The Work may be suspended by the City as provided in the General Conditions.

**ARTICLE 6
ENUMERATION OF CONTRACT DOCUMENTS**

- 6.1 The basis for this Agreement is this executed Document 00510 - Agreement between the City of Houston and Contractor. Other Contract Documents, except for Work Orders and Modifications issued after execution of this Agreement, are enumerated under this Article.
- 6.2 The General Conditions are Document 00700, current edition, **INCLUDING THE INDEMNITY PROVISIONS.**
- 6.2 The Supplementary Conditions of the Contract are those stated in Document 00800.
- 6.4 The Specifications.
- 6.5 Reserved
- 6.6 The Addenda, issued separately, which applied to Contract Documents, if any, are as follows:

Addendum No. 1, dated _____.

- 6.7 Attachments to this Agreement are as follows:

<u>Documents</u>	<u>Title</u>
EXHIBIT A.	DEFINITIONS
EXHIBIT *B	SCOPE OF WORK/TECHNICAL SPECIFICATIONS
EXHIBIT *B-1	STANDARD DRAWINGS FOR CONCRETE REPAIR SERVICES
EXHIBIT *B-2	WAGE SCALE FOR ENGINEERING CONSTRUCTION
EXHIBIT *B-3	DOCUMENT 00512 WORK ORDER
EXHIBIT *C	EQUAL EMPLOYMENT OPPORTUNITY
EXHIBIT *D	MWBE SUBCONTRACT TERMS
EXHIBIT *E	DRUG POLICY COMPLIANCE AGREEMENT
EXHIBIT F	CERTIFICATION OF NO SAFETY IMPACT POSITIONS
EXHIBIT *G	DRUG POLICY COMPLIANCE DECLARATION
EXHIBIT *H	FEES AND COSTS
EXHIBIT *I	CITY'S CONTRACTORS PAY OR PLAY PROGRAM
EXHIBIT *J	PERFORMANCE BOND
EXHIBIT *K	ONE-YEAR MAINTENACE BOND
EXHIBIT *L	STATUTORY PAYMENT BOND
EXHIBIT *M	CITY OF HOUSTON GENERAL CONDITIONS DOCUMENT 00700
EXHIBIT *N	CITY OF HOUSTON SUPPLEMENTAL CONDITIONS DOCUMENT 00800

* Note: These Exhibits shall be inserted into the Contract agreement at the time of Contract execution.

This Agreement is effective as of the date of countersignature by the City Controller and is executed in Four original copies of which one is to be retained by the City Controller and two are to be delivered to the Contractor.

CONTRACTOR:

(If Joint Venture)

By: _____
Name:
Title:
Date:
Federal I.D. No.

By: _____
Name:
Title:
Date:

CITY OF HOUSTON, TEXAS

APPROVED:

SIGNED:

By: _____
[City Purchasing Agent]

By: _____
[Mayor]

ATTEST/SEAL:

COUNTERSIGNED:

By: _____
[City Secretary]

By: _____
[City Controller]

Date Countersigned:

This Ordinance has been reviewed as to form by the undersigned legal assistant and has been found to meet established Legal Department criteria. The Legal Department has not reviewed the content of these documents.

Date

Legal Assistant

EXHIBIT A DEFINITIONS

As used in this Agreement, the following terms have the meanings set out below:

"Agreement" means this contract between the Parties, including all exhibits, change orders, and any written amendments authorized by City Council and Contractor.

"City" is defined in the preamble of this Agreement and includes its successors and assigns.

"City Purchasing Agent" is defined as the person or duly authorized successor, authorized in writing to act for the City. The term includes, except as otherwise provided in this Contract, the authorized representative of the City Purchasing Agent acting within the limits of delegated authority.

"Contract Award Notice" means the official notification substantiated by the Notice to Proceed issued by the City Purchasing Agent to the Contractor.

"Contract Charges" means charges that accrue during a given month as defined in Article III.

"Contract Term" is defined in Article IV.

"Contractor" is defined in the preamble of this Agreement and includes its successors and assigns.

"Countersignature Date" means the date this agreement is countersigned by the City Controller.

"Director" mean the Directors/Chiefs of each of the Departments or the City Purchasing Agent for the City, or the person he or she designates.

"Effective Date" is defined as date contract is countersigned by the City Controller.

"Governing Body" means the Mayor and City Council of the City of Houston.

"Hazardous Materials" is defined in Article II (Environmental Laws).

"Notice to Proceed" means a written communication from the City Purchasing Agent to Contractor instructing Contractor to begin performance.

"Parties" mean all the entities set out in the Preamble who are bound by this Agreement.

EXHIBIT B-1
SCOPE OF WORK/SPECIFICATIONS
(To be inserted by the City at the time of Contract execution)

EXHIBIT B-2
STANDARD DRAWINGS FOR CONCRETE REPAIR SERVICES
(To be inserted by the City at the time of Contract execution)

EXHIBIT B-3
WAGE SCALE FOR ENGINEERING CONSTRUCTION
(To be inserted by the City at the time of Contract execution)

EXHIBIT B-4
DOCUMENT 00512 WORK ORDER FORM
(To be inserted by the City at the time of Contract execution)

EXHIBIT C
EQUAL EMPLOYMENT OPPORTUNITY
(To be inserted by the City at the time of Contract execution)

EXHIBIT D
MWBE SUBCONTRACT TERMS
(To be inserted by the City at the time of Contract execution)

EXHIBIT E
DRUG POLICY COMPLIANCE AGREEMENT
(To be inserted by the City at the time of Contract execution)

**EXHIBIT F
CONTRACTOR'S CERTIFICATION OF NO SAFETY IMPACT POSITIONS
IN PERFORMANCE OF A CITY CONTRACT**

I, _____
(Name - Print/Type) **(Title)**

as an owner or officer of _____ (Contractor) have authority to bind the Contractor with respect to its bid, and I hereby certify that Contractor has no employee safety impact positions as defined in §5.18 of Executive Order No. 1-31 that will be involved in performing this City Contract. Contractor agrees and covenants that it shall immediately notify the City's Director of Personnel if any safety impact positions are established to provide services in performing this City Contract.

Date

Contractor Name

Signature

Title

**CONTRACTOR'S CERTIFICATION OF NON-APPLICATION OF
CITY OF HOUSTON DRUG DETECTION AND DETERRENCE PROCEDURES
FOR CONTRACTORS**

I, _____
(Name - Print/Type)

as an owner or officer of _____ (Contractor) have authority to bind the Contractor with respect to its bid, and I hereby certify that Contractor has fewer than fifteen (15) employees during any 20-week period during a calendar year and also certify that Contractor has no employee safety impact positions as defined in §5.18 of Executive Order No. 1-31 that will be involved in performing this City Contract. Safety impact position means a Contractor's employment position involving job duties that if performed with inattentiveness, errors in judgment, or diminished coordination, dexterity, or composure may result in mistakes that could present a real and/or imminent threat to the personal health or safety of the employee, co-workers, and/or the public.

Date

Contractor Name

Signature

Title

EXHIBIT G
DRUG POLICY COMPLIANCE DECLARATION
(To be inserted by the City at the time of Contract execution)

**EXHIBIT H
FEES AND COSTS**

(To be inserted by the City at the time of Contract execution)

**EXHIBIT I
PAY OR PLAY**

(To be inserted by the City at the time of Contract execution)

EXHIBIT J
PERFORMANCE BOND

(To be inserted by the City at the time of Contract execution)

EXHIBIT K
ONE-YEAR MAINTENANCE BOND
(To be inserted by the City at the time of Contract execution)

T

EXHIBIT L
STATUTORY PAYMENT BOND
(To be inserted by the City at the time of Contract execution)

EXHIBIT M
CITY OF HOUSTON GENERAL CONDITIONS DOCUMENT 00700

(To be inserted by the City at the time of Contract execution)

A PDF version of the General Conditions can be viewed on the following web link:

<http://purchasing.houstontx.gov/buyer/BidDocumentManager.aspx?id=C23560>

EXHIBIT N
CITY OF HOUSTON SUPPLEMENTAL CONDITIONS DOCUMENT 00800
(To be inserted by the City at the time of Contract execution)

CITY OF HOUSTON -- BIDDER'S BOND

(Must be in an amount at least 10% of the bid. If the bid is upon alternates this bond must be for at least 10% of the highest amount for which the bidder offers to do any or all the work bid upon.)

THE STATE OF TEXAS

§
§
§

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF HARRIS

THAT WE, _____ as principal and the other subscriber hereto as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston, a municipal corporation in the sum of \$ _____ Dollars (\$ _____).

The condition of this obligation is that: ---

WHEREAS, the said principal is submitting to the City of Houston his or its bid for the doing for the City of Houston of certain work and construction of which the following is a brief description, to-wit: ---

Bid No. S50-C23560

CONCRETE REPAIR SERVICES FOR VARIOUS DEPARTMENTS.

in accordance with the plans and specifications for such work upon which such bid is made, to which plans and specifications reference is made for a more full description of the work and construction referred to.

NOW, THEREFORE, if the said bidder is awarded the contract for such work, the said bidder will, within the time provided in the specifications, enter into a contract with the City therefore upon the form and to the purpose and intent provided in the specifications, will furnish insurance as required in the specifications and will furnish a good and sufficient construction surety bond executed by said bidder and one corporate surety organized under the laws of the State of Texas or authorized to do business in the State of Texas and having a fully paid up capital stock of not less than \$100,000.00 and duly licensed and qualified by the Board of Insurance Commissioners of the State of Texas, which bond shall be for an amount equal to 100 percent of the contract price and shall be conditioned in accordance with the requirements stated in the specifications upon which such bid is being submitted.

In the event said bidder is unable or fails to execute said contract for the work proposed to be done, is unable or fails to furnish insurance as specified or is unable or fails to furnish said construction bond in the amount and condition as aforesaid, the undersigned principal and surety shall be liable to said City of Houston for the full amount of this obligation which is here and now agreed upon and admitted as the amount of the damages which will be suffered by the City of Houston on account of the failure of such bidder to so comply with the terms of this bid.

Executed this _____ day of _____, A.D. 201_.

PRINCIPAL

By _____

By _____

Surety