CONSTRUCTION CONTRACT

This Agreement entered into this 12th day of September, 2017 by and between Hidalgo County acting by and through Hidalgo County Urban County Program, hereinafter called the "OWNER", acting herein through its County Judge and **Saenz Brothers Construction, LLC (a Texas Limited Liability Company)** of **Donna** State of Texas, hereinafter called "CONTRACTOR".

WITNESSETH

That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows:

PROJECT NAME: Hidalgo County Precinct No. 3 GLO Flood & Drainage Improvements Project known as the Peñitas Drain Project Round 2 Phase I

PROJECT No.: **6540-60-0309-5200-6000-UCP-ET**

PROJECT DESCRIPTION: **FLOOD & DRAINAGE IMPROVEMENTS**

heinafter called the project, for the sum of **($952,250.00) – Nine hundred fifty two thousand two hundred fifty dollars and zero cents** and all extra work in connection therewith, under the terms as stated in the General and Special Conditions of the Contract; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, Supplemental General Conditions and Special Conditions of the contract, the plans, which include all maps, plats, blue prints, and other drawings and printed or written explanatory matter thereof, the specifications and contract documents therefore as prepared by **Javier Hinojosa Engineering** and as enumerated in Paragraph 1 of the Supplemental General Conditions, all of which are made a part hereof and collectively evidence and constitute the contract.

The CONTRACTOR hereby agrees to commence work under this contract on or after a date to be specified in a written "Notice to Proceed" of the OWNER and to fully complete the project within **(150) One hundred fifty** consecutive calendar days thereafter. The CONTRACTOR further agrees to pay, as liquidated damages, the sum of **($300.00) three hundred dollars and zero cents** for each consecutive calendar day thereafter as hereinafter provided in Paragraph 19 of the General Conditions.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in the General Conditions of the contract, and to make payments on account thereof as provided in Paragraph 25, "Payments to Contractor", of the General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this contract in four (4) counterparts, each of which shall be deemed an original, in year and day first above mentioned.

Fernando Saenz, Manager
Saenz Brothers Construction LLC

Name of Firm: Saenz Brothers Construction LLC
Address: 3226 N. Victoria Road
Donna, Texas 78537

Federal I.D./S.S.: 46-22885558

STATE OF TEXAS

COUNTY OF HIDALGO

This instrument was acknowledged before me on this the _____ day of _____, 2017,

by **Fernando Saenz**, **Manager** of and on behalf of **Saenz Brothers Construction, LLC.**
(name) (title) (a limited liability corporation) (a partnership) (an individual)

Notary Public - Signature

WITNESS:

URBAN COUNTY PROGRAM

Diana R. Serna, Director
Urban County Program

APPROVED AS TO FORM
Atlas, Hall & Rodriguez
By: Stephen L. Crain
Date: 9/5/2017

Zimbra **sandra.regalado@co.hidalgo.tx.us**

RE: Contract- Saenz Brothers Construction

From : Steve Crain <scrain@atlashall.com> Tue, Sep 05, 2017 12:41 PM
Subject : RE: Contract- Saenz Brothers Construction
To : 'Sandra Regalado' <sandra.regalado@co.hidalgo.tx.us>

The insurance certificates are OK.

From: Sandra Regalado [mailto:sandra.regalado@co.hidalgo.tx.us]
Sent: Tuesday, September 05, 2017 8:32 AM
To: Steve Crain <scrain@atlashall.com>
Subject: RE: Contract- Saenz Brothers Construction

Good Morning,

Attached please find the pending insurance certificates for the Contract submitted for review for Saenz Brothers Construction for the above mentioned project.

Respectfully,

Sandra G. Regalado, UCP Coordinator
Urban County Program
427 E. Duranta St. Ste. 107
Alamo, TX 78516
Phone: (956) 787-8127
Fax: (956) 318-2988
Direct: (956) 292-7000 ext 2233

From: "Steve Crain" <scrain@atlashall.com>
To: "Sandra Regalado" <sandra.regalado@co.hidalgo.tx.us>
Sent: Friday, September 1, 2017 4:56:57 PM
Subject: RE: Contract- Saenz Brothers Construction

The contract, exhibits, bonds and insurance certificates are all provided at one time for review. Please call me on Tuesday.

From: Sandra Regalado [mailto:sandra.regalado@co.hidalgo.tx.us]
Sent: Friday, September 01, 2017 3:52 PM
To: Steve Crain <scrain@atlashall.com>
Subject: Re: Contract- Saenz Brothers Construction

Please see attached exhibits

Sandra G. Regalado, UCP Coordinator
Urban County Program
427 E. Duranta St. Ste. 107
Alamo, TX 78516
Phone: (956) 787-8127
Fax: (956) 318-2988
Direct: (956) 292-7000 ext 2233

From: "Steve Crain" <scrain@atlashall.com>
To: "Sandra Regalado" <sandra.regalado@co.hidalgo.tx.us>
Sent: Friday, September 1, 2017 3:37:19 PM
Subject: RE: Contract- Saenz Brothers Construction

EXHIBIT "A"

SPECIFICATIONS:

Hidalgo County – Urban County Program
Hidalgo County Precinct No. 3 – Flood Drainage Improvements
Bid No.: 6540-60-0309-5200-6000-UCP-ET

SCOPE OF WORK, SPECIFICATION REQUIREMENTS AND OTHER TERMS & CONDITIONS:

The County Of Hidalgo requests proposals for:
"Flood Drainage Improvements Project known as the "Peñitas Drain Phase I" for the Texas General Land Office (GLO) Contract No. 12-406-000-6453-DRS-210068"
(See attached specifications as prepared by Javier Hinojosa Engineering)

Engineering Firm Contact:
Javier Hinojosa Engineering
416 E. Dove Avenue
McAllen, TX 78504
956-668-1588

Hidalgo County Precinct No. 3 Contact:
Commissioner Joe M. Flores
956-585-4509

Hidalgo County-Urban County Program Contact:
Eric Trevino, UCP Coordinator I
956-787-8127

TECHNICAL SPECIFICATIONS

SECTION	DESCRIPTION
Section 01000	Special Provisions
Section 02101	Preparation of Right of Way
Section 02221	Trench Excavation, Backfill and Compaction
Section 02224	Pipe Boring, Drilling and Jacking
Section 02230	Excavation
Section 02236	Embankment
Section 02571	Sanitary and Storm Sewers
Section 02571A	Concrete Pipe
Section 02575	Manholes
Section 02580	Storm Sewer Structures
Section 02601	Flexible Base
Section 02612	Hot Mix Asphalt Concrete Pavement
Section 03300	Cast In Place Concrete
Section 03330	Reinforcing Steel
Section 09100	Construction Traffic Control
Section 19000	Trench Protection

SECTION 01000
SPECIAL PROVISIONS

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UNDERGROUND UTILITIES. WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS, SUFFICIENTLY IN ADVANCE OF OPERATIONS TO PRECLUDE DAMAGE TO SAME.

2. WATER, SEWER, OR OTHER UTILITY SERVICES SHALL NOT BE INTERRUPTED. ANY DAMAGES TO EXISTING UTILITIES WILL BE THE CONTRACTOR'S RESPONSIBILITY.

3. IN THE EVENT OF DAMAGE TO UNDERGROUND FACILITIES, WHETHER SHOWN OR NOT SHOWN IN THE DRAWINGS, THE CONTRACTOR SHALL MAKE THE NECESSARY REPAIRS TO PLACE THE FACILITIES BACK IN SERVICE AT NO INCREASE IN THE CONTRACTOR'S PRICE AND ALL SUCH REPAIRS SHALL CONFORM TO THE REQUIREMENTS OF THE COMPANY OR AGENCY SERVICING THE FACILITY.

4. THE CONTRACTOR SHALL EXERCISE EXTRA CARE TO PREVENT DAMAGE TO ALL OTHER STRUCTURES IN THE AREA INCLUDING BUILDINGS, FENCES, ROADS, PIPELINES, UTILITIES, ETC., WHETHER PUBLICLY OR PRIVATELY OWNED.

5. UNTIL ACCEPTANCE BY THE ENGINEER OF ANY PART OR ALL OF THE CONSTRUCTION, AS PROVIDED FOR IN THE PLANS AND THESE SPECIFICATIONS, IT SHALL BE UNDER THE CHARGE AND CARE OF THE CONTRACTOR, AND HE SHALL TAKE EVERY NECESSARY PRECAUTION AGAINST INJURY OR DAMAGE TO ANY PART OF THE WORK. THE CONTRACTOR SHALL REBUILD, REPAIR, RESTORE AND MAKE GOOD, AT HIS OWN EXPENSE, ALL INJURIES OR DAMAGE TO ANY PORTION OF THE WORK BEFORE ITS COMPLETION AND ACCEPTANCE.

6. NO OPEN TRENCHES OR EXCAVATION SHALL BE LEFT OPEN OVERNIGHT.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR THIS PROJECT FROM CITY OF PENITAS, DRAINAGE DISTRICT No. 1., HIDALGO COUNTY IRRIGATION DISTRICT No. 6, AGUA S.U.D., HIDALGO COUNTY IRRIGATION DISTRICT No. 16 AND TXDOT.

8. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF REMOVAL AND/OR RELOCATION OF GAS VALVES, WATER METERS OR IRRIGATION VALVES.

9. CONTRACTOR TO COORDINATE ALL WORK WITH MR. RAUL SESIN P.E., MANAGER, HIDALGO COUNTY DRAINAGE DISTRICT No. 1 (956-292-7080) AND VICTOR GALLARDO, HIDALGO COUNTY PRECINCT No. 3 (956-585-4509) PRIOR TO START OF CONSTRUCTION.

10. ALL DRIVEWAYS AND SIDEWALKS TO BE RECONSTRUCTED WITH EXISTING LIKE MATERIALS TO BE MINIMUM OF THE FOLLOWING:

ASPHALT DRIVEWAYS:	8" FLEX BASE AND 2" H.M.A.C.
CONCRETE DRIVEWAYS:	6" REINFORCED CONCRETE (3,500 P.S.I.)
CALICHE DRIVES:	8" FLEX BASE
CULVERTS:	18" R.C.P.

11. ALL EXISTING PAVEMENT THAT IS DAMAGED TO BE REPLACED WITH 8" FLEX AND 2" H.M.A.C. AND ALL EDGES TO BE SAW CUT.

12. CONTRACTOR TO PROVIDE TRAFFIC CONTROL PLAN FOR ALL IMPROVEMENTS APPROVED BY HIDALGO COUNTY AND ENGINEER.

13. PROPER SEDIMENT CONTROL DEVISES SHALL BE UTILIZED DURING CONSTRUCTION ON ALL DRAINAGE STRUCTURES. ALL GRATE INLETS SHALL HAVE FILTER FABRIC INLET PROTECTION TO PREVENT SOIL EROSION INTO THE DRAINAGE SYSTEM..

14. CONTRACTOR TO PROVIDE AND MAINTAIN TEMPORARY GRAPHIC CONSTRUCTION SIGNS, DIRECTIONAL SIGNS AND ANY OTHER SIGNS THAT MAY BE REQUIRED DURING CONSTRUCTION.

15. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF HIDALGO COUNTY DRAINAGE DISTRICT No. 1, HIDALGO COUNTY IRRIGATION DISTRICT No. 6, UNITED IRRIGATION DISTRICT AND HIDALGO COUNTY PRECINCT NO. 3.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AGUA S.U.D. 48 HOURS PRIOR TO COMMENCEMENT OF WORK @ (956) 585-2459 TO COORDINATE AND MEET ANY ADDITIONAL REQUIREMENTS AND/OR SPECIFICATIONS.

17. THE CONTRACTOR SHALL BE RESPONSIBLE TO CALL DIG TESS 48 HOURS PRIOR TO COMMENCEMENT OF WORK FOR UTILITY SPOTTING @ (1-800-DIG-TESS).

18. LOCATIONS OF UNDERGROUND FACILITIES ARE FROM BEST INFORMATION AVAILABLE. NEITHER THE OWNER OR ENGINEER, WARRANT THE ACCURACY OF THE INFORMATION PROVIDED. ANY DEVIATIONS SHALL BE CALLED TO THE ENGINEER'S ATTENTION IMMEDIATELY.

19. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE CORRESPONDING UTILITY CORPORATION IN REGARDS TO THE RELOCATION/ADJUSTION OF ANY CONFLICTING UTILITIES. THE RELOCATION/ADJUSTMENT SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

20. THE CONTRACTOR SHALL REMOVE ALL FENCES LOCATED WITHIN THE EASEMENTS AND RIGHT OF WAY, INTERFERING WITH CONSTRUCTION OPERATION AND PROVIDE TEMPORARY FENCING DURING CONSTRUCTION. REMOVED FENCES SHALL BE REPLACED WITH A NEW FENCE OR UNDAMAGED ORIGINAL FENCING. REMOVAL AND REPLACEMENT OF EXISTING AND TEMPORARY FENCES SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

21. THE CONTRACTOR SHALL PROVIDE ACCESS TO EXISTING RESIDENCES AT ALL TIMES.

22. ANY DAMAGES TO FENCES, WALKS, OR PRIVATE PROPERTY SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.

23. NO OPEN EXCAVATION SHALL BE LEFT OPEN OVERNIGHT. ALL EXCAVATIONS WHICH CANNOT BE BACKFILLED OVERNIGHT SHALL BE COVERED. AS A MINIMUM, WITH STEEL PLATING WHEN IN PAVED AND UNPAVED AREAS SUBJECT TO VEHICULAR LOADING; ¾ PLYWOOD, WOOD PLANKING WITH O.S.H.A. ORANGE PLASTIC EXPANDED MESH BARRIER AROUND PERIMETER IN UNPAVED AREAS NOT SUBJECT TO VEHICULAR LOADING, OR AS APPROVED BY THE ENGINEER.

24. THE PREPARATION OF THESE PLANS REFLECTS INFORMATION, PROVIDED BY OTHERS, ON THE APPROXIMATE LOCATION AND EXISTENCE OF EXISTING UTILITY AND ADJACENT PHYSICAL FEATURES. HOWEVER, THEY DO NOT IMPLY OR AFFIRM THAT ALL UTILITIES OR PHYSICAL FEATURES ARE SHOWN. GENERALLY, UTILITY SERVICE CONNECTIONS ARE NOT INDICATED ON THESE PLANS. CONTRACTOR IS RESPONSIBLE FOR NOTIFICATIONS OF THE OWNER IMMEDIATELY UPON ENCOUNTERING UNFORESEEN CONFLICTS.

25. THE APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN, CONTRACTOR SHALL DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD PRIOR TO COMMENCING WORK. CONTRACTOR TO BE FULLY RESPONSIBLE FOR DAMAGES WHICH MIGHT OCCUR BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE EXISTING UTILITIES.

26. PUBLIC AND PRIVATE UTILITY LINES AND CUSTOMER SERVICE LINES MAY EXIST THAT ARE NOT SHOWN ON THE CONSTRUCTION DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE, MAINTAIN AND PROTECT THE INTEGRITY OF THESE LINES. HAND EXCAVATION MAY BE REQUIRED. THE CONTRACTOR SHALL RESTORE RELOCATED OR DIVERTED UTILITY TO ITS ORIGINAL CONDITION AND LOCATION WHEN APPLICABLE UPON COMPLETION OF CONSTRUCTION. SAID RESTORATION SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

27. THE CONTRACTOR SHALL ADJUST EXISTING AGUA S.U.D. WATER LINES AS REQUIRED TO INSTALL DRAINAGE IMPROVEMENTS SAID ADJUSTMENTS SHALL BE COORDINATED WITH AGUA S.U.D. PRIOR TO COMMENCEMENT OF WORK. SAID WATER LINE ADJUSTMENT SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

28. THE CONTRACTOR SHALL ADJUST AND CONNECT TO NEW SYSTEM EXISTING FIELD DRAIN LINES AT PROPOSED LOCATIONS. SAID WORK SHALL BE COORDINATED WITH H.C.I.D. No. 6 PRIOR TO COMMENCEMENT OF WORK. SAID LINE ADJUSTMENTS AND CONNECTIONS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

29. THE CONTRACTOR TO MAINTAIN ALL EQUIPMENT AND TRANSPORTATION OF SAID EQUIPMENT WITHIN THE EXISTING RIGHTS-OF-WAY OF THE CITY, COUNTY, OR STATE.

30. DURING EXCAVATION OPERATIONS FOR DRAINAGE AND/OR UTILITIES, THE CONTRACTOR SHALL NOT PILE EXCAVATED MATERIAL OR EXCAVATE WITHIN THE DRIP LINE OF TREES THAT ARE TO BE PRESERVED.

31. WHERE NEW WATER LINES AND SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC 317(DESIGN OF SEWAGE SYSTEMS) OR 30 TAC 290 (WATER HYGIENE).

32. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING WATER AND SEWER CONNECTIONS TO ALL HOMES AND BUSINESSES IN WORKING ORDER AT ALL TIMES, EXCEPT FOR BRIEF INTERRUPTIONS IN SERVICE FOR CONNECTIONS TO BE REINSTALLED. IN NO CASE SHALL SERVICES BE ALLOWED TO REMAIN OUT OF SERVICE OVERNIGHT. CONTRACTOR IS RESPONSIBLE FOR DAMAGES TO SAID SERVICES.

33. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE DRAINAGE OF PROPOSED FACILITIES AT ALL TIMES DURING CONSTRUCTION.

34. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GRADING AREA BETWEEN THE BACK OF CURB/EDGE OF PAVEMENT, ROAD SIDE DITCH AND RIGHT-OF-WAY TO HAVE POSITIVE FLOW TO THE PROPOSED DRAINAGE SYSTEM.

35. THE CONTRACTOR SHALL PROVIDE/MAINTAIN ADEQUATE POSITIVE DRAINAGE AT ALL TIMES DURING THE INSTALLATION OF THE STRUCTURES, DRAINAGE, UTILITY, IRRIGATION AND ROAD IMPROVEMENTS. DEWATERING OF THE TRENCH MAY BE REQUIRED DURING THE INSTALLATION OF THE DRAINAGE, UTILITY AND IRRIGATION FACILITIES/STRUCTURES. SAID DEWATERING SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

36. THE CONTRACTOR SHALL CLEANUP AND RESTORE THE AREA OF OPERATIONS TO A CONDITION AS GOOD AS OR BETTER THAN THAT WHICH EXISTED PRIOR TO INSTALLATION OF ALL ITEMS TO BE CONSTRUCTED.

37. ALL DEBRIS, VEGETATION AND SURPLUS MATERIAL, RESULTING FROM DEMOLITION AND/OR CLEARING OF THE RIGHT-OF-WAY IN PREPARATION OF PROPOSED IMPROVEMENTS SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF AT A SITE ACCEPTABLE TO HIDALGO COUNTY DRAINAGE DISTRICT No 1. THE CONTRACTOR SHALL PROVIDE A LETTER STATING SO. THIS SHALL BE INCIDENTAL AND NOT A SEPARATE PAY ITEM UNLESS STATED SO. NO EXCESS EXCAVATED MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAYS WITHOUT WRITTEN PERMISSION FROM THE AFFECTED PROPERTY OWNER AND THE HIDALGO COUNTY DRAINAGE DISTRICT No 1. IF THE CONTRACTOR PLACES EXCESS MATERIAL IN THE AREAS WITHOUT WRITTEN PERMISSION, HE WILL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM SUCH FILL AND CONTRACTOR SHALL REMOVE THE MATERIAL AT OWN COST.

38. THE CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION AND SUBMITTAL OF THE TRENCH EXCAVATION PROTECTION PLAN. CONTRACTOR SHALL SUBMIT CONSTRUCTION DETAILS AND DESIGN CALCULATIONS BEARING THE SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS BEFORE CONSTRUCTING THE SHORING AND/OR UTILIZING A TRENCH PROTECTION SYSTEM (BOX). THE ENGINEER RESERVES THE RIGHT TO REJECT DESIGNS NOT MEETING THE REQUIREMENTS OF SECTION ITEM 402 AND 403.

39. THE CONTRACTOR SHALL BE RESPONSIBLE TO FOLLOW ALL T.C.E.Q. STORM WATER POLLUTION PREVENTION PLAN (SWP3) REQUIREMENTS AS PER SWP3 SHEETS AND AS STATED IN TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM CONSTRUCTION GENERAL PERMIT (TPDES TXR150000, EFFECTIVE DATE MARCH 5, 2008), INCLUDING N.O.I. SUBMITTAL AND MS4 NOTIFICATION.

40. FLEXIBLE BASE AGGREGATE SHALL MEET THE REQUIREMENTS IN THE TABLE BELOW. NEW CALICHE MATERIAL SHALL BE TREATED WITH 0.5% LIME BY DRY WEIGHT OF MATERIAL IF THE PLASTICITY INDEX OF SAID MATERIAL IS GREATER THAN 12 .

41. ALL ROAD CROSSINGS SHALL BE REPLACED WITH A MINIMUM OF 8" COMPACTED CALICHE AND 2" HMAC OR LIKE SECTION, WHICHEVER IS GREATER.

42. THE ENGINEER WILL PROVIDE CONTROL POINTS (BENCHMARK AND PROPERTY CORNERS) FOR THE WORK TO BE PERFORMED BY THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION STAKING, INCLUDING BUT NOT LIMITED TO HORIZONTAL & VERTICAL GRADE CUTS FOR CURB & GUTTER, ROADWAY, STORM DRAIN PIPE, ROADSIDE DITCHES, DRIVEWAY CULVERTS AND DITCH WORK.

43. THE CONTRACTOR SHALL CONNECT ANY PROPOSED IRRIGATION LINE WITH EXISTING IRRIGATION PIPE IN ACCORDANCE WITH H.C.I.D. No 6 SPECIFICATIONS, SUPPORT COLLARS MAY BE USED. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR ANY DAMAGE TO THE EXIST. LINE CAUSED BY THIS WORK. ELBOWS AND MISC. FITTINGS SHALL ALSO BE USE TO ACHIEVE A 1.0 FT SEPARATION BETWEEN TOP OF PROP. DRAIN LINE AND BOTTOM OF THE IRRIGATION LINE.

44. ELBOW FOR RCP OR HPP BEING PROPOSED AT THE END OF LINES SHALL BE PRE-FABRICATED AND SECURED TO THE PIPE WITH A CONCRETE COLLAR (TYPICAL ON ALL PIPE ELBOW INSTALLATIONS.) ELBOW SHALL BE REQUIRED AT ALL LOCATIONS SHOWN ON THE PLANS. THIS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL. PRE-FABRICATED ELBOWS SHALL BE FIELD CONFIRMED BY THE CONTRACTOR.

45. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPROVING ALL EXISTING DRIVEWAYS. CALICHE, DIRT OR ASPHALT DRIVEWAYS SHALL BE REPLACED WITH 8" COMPACTED CALICHE AND 1 1/2" ACP. CONCRETE DRIVEWAYS SHALL BE REPLACED WITH 5" CONCRETE WITH REINFORCEMENT AS PER DETAILS. THIS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED ON THE PROPOSAL.

46. FOR ALL PITS OR QUARRIES, COMPLY WITH THE "TEXAS AGGREGATE QUARRY AND PIT SAFETY ACT."

47. THE CONTRACTOR SHALL RELOCATE OR RECONSTRUCT ALL MAIL BOXES TO BE 1' BEHIND BACK OF CURB OR 3' BEHIND EDGE OF PAVEMENT. MAIL BOXES SHALL BE REPLACED TO THE SAME EXISTING CONDITIONS OR BETTER. SAID RELOCATION AND/OR RECONSTRUCTION OF MAIL BOXES SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

48. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL EXISTING WATER VALVES AND MANHOLES TO MATCH PROPOSED FINISH GRADE OF ROADWAY. CONCRETE COLLARS SHALL BE INSTALLED TO MATCH TOPS WITH PAVEMENT GRADE. THIS WORK SHALL BE INCIDENTAL AND NOT A SEPARATE PAY ITEM UNLESS STATED OTHERWISE.

49. THE CONTRACTOR SHALL INSURE A 6" MINIMUM COVER FOR DRIVEWAY CULVERTS. THE RELAYING OR REMOVAL OF DRIVEWAY PIPE CULVERTS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED ON THE PROPOSAL.

50. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT/RELOCATION OF ALL REGULATORY SIGNS REMOVED DUE TO CONSTRUCTION OPERATIONS WITH THE SAME SIGN ON FIXED SUPPORT(S) IMMEDIATELY UPON ITS REMOVAL. APPROVAL BY THE ENGINEER IS NECESSARY BEFORE REMOVING ANY REGULATORY ROADWAY SIGN(S). FLAGGERS ARE REQUIRED TO BE AVAILABLE TO DIRECT TRAFFIC DURING SIGN INTERMEDIATE DOWN TIME. RELOCATION OF ANY DIRECTIONAL SIGN ASSEMBLIES REMOVED DURING CONSTRUCTION OPERATIONS IMMEDIATELY UPON THEIR REMOVAL IS REQUIRED. THESE SIGNS SHALL BE RELOCATED TO A LOCATION IN ACCORDANCE WITH THE LATEST VERSION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". IN NO CASE WILL A SIGN BE REMOVED WITHOUT A REPLACEMENT SIGN AND SUPPORT(S) BEING READILY AVAILABLE AND A LOCATION ESTABLISHED. REMOVAL AND RELOCATION OF THESE SIGNS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED ON THE PROPOSAL.

51. ALL CONSTRUCTION OPERATIONS SHALL BE CONDUCTED TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC AS PROVIDED FOR IN THE SPECIFICATIONS, TxDOT STANDARDS, TEXAS M.U.T.C.D. AND/OR AS DIRECTED. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE CURRENT EDITION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

52. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT/RELOCATION OF ALL REGULATORY SIGNS REMOVED DUE TO CONSTRUCTION OPERATIONS WITH THE SAME SIGN ON FIXED SUPPORT(S) IMMEDIATELY UPON ITS REMOVAL. APPROVAL BY THE ENGINEER IS NECESSARY BEFORE REMOVING ANY REGULATORY ROADWAY SIGN(S). FLAGGERS ARE REQUIRED TO BE AVAILABLE TO DIRECT TRAFFIC DURING SIGN INTERMEDIATE DOWN TIME. RELOCATION OF ANY DIRECTIONAL SIGN ASSEMBLIES REMOVED DURING CONSTRUCTION OPERATIONS, IMMEDIATELY UPON THEIR REMOVAL, IS REQUIRED. ALL SIGNING, BARRICADING AND TRAFFIC CONTROL SHALL CONFORM TO THE LATEST VERSION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". IN NO CASE WILL A SIGN BE REMOVED WITHOUT A REPLACEMENT SIGN AND SUPPORT(S) BEING READILY AVAILABLE AND A LOCATION ESTABLISHED. REMOVAL AND RELOCATION OF THESE SIGNS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED ON THE PROPOSAL.

53. THE CONTRACTOR SHALL ABANDON AND CAP ANY PORTION OF PIPE LINE (STORM, IRRIGATION, ETC.) FOUND WITHIN THE PROPOSED PIPE TRENCH, AT THE ENGINEERS REQUEST. ONCE APPROVED BY THE ENGINEER, THE PIPE TO BE ABANDONED SHALL BE CAPPED AND SEALED WITH CEMENT AT BOTH ENDS OF THE TRENCH. THIS SHALL BE CONSIDERED SUBSIDIARY UNLESS OTHERWISE STATED.

SECTION 02101

PREPARATION OF RIGHT-OF-WAY

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. Relocation or removal and proper disposal of all obstructions (as applicable) from the right-of-way and from designated easements.

B. Obstructions shall include:

1. Remains of houses not completely removed by others.
2. Concrete, foundations, floor slabs, curb and gutter, driveways, and sidewalk.
3. Building materials such as brick, lumber and plaster.
4. Water wells, septic tanks, manholes, inlets, utility pipes and conduits.
5. Underground service station tanks, equipment or other foundations.
6. Fencing and retaining walls.
7. Paved parking areas.
8. Abandoned railroad tracks, ties, and scrap iron.
9. Ancillary structures such as shacks and outhouses.
10. Trees, stumps, bushes, shrubs, roots, limbs and logs.
11. All rubbish and debris whether above or below ground.
12. Power poles, telephone poles and service poles.
13. Mail boxes.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide materials required to perform work as specified.

PART 3 - EXECUTION

3.01 GENERAL

A. Clear entire project right-of-way and such other areas, including public or corporate lands, specified in the plans of all structures and obstructions.

B. Trim carefully all trees and shrubs designated for preservation and protect from scarring or other injuries during construction operation.

C. Removal of all foundations and underground obstructions, unless otherwise specified, shall be removed to the following depths:

1. In embankment areas, two (2) feet below natural ground.
2. In excavation areas, two (2) feet below the lower elevation of excavation.
3. In all other areas, one (1) foot below natural grade.

D. Backfill all holes, as directed by the ENGINEER, resulting from all removals.

E. Complete the preparation of right-of-way such that prepared right-of-way is free of holes, ditches and other abrupt changes in elevations and irregularities to contours.

F. Plug the remaining ends of all abandoned storm sewers, culverts, sanitary sewers, conduits, and utility pipes with concrete, as specified by the ENGINEER, to form a tight closure.

G. On existing concrete where only a portion is to be removed, care shall be exercised to avoid damage to remaining concrete. Where concrete reinforcement is encountered in removed portions, a minimum of one (1) foot of such reinforcement shall be cleaned of old concrete and left in place to tie into new construction. Concrete to be preserved, but subsequently destroyed by the CONTRACTOR's operations, shall be replaced by the CONTRACTOR at his expense in accordance with City Specifications, or as directed by the ENGINEER.

H. The necessary Replacement or Relocation of obstructions shall be considered incidental work to this Section and will not be paid for directly.

PART 4 - MEASUREMENT AND PAYMENT

4.01 PREPARATION OF RIGHT-OF-WAY

A. Preparation of right-of-way shall be measured on a lump-sum basis with measurement for payment made only on areas indicated and classified on the plans as preparation of right-of-way.

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

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

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

SECTION 02221

TRENCH EXCAVATION, BACKFILL, AND COMPACTION

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. Excavation, shoring, dewatering, pipe bedding, trench backfill, compaction, grading and cleanup of all pipeline trenching for the project.

B. All work must be done in accordance with these specifications and the safety requirements of the State Of Texas and OSHA Standards.

1.02 JOB CONDITIONS:

A. Site Acceptance:
1. Accept site in condition existing during Contract time frame.
2. Ground water/surface water found during construction are conditions of the contract and responsibility of Contractor.

B. Adverse Weather:
1. Place no backfill that is excessively wet or frozen.
2. Place no backfill in excessively wet or frozen trenches.

PART 2 - PRODUCTS

2.01 PIPE BEDDING AND BACKFILL:

A. The type of bedding shall be stated on the Plans or in the Special Provisions of the contract document. Determination of source of materials for bedding and backfill to meet the stated conditions shall be responsibility of CONTRACTOR, but use of such materials shall be subject to approval of ENGINEER.

B. Excavated Material Backfill:
Excavated material may be used in the trench backfill, provided that all hard rock and stones having any dimensions greater than 6 inches and frozen earth debris and roots larger than 2 inches are removed for the initial backfill.

C. Select Backfill:
Select backfill shall be gravel, fine rock cuttings, sand, sandy loam or loam free from excessive clay. Rock cuttings shall have no dimension greater than 2 inches.

D. Sand Backfill:

Sand backfill shall be clean, hard, durable, uncoated grains, free from lumps and organic material. All sand materials must pass a No. 8 Sieve.

E. Granular Backfill:
Granular backfill shall be free flowing, such as sand or hydraulically graded stone fines, or mixed sand and gravel, or sandy loam. The material shall be free from lumps, stones over 2 inches in diameter, clay and organic matter.

F. Controlled Density Fill:
Use high slump mixture of portland cement, fly ash and fine aggregate formulated, licensed and marketed as K-Krete or equal. Provide mixture with minimum 28-day compressive strength of 70 psi with no measurable shrinkage or surface settlement.

G. Thermoplastic Pipe Backfill:
Use a cohesionless material, such as sand, crushed stone, or pea gravel, with a maximum size not exceeding 3/8 inch.

2.02 CRADLING ROCK:

A. Use crushed rock or stone with 70-100% passing 1> inch sieve and no more than 50% passing 1 inch sieve, and no stones over 2 inches in diameter.

2.03 SHEETING, SHORING AND BRACING:

A. Use sound timber or structural steel in the shapes and sizes required in accordance with Section 19000, Trench Protection System.

PART 3 - EXECUTION

3.01 GENERAL:

A. Dewatering:

1. Execute work "dry". No pipe or conduits shall be laid or concrete poured on excessively wet soil.

2. Prevent surface water from flowing into excavation.

3. Provide equipment for handling water encountered as required. Obtain approval of proposed method of dewatering.

4. No sanitary sewer shall be used for disposal of trench water.

B. Protection of Existing Utilities:

1. Notify all utilities of location and schedule of work.

2. Locations and elevations of utilities shown on plans are to be considered approximate only. Notify utility OWNER and ENGINEER of conflicts between existing and proposed facilities.

3. Repair, relay, or replace existing utilities damaged, destroyed, or disrupted during work. Unless specified otherwise, replacement will be at the CONTRACTOR'S expense.

C. Sheeting, Shoring and Bracing:

1. Provide as required in accordance with Section 19000 Trench Protection System, to hold walls of excavation, prevent damage to adjacent structures, and to protect workmen and property.

2. Leave sheeting and shoring in place where removal might cause damage to work or otherwise indicated on drawings. If left in place, cut sheeting 18 inches or more above top of pipe.

3. Movable trench shield shall not be used below the spring line of the pipe unless authorized in writing by the ENGINEER. When movable trench shield is allowed in writing by the ENGINEER below spring line of pipe, it shall be lifted prior to any forward movement to avoid pipe displacement.

D. Changes in Grade:

1. Grades may be adjusted 1.5 feet (plus or minus) from plan grades to suit unforeseen construction conflicts or conditions with approval of ENGINEER.

2. No additional compensation will be made for such changes.

3.02 EXCAVATION AND TRENCHING:

A. General:

1. Method of excavation at CONTRACTOR'S option.

2. Excavate by hand under tree roots 3 inches and larger, and under and around structures and utilities.

3. Stockpile and replace topsoil to a minimum of 8 inches for surface restoration in grassed or agricultural areas.

B. Trench Characteristics:

1. Depth: as indicated on plans for pipe installation to lines and grades required with proper allowance for thickness of pipe and type of bedding specified or indicated.

2. Width:

a. Keep width of trench as narrow as possible and yet provide adequate room for backfilling and jointing.

b. Maximum width as follows:

Pipe Size Inches	Max. Trench Width
4 & 6	2'-0"
8 & 10	2'-4"
12	2'-6"
15	2'-9"
18	3'-0"
Over 18	Pipe O.D. + 12"

3. Trench walls must be vertical from trench bottom to 12 inches above top of pipe and above that may be vertical or sloped above pipe to conform to excavating safety codes.

4. Provide bell holes for each pipe joint where pipe bears on undisturbed earth.

5. Trench bottom shall be free of large stones and other foreign material.

3.03 SOFT, SPONGY OR UNSTABLE MATERIALS:

A. If this type of material is encountered during excavation or trenching, stop work and notify ENGINEER.

B. Perform remedial work as directed by ENGINEER.

C. If material is judged by ENGINEER to be unsuitable and removal is authorized or required, remove and replace with stable trench material as directed by ENGINEER.

3.04 ROCK EXCAVATION:

A. Excavate any rock to maintain minimum 6-inch clearance around pipe.

B. Remove and dispose rock material not suitable for backfill in a proper manner.

C. Use of explosives not permitted without prior written authorization from applicable regulating agencies, OWNER, and ENGINEER.

D. Provide Special Hazard Insurance covering liability if blasting operations are approved.

3.05 BEDDING:

A. Place pipe after bottom of trench has been excavated to proper depth and grade.

B. Place, compact, and shape bedding material to conform to barrel of pipe to insure continuous firm bedding for full length of pipe. Extreme care is to be taken to ensure proper backfill under the pipe haunches, especially for thermoplastic pipe installation.

C. Provide bedding as described in following table unless indicated otherwise on Plans or in Special Provisions.

Pipe Material	Minimum Bedding Class
1. Vitrified Clay Pipe	Class C (Granular Foundation)*
2. Non-reinforced Concrete Pipe	Class C (Shaped Subgrade)*
3. Reinforced Concrete Pipe	Class C* (Shaped Subgrade)*
4. Ductile Iron Pipe	Class D*
5. Steel Cylinder	Class C (Shaped Subgrade)*
6. Thermoplastic Pipe	**

* Refers to plan detail, "Trench Bedding Circular Pipe."

** Refers to plan detail, "Flexible Pipe Bedding And Backfill."

D. Thermoplastic Pipe Bedding. The pipe shall be bedded in a foundation of compacted cohesionless material, such as sand, crushed stone, or pea gravel, with a maximum size not exceeding 3/8". This material shall extend a minimum of six (6) inches below the pipes outside wall or outermost ribs, and shall be carefully and accurately shaped to fit the lowest part of the pipe exterior up to the pipe's spring line.

3.06 TRENCH BACKFILL

A. Use excavated material backfill (2.01B) unless otherwise specified.

B. Use Sand Backfill for all trenches within 5 feet of buildings and beneath areas, paved streets or existing exposed utilities.

C. Initial Backfill:

1. Place backfill after pipe has been bedded and checked for alignment, grade and internal obstructions.

2. Carry out in an orderly fashion after authorization to cover pipe has been given.

3. Allow no more than 300 feet of trench to be open at one time.

4. Do not backfill until concrete or mortar has sufficiently cured.

5. Record location of connections and appurtenances before backfilling.

6. Place by hand in approximately 6 inch layers (loose measurement) and tamp with hand operated tamping equipment until a minimum cover of 12-inches above top of pipe is obtained.

7. Backfill simultaneously on both sides of pipe to prevent displacement.

8. Particular attention is necessary when backfilling thermoplastic pipe. After the pipe structure has been installed on bedding as required by plan details it shall be backfilled according to the following:

   Backfill shall consist of a cohesionless material, such as sand, crushed stone, or pea gravel, and having a maximum size not to exceed 3/8". The backfill material shall be placed along both sides of the completed pipe structure(s) to a depth of twelve (12) inches above the pipe. The backfill shall be placed in uniform layers not exceeding six (6) inches in depth (loose measurement), wetted if required, and thoroughly compacted between the pipe structure and the sides of the

   trench. Until a minimum cover of twelve (12) inches is obtained, only hand operated tamping equipment will be allowed within vertical planes two (2) feet beyond the horizontal projection of the outside surfaces of the structure.

9. All initial backfill shall be compacted to a minimum of 95 percent Standard Proctor Density.

D. Subsequent Backfill:

1. Place backfill into trench at an angle so that impact on installed pipe is minimized.

2. Compaction of all backfill material shall be performed in a manner that shall not crack, crush, or cause the installed pipe to be moved from the established grade or alignment.

3. Area under or within 5 feet of pavement; and under or within 2 feet of utilities, buildings, or walks shall be mechanically compacted to the top of the subgrade in 6-inch lifts to a minimum of 95 percent Standard Proctor Density.

4. Areas not under or within 5 feet of pavement; and under or within 2 feet of existing or proposed utilities, buildings, or walks shall be backfilled in layers not more than 10-inches in depth and compacted to a minimum 90 percent Standard Proctor Density.

5. Compaction method for subsequent backfill is at discretion of CONTRACTOR with following exceptions:

   a. If in OWNER'S or ENGINEER'S opinion compaction method presents potential damage to pipe, it will not be allowed.
   b. Compaction of any backfill material by flooding or jetting will require prior written authorization of ENGINEER.
   c. Heavy equipment shall not be used over pipe envelope before a minimum of 48 inches of backfill have been placed over top of pipe.

6. Mound excavated materials no greater than 6 inches in open areas only.

E. Controlled Density Fill:

1. Use where shown on plans.

2. Provide suitable forms to limit volume of control density fill material.

3. Prevent flow of material into existing drain lines.

4. Protect exposed utility lines during placement.

5. Place material in accordance with suppliers' written recommendations unless directed otherwise by ENGINEER.

3.07 EXCESS MATERIAL:

A. Waste excess excavated material where directed by ENGINEER.

3.08 TESTING:

A. Unless specified elsewhere, testing will be the responsibility of the OWNER.

B. Standard Proctor Density:

1. ASTM D698.

2. One (1) required for each type of material encountered.

C. In Place Density:

1. ASTM D1556 (Sand Cone)

2. ASTM D2167 (Balloon)

3. ASTM D3017 (Nuclear)

D. One (1) test per each 400 cubic yards of backfill placed.

PART 4 - MEASUREMENT AND PAYMENT

4.01 TRENCH EXCAVATION:

A. Trench excavation shall be considered incidental to pipeline installation.

B. Payment shall be made at the contract unit price per cubic yard only if a bid item is established in the contract.

4.02 BACKFILL:

A. Payment for backfill shall be made at the contract unit price per cubic yard only if a separate bit item is established in the contract.

B. No allowance shall be made for waste removal or disposal.

C. If ENGINEER orders an initial backfill material other than that specified in contract, it shall be paid for as an extra in price per cubic yard as compacted in place, EXCEPT if a higher class embedment is ordered by ENGINEER because the CONTRACTOR has over-excavated the trench width.

D. If the CONTRACTOR over-excavates the trench width and the ENGINEER orders the next higher class of embedment to be used, the embedment shall be paid for as if the original specified embedment was used.

E. If the ENGINEER orders the excavated material to be removed and disposed of and replaced with another material and a separate bid item is not established as a bid item, the material shall be paid as an extra.

F. If the CONTRACTOR fails to compact the backfill to the density requirements, the ENGINEER may order the material removed and replaced at no cost to the OWNER.

G. The disposal of rejected material shall be done in a proper manner and shall be at no cost to the OWNER.

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

SECTION 02224

PIPE BORING, DRILLING AND JACKING

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. This work shall consist of boring, drilling, or jacking operations related to the installation of water pipe, sanitary and storm sewer pipe, and traffic conduit in areas where trenching is not feasible.

PART 2 - PRODUCTS

A. The steel casing shall be seamless or electric resistance-welded tubing for sizes under 24-inch O.D. and standard double-submerged arc-weld for sizes over 24".

B. Tubing shall be A-106, Grade B with bevelled ends.

C. Table 02224-1 notes the steel casing size and thickness as related to the carrier pipe.

TABLE 02224-1

CASING SIZE VERSUS CARRIER SIZE

Steel Casing Diameter and Wall Thickness	Carrier Pipe (Inside Diameter)
14" Schedule 30	6"
16" Schedule 30	8"
18" Standard Class	10"
22" Standard Class	12"
24" Schedule 20	14"
26" Schedule 20	16"
30" 0.375" Wall	18"
36" 0.375" Wall	24"

PART 3 - EXECUTION

3.01 BORING:

A. Boring shall be performed to alignment and grade as shown on the construction drawings.

B. The earth and/or rock augers shall not exceed the O.D.(outside diameter) of the steel casing by more than 1/4 of an inch. The boring and insertion of the steel casing shall be performed with equipment capable of simultaneous operations.

C. The feed rate of augers and hydraulic pushing of the casing shall be the same. Under no circumstances will boring be allowed unless operations are simultaneous.

D. Every effort shall be made to avoid loss of earth.

E. Excavated material shall be removed from the casing as excavation progresses and no accumulation of such material within the casing shall be permitted.

F. Upon completion of the boring operations, all voids around the outside face of the casing shall be filled by grouting. Grouting equipment and material shall be on the job site before boring operations are started in order that grouting around the bored casing may be started immediately after the boring operations have finished.

G. The allowable tolerance as to grade and alignment of the installed casing shall not exceed 1/10 of a foot per hundred feet of casing length.

H. The CONTRACTOR shall be responsible for locating any underground utilities and for any damage resulting thereto.

I. The CONTRACTOR shall be fully responsible for producing a sound, tight installation, true to line and grade. Carrier pipe shall be skidded through the casing on redwood skids tied with stainless-steel.

J. A suggested method is shown in the plan details. Other methods shall be approved in writing by the Engineer.

3.02 BORING INSTALLATION DETAILS:

A. Prior to the start of the boring operations, the CONTRACTOR shall submit the following details to the ENGINEER.

1. Boring pit bracing

2. Casing boring head

B. Only workmen experienced in boring operation shall perform the work.

3.03 DRILLING AND JACKING FOR ELECTRICAL CONDUIT:

A. Metallic conduit shall be installed under existing pavement by approved jacking or drilling methods.

B. Non-metallic conduit shall not be installed by jacking. Non-metallic conduit may be installed by drilling if a hole larger than the conduit is pre-drilled and the conduit is hand-installed.

C. Jack or drilling pits shall be no less than 2 feet from the edge of any type of any pavement, measured from the side of the pit nearest to the pavement.

3.04 JACKING:

A. If the grade of the pipe at the jacking end is below the ground surface, suitable pits or trenches shall be excavated for the purpose of conducting the jacking operations and for placing end joints of the pipe. Such work shall be sheeted securely and braced in a manner to prevent earth cave-ins and to provide a safe, stable work area.

B. Heavy duty jacks suitable for forcing the pipe through the embankment shall be provided. In operating jacks, even pressure shall be applied to all jacks used so that pressure will be applied to the pipe uniformly around the ring of the pipe.

C. A suitable jacking frame or back stop shall be provided. The pipe to be jacked shall be set on guides properly braced together, to support the section of the pipe and to direct it in the proper line and grade.

D. The whole jacking assembly shall be placed so as to line up with the direction and grade of the pipe. In general, embankment material shall be excavated just ahead of the pipe and material removed through the pipe and the pipe forced through the embankment with jacks, into the space thus provided.

E. The excavation for the underside of the pipe, for at least 1/3 of the circumference of the pipe, shall conform to the contour and grade of the pipe. A clearance of not more than 2 inches may be provided for the upper half of the pipe. This clearance is to be tapered off to zero at the point where the excavation conforms to the contour of the pipe.

F. The distance that the excavation shall extend beyond the end of the pipe depends on the character of the material, but it shall not exceed 2 feet in any case. This distance shall be decreased if the character of the material being excavated makes it desirable to keep the advance closer to the end of the pipe.

G. The pipe, preferably, shall be jacked from the low or downstream end. Lateral or vertical variation in the final position of the pipe from the line and grade established by the ENGINEER will be permitted only to the extent of 1 inch in 10 feet, provided that such variation shall be regular and only in one direction and that the final grade or flow line shall be in the direction required.

H. If the CONTRACTOR desires, he may use a cutting edge of steel plate around the head end of the pipe extending a short distance beyond the end of the pipe with inside angles or lugs to keep the cutting edge from slipping back onto the pipe.

I. When jacking of pipe is once begun, the operation shall be carried on without interruption, insofar as practical, to prevent the pipe from becoming firmly set in the embankment.

J. Any pipe damaged in jacking operations shall be removed and replaced by the CONTRACTOR at his entire expense.

K. Immediately after jacking is complete and the carrier or encasement pipe is accurately positioned and approved for line and grade, the clearance space between the pipe and soil shall be completely filled by pressure grouting for the entire length of the installation.

L. The pits or trenches excavated to facilitate jacking operations shall be backfilled immediately after the jacking of the pipe has been completed.

3.05 JACKING INSTALLATION DETAILS:

A. Prior to the start of the jacking operations, the CONTRACTOR shall submit the following details to the ENGINEER.

1. Jacking pit bracing

2. Casing boring head

B. Only workmen experienced in jacking operation shall perform the work.

PART 4 - MEASUREMENT AND PAYMENT:

4.01 MEASUREMENT:

A. BORING:

1. Measurement shall be per linear foot of bored casing, and shall include furnishing all labor, materials, equipment, and work involved in the boring operations.

2. The unit measurement shall also include skids, steel ties, grouting, and other items associated with the boring and casing.

B. DRILLING AND JACKING FOR ELECTRICAL CONDUITS:

1. Measurement shall be per linear foot of installed electrical conduit and shall include all labor, materials, equipment, and work required for the operation.

C. JACKING:

1. Jacking carrier or encasement pipe will be measured by the linear foot of pipe complete in place. Such measurement will be made between the ends of the pipe along the central axis as installed.

2. The unit measurement shall also include skids, steel ties, grouting, and other items associated with the boring and casing.

4.02 PAYMENT:

A. BORING:

1. The accepted quantities for boring will be paid at the unit bid price per diameter of casing per linear foot.

2. Payment for carrier pipe will be paid in accordance with appropriate contract items.

B. DRILLING AND JACKING FOR ELECTRICAL CONDUIT:

1. The accepted quantities for drilling and jacking for electrical conduit will be paid at the unit bid price per diameter per linear foot.

C. JACKING:

1. The accepted quantities for jacking will be paid at the unit bid price per linear foot of carrier or encasement pipe of the type, size, and class indicated.

D. When not listed as a separate contract pay item, boring ,drilling and jacking electrical conduit or jacking shall be considered as incidental work, and the cost there of shall be included in such contract pay item(s) as provided in the contract proposal.

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

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

SECTION 02230

EXCAVATION

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. This work shall consist of excavating and properly utilizing or otherwise properly disposing of all excavated materials, of whatever character, within the limit of work.

B. Excavation shall also consist of constructing, compacting, shaping and finishing of all earthwork in designated areas on the plans, as specified herein, and in conformity with the required lines grades and typical cross sections or as directed by the ENGINEER.

PART 2 - PRODUCTS

2.01 CLASSIFICATION:

A. All excavations shall be unclassified as shall include all materials encountered regardless of their nature or the manner in which they are removed.

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS:

A. Prior to commencing this work, all erosion control and tree protection measures required shall be in place and all utilities located and protected.

B. Construction equipment shall not be operated within the drip line of trees, unless otherwise indicated.

C. Construction materials shall not be stockpiles under the canopies of trees. No excavation or embankment shall be placed within the drip line of trees until tree wells are constructed.

D. All excavation shall be performed as specified herein and shall conform to the established alignment, grades and cross sections.

E. Suitable excavated materials may be utilized in constructing required embankments.

F. The construction of all embankments shall conform to Section 02236 - Embankment. No material shall be stockpiled within the banks of a waterway.

G. Unsuitable excavated materials or excavation in excess of that needed for construction shall be known as "Waste" and shall become the property of the CONTRACTOR and it shall become his sole responsibility to properly dispose of this material off site in an environmentally sound manner at a permitted disposal site.

H. Adequate dewatering and drainage of excavation shall be maintained throughout the time required to complete the work.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. Measurement of the volume of excavation in cubic yards by the average end areas. Cross sectional areas shall be computed from the existing ground section to the established line of the subgrade, as shown on typical sections for the limits of the right-of-way or other work limits, including parkway slopes and sidewalk areas.

B. Measurement of the area in square yards of surface area excavated as shown on the typical sections included in the plans.

C. Measurement of the volume of excavation is in cubic yards, based upon the average end areas taken from pre-construction cross sections and planned grades. The planned quantities for excavation will be used as the measurement for payment for this item.

4.02 PAYMENT:

A. This item will be paid for at the contract unit price bid for "Excavation", as provided under the measurement method as included in the bid, which price shall be full compensation for all work herein specified: including dewatering, drainage, subgrade preparation, unless otherwise indicated and the furnishing of all materials, equipment, tools, labor and incidentals necessary to complete the work.

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

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

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

SECTION 02236

EMBANKMENT

PART 1 GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. This work shall consist of placing and compacting of suitable materials obtained from approved sources for use in the construction of street or channel embankments, berms, levees, pikes and structures.

PART 2 - PRODUCTS

(THIS PART INTENTIONALLY LEFT BLANK)

PART 3 - EXECUTION

3.01 GENERAL CONSTRUCTION METHODS:

A. Prior to placing any embankment, all tree protection, tree wells and erosion control devices shall be in place and all Section 02101, Preparing Right of Way and/or Section 02102, Clearing and Grubbing operations shall have been completed on the areas over which the embankment is to be placed.

B. Stump holes or other small excavations in the limits of the embankments shall be backfilled with suitable materials and thoroughly tamped by approved methods before commencing embankment construction.

C. The surface of the ground, including plowed loosened ground or surface roughened by small washes, shall be restored to approximately its original slope and the ground surface thus prepared shall be compacted by sprinkling and rolling.

D. Construction equipment shall not be operated within the drip line of trees, unless indicated. Construction materials shall not be stockpiled under the canopies of trees.

E. No excavation or embankment shall be placed with in the drip line of trees until tree wells are constructed.

F. Unless otherwise indicated, the surface of the ground of all unpaved areas, other than rock which are to receive embankment, shall be loosened by scarifying or plowing to a depth of not less than 4-inches.

G. The loosened material shall be recompacted with the new embankment as hereinafter specified.

H. The surface of hillsides to receive embankment shall be loosened by scarifying or plowing to a depth of not less than 4-inches and benches cut before embankment materials are placed.

I. The embankment shall then be placed in layers, as hereinafter specified, beginning at low side in partial width layers and increasing the width as the embankment is raised.

J. The material which has been loosened shall be recompacted simultaneously with the embankment material placed at the same elevation.

K. Where embankments are to be placed adjacent to or over existing roadbeds slopes shall be plowed or scarified to a depth of not less than 6-inches and the embankment built up in successive layers, as hereinafter specified, to the level of the old roadbed before its height is increased. Then, if indicated, the top of the old roadbed shall be scarified and recompacted with the next layer of the new embankment.

L. The total depth of the scarified and added material shall not exceed the permissible layer depth.

M. Trees, stumps, roots, vegetation or other unsuitable materials shall not be placed in embankment.

N. All embankment shall be constructed in layers approximately parallel to the finished grade and unless otherwise indicated, each layer shall be so constructed as to provide a uniform slope of 1/4 inch per foot from the centerline of the roadbed to the outside, except that on superelevated curves, each layer shall be constructed to conform to the superelevation indicated.

O. The embankment shall be continuously maintained at its finished section and grade until that portion of the work is accepted.

P. After completion of the embankment to the finished section and grade, the CONTRACTOR shall proof roll the subgrade and

revegetation procedures must commence immediately to minimize the soil loss and air pollution.

3.02 EARTHEN EMBANKMENTS:

A. Earth embankments shall be defined as embankments composed of soil material other than rock and shall be constructed of acceptable material from approved sources.

B. Except as otherwise indicated, earth embankments shall be constructed in successive 6-inch layers, loose measure, for the full width of the individual cross section and in such length as are best suited to the sprinkling and compaction methods utilized.

C. Minor quantities of rocks not larger than 4-inches, encountered in constructing earth embankment may be incorporated in the earth embankment layers, provided such placement of rock is not immediately adjacent to structures.

D. Each layer of embankment shall be uniform as to material, density and moisture content before beginning compaction.

E. Where layers of unlike materials abutt each other, each layer shall be feathered on a slope of 1:20 or the material shall be so mixed as to prevent abrupt changes in the soil.

F. No material placed in the embankment by dumping in a pile or windrows shall be incorporated in a layer in that position, but all such piles or windrows shall be moved by blading or similar methods.

G. Clods or lumps of material shall be broken and the embankment material mixed by blading, harrowing, disking or similar methods to the end that a uniform density is secured in each layer.

H. Water required for sprinkling to bring the material to the moisture content necessary for optimum compacting shall be evenly applied and it shall be the responsibility of the CONTRACTOR to secure a uniform moisture content throughout the layer by such methods that may be necessary.

I. All earth cuts, whether full width or partial width cuts in the side of a hill, which are not required to be excavated below subgrade elevation shall be scarified to a uniform depth of at least 6-inches below grade and the material shall be mixed and reshaped by blading and then sprinkled and rolled in accordance with the requirements outlined

above for earth embankments and to the same density as that required for the adjacent embankment.

J. Compaction of embankments shall conform to Section 02210, Subgrade Preparation. Each layer shall be compacted to the required density by any methods, type and size of equipment which will give the required compaction.

K. Prior to and in conjunction with the rolling operation, each layer shall be brought to the moisture content compaction over the entire layer.

L. For each layer of earth embankment and select material, it is the intent of this specification to provide the density as required herein, unless otherwise indicated.

M. Soils shall be sprinkled as required and compacted to the extent necessary to provide not less than 95 percent nor more than 105 percent of the density as determined to accordance with SDHPT Test Method Tex-114-E at optimum moisture content or within minus 3 percent of the optimum moisture content.

N. Care shall be taken to avoid overcompacting high PI expansive clays.

O. After each layer of earth embankment or select material is complete, tests as necessary will be made by the ENGINEER. If the material fails to meet the density specified, the course shall be reworked as necessary to obtain the specified compaction.

3.03 ROCK EMBANKMENTS:

A. Rock embankments shall be defined as those composed principally of rock and shall be constructed of accepted material from approved sources. Rock embankments shall not be placed immediately adjacent to structures.

B. Except as otherwise indicated, rock embankments shall be constructed in successive layers for the full width of the cross section and of 18 inches or less in depth.

C. When, in the opinion of the ENGINEER, the rock sizes necessitate a greater depth of layer than specified, the layer depth may be increased as necessary, but in no case shall the depth of layer exceed 2 1/2 feet.

D. Each layer shall be constructed by starting at one end and dumping the rock on the top of the layer being constructed then pushing the material

ahead with a bulldozer in such a manner that the larger rock will be placed on the ground or preceding embankment layer and the interstices between the larger stones filled with small stones and spalls by the operation and from the placing of succeeding loads of material.

E. The maximum dimension of any rock used in embankment shall be less than the depth of the embankment layer and in no case shall any rock over 2 feet in its greatest dimension be placed in the embankment.

F. All oversized rocks which are otherwise suitable for construction shall be broken to the required dimension and utilized in embankment construction where indicated, except that when preferred by the CONTRACTOR and acceptable to the ENGINEER, such rocks and may be placed at other points where the embankment layer is of greater depth, thus requiring less breakage.

G. Each layer shall be compacted to the required density as outlined for "Earthen Embankments", above, except in those layers where rock will make density testing difficult, the ENGINEER may accept the layer by visual inspection or proof rolling.

H. Unless otherwise indicated, the upper 3 feet of the embankment shall contain no stones larger than 4 inches in their greatest dimension and shall be composed of material so graded that the density and uniformity of the surface layer may be secured in accordance with TxDOT Test Method Tex-114-E.

I. Exposed oversize material shall be broken up or removed.

3.04 EMBANKMENT AT CULVERTS AND BRIDGES:

A. Embankments adjacent to culverts and bridges which cannot be compacted by use of the blading and rolling equipment used in compacting the adjoining sections of embankment shall be compacted in the manner prescribed under Section 02221, Trench Excavation Backfill and Compaction or Section 02223, Structural Excavation and Backfill.

B. Embankment placed around spill-through type abutments shall be constructed in 6 inch loose layers of uniform suitable material placed in such manner as to maintain approximately the same elevation on each side of the abutment and all materials shall be mixed, wetted and compacted as specified above.

C. Embankment material placed adjacent to any portion of any structure or above the top of any culvert or similar structure shall be free of any

appreciable amount of gravel or stone particles and thoroughly compacted by mechanical compaction equipment.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. All accepted embankment, when included in the contract as a separate bid item, will be measured in place and the volume computed in cubic yards by the method of average end areas.

B. No allowance will be made for shrinkage.

4.02 PAYMENT;

A. The accepted quantities of embankment, when included as a separate bid item, will be paid at the contract unit bid price per cubic yard.

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

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

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

SECTION 02571

SANITARY AND STORM SEWERS

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. This work shall consist of furnishing and installing all non-pressurized sanitary and storm sewer pipe, fittings, structures and accessories required for sanitary and storm sewer construction as required by the plans or the contract documents.

1.02 QUALITY ASSURANCE:

A. Comply with latest published editions of American Society of Testing and Materials (ASTM) Standards:

1. ASTM C700 - Extra Strength Clay Pipe.
2. ASTM C12 - Installing Vitrified Clay Pipe
3. ASTM C425 - Compression Joints for Vitrified Clay Pipe and Fittings.
4. ASTM C478 - Concrete Pipe Manholes.
5. ASTM D1784 - Rigid Poly (vinyl Chloride) (PVC) Compounds and Chlorinated Poly (vinyl chloride) (CPVC) Compounds.
6. ASTM D2321 - Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
7. ASTM D2564 - Solvent Cements for Poly Plastic Pipe and Fittings.
8. ASTM D3212 - Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals.
9. ASTM D3033 Type PSP - PVC Sewer Pipe and Fittings.
10. ASTM D3034 Type PSM - PVC Sewer Pipe and Fittings.
11. ASTM C43 - Definition of terms relating to structural clay products.
12. ASTM C443 - Specification for joints for circular concrete Sewer and culvert pipe, using rubber gaskets.
13. ASTM F405 - Standard specification for corrugated polyethylene pipe and fittings.

14. ASTM F679 - Specification for polyvinyl chloride (PVC) large-diameter plastic gravity sewer pipe and fittings.

15. ASTM F477 - Specification for elastomeric seals (gaskets) for joining plastic pipe.

16. ASTM F667 - Specification for large diameter corrugated poly-ethylene pipe and fittings.

B. Comply with latest published editions of American Association of State Highway and Transportation Officials (AASHTO) Standards:

1. AASHTO M252 - Specification for polyethylene corrugated drainage pipe.

2. AASHTO M294 - Specification for corrugated polyethylene pipe, 12" to 36" diameter.

C. Comply with latest published editions of UNI-Bell Plastic Pipe Association Standards:

1. UNI-B-5 - Recommended practice for the installation of PVC sewer pipe.

2. UNI-B-6 - Recommended practice or low-pressure air testing of installed sewer pipe.

3. UNI-B-9 - Recommended standard performance specifications for polyvinyl chloride (PVC) large diameter gravity sewer pipe and fittings on controlled inside diameter (nominal pipe sizes 18-48 inch).

1.03 SUBMITTALS:

A. The contractor shall submit to the ENGINEER a manufacturer's certification for each type of pipe product(s) attesting that such product(s) meets all applicable and appropriate specification requirements.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS:

A. Pipe furnished shall be of materials specified herein for sanitary or storm sewer construction as required by plans or contract documents.

B. All pipe delivered to project site shall be marked in accordance with applicable standard specification under which pipe is manufactured.

C. The CONTRACTOR shall not use (and OWNER reserves the right to reject) materials that are or were improperly stored, inadequately protected, or physically damaged.

2.02 VITRIFIED CLAY PIPE (SANITARY SEWERS ONLY):

A. General:

Vitrified clay pipe shall be furnished in sizes as shown on the plans, as specified in the Special Provisions, or as specified by other documents of this contract.

B. Pipe:

1. Vitrified clay pipe shall be extra strength, as specified in ASTM C 700 and shall be sound, durable, and well burned throughout its entire thickness.

2. Pipe ends shall be square with the longitudinal axis; and sockets shall be true, circular, and concentric with the barrel of the pipe.

3. The ends of the pipe shall be so formed that, when the pipes are laid together and the joints made, they shall constitute a continuous and uniform line of pipe and shall have a smooth and regular interior surface.

4. Deviation from a straight line shall not be greater than 1/16 inch per linear foot and shall be measured from a straight edge on the concave side. Variation from a true circle of the spigot or socket of the pipe shall not be greater than 3 percent of its nominal diameter.

C. Fittings:

1. Stoppers shall be furnished with all pipes and branches that are to be left unconnected and shall be strong enough to meet the necessary load and hydrostatic pressure requirements.

2. Branches, tees and wyes of the size and quantity as required on the plans shall be furnished with joint connection material securely and completely fastened to the barrel of the pipe during the process of manufacture.

D. Joints:

1. "Bell and spigot" pipe or "plain end" pipe will be used as the method of connecting the pipes.

2. Either rubber elastomer or polyurethane compression/sealing member of the joint will be shaped for the particular connection. These materials shall meet the requirements of ASTM C 425.

3. For "plain end" pipe the collar used to couple the ends of the pipe shall be made from rigid unplasticized polyvinyl chloride and shall meet the requirements of ASTM C 425.

4. Joint material shall be any one of the types specified in ASTM C 425 and shall meet all requirements of that specification and Section 125.

5. The CONTRACTOR shall furnish the ENGINEER complete information concerning the type and make of all joint material which he intends to use under this contract including certification that the joint material meets the requirements of these specifications.

6. The pipe joints shall not leak when subjected to the shear loading and hydrostatic tests as specified by ASTM C 425.

E. Materials Testing:

Pipe and fittings shall conform to the test requirements set forth in ASTM C 301, ASTM C 425, and ASTM C 700. Test results shall be furnished to the ENGINEER, upon request. In addition to the stated tests, the ENGINEER may select at random 2 pipe lengths or joints for each 250 feet of pipe or fraction thereof of each size of pipe to be installed. The CONTRACTOR shall test the random selections and the results will be furnished by the ENGINEER.

F. Basis for Rejection:

1. Pipe or fitting with injurious cracks, checks, blisters, broken extremities, or other imperfections.

2. The following imperfections in a pipe or fitting will be considered injurious and cause for rejection where not in conflict with ASTM C 700, which will govern.

a) A single crack in the barrel of the pipe or fitting extending through the entire pipe wall thickness, regardless of the length of such crack. A single crack which extends through 1/5 of the pipe wall thickness and is 3 inches or longer. Any surface fire crack which is more than 1/16 inch wide at its widest point regardless of its length.

b) Lumps, blisters, pits, flakes, or tramped clay on the interior surface.

c) Spigot or socket end of the pipe or fitting varies from a true circle more than 3 percent of its nominal diameter.

d) When a straight pipe or fitting exhibits a deviation from a straight line of more than 1/16 inch per linear foot measured from a straight edge on the concave side.

e) A piece broken from the end of the pipe or fitting.

G. Perforated Clay Pipe:

1. Perforated clay pipe shall be extra strength pipe and shall conform to the requirements of ASTM C 700.

2. This type of pipe is used in situations where ground water are to be collected and transported to an outlet or for the purpose of a leach field for dispersion of waste water .

3. The pipe is generally encased in gravel. The installation of this type of pipe shall be as specified by the Special Provisions of this contract.

2.03 POLYVINYL CHLORIDE PLASTIC PIPE (PVC) (SANITARY AND STORM SEWERS):

A. General:

1. Polyvinyl Chloride (PVC) thermoplastic pipe shall be furnished in sizes as shown on the plans, as specified in the Special Provisions, or as specified by other documents of this contract.

2. Only trench installation of PVC pipe shall be permitted.

B. Pipe:

1. PVC pipe nominal sizes 4 inches to 15 inches shall meet the requirements of ASTM D 1784 and ASTM D 3033 or ASTM D 3034. Minimum wall classification shall be SDR 26, unless otherwise specified.

2. PVC pipe nominal sizes 18 inches to 48 inches shall meet the requirements of ASTM D 1784, ASTM F 679, and UNI-B-9. Minimum "pipe stiffness" at 5% deflection shall be 46 psi in accordance with ASTM D 2412.

3. Schedule 40 PVC pipe shall be used for service connections.

C. Fittings:

1. Fittings shall meet the same specification requirements of PVC pipe.

D. Joints:

1. Joints shall be "push-on" type conforming to ASTM D3212 with elastomeric gaskets conforming to ASTM D 3212 with elastomeric gaskets conforming to ASTM F 477.

2. All joints shall be assembled in accordance with manufacturer's published recommendations.

3. If used, lubricant shall have no detrimental effect on the gasket or the pipe.

4. The insertion reference mark on the pipe spigot end indicates the correct depth of spigot penetration into the pipe gasket joint. Spigot penetration shall be within 1/4 inch of the reference mark.

E. Materials Testing:

1. Pipe, fittings, and gaskets shall conform to applicable test requirements set forth in ASTM D 1784, ASTM D 2412, ASTM D 3033 or ASTM 3034, ASTM 4, ASTM F 679 and UNI-B-9.

2. Test results shall be furnished to the ENGINEER upon request.

F. Coding:

All PVC pipe shall be coded to eliminate confusion and prevent accidental damage to the water and sanitary sewer facilities. One of the following three alternatives for pipe coding must be used.

1. Color coding - The pipe shall have a full and uniform color coding according to the following schedule:

a) Sanitary Sewer (all sizes) - Green or Black.

b) Water (all sizes) - Blue or White.

2. Factory marking - The pipe shall be factory marked at the half points (180 degrees opposite) as specified in the ASTM D 3034.

3. Manual marking - Dark green marking ink shall be applied to all sewer pipe sections and shall consist of mixture of pigmented-paste and thinner; it shall not be water soluble after drying; it shall etch the pipe; it shall be specifically designed for permanent marking of PVC Pipe; it shall be Mathews M-149 offset ink or approved equal.

Application shall be as follows; for 8 inch through 12 inch pipe, a single 3 inch wide stripe; for 15 inch through 27 inch pipe, two 3 inch wide stripes.

The stripe(s) shall be straight and run length-wise on the pipe for the full length of the section of pipe. When two stripes are used, the centers of the two stripes shall not be separated by more than 8 inches.

The ink shall be of sufficient consistency to entirely blot out the color of the pipe to which it is applied.

2.04 CONCRETE PIPE (STORM SEWERS ONLY):

A. General:

1. The size, type, and class of the concrete pipe to be furnished shall be as shown on the plans as specified in the Special Provisions, or as specified by other documents of this contract.

2. With written approval from the OWNER or the ENGINEER, pipe stronger than that specified by the contract documents may be furnished at the CONTRACTOR'S option and the price differential increase from the contract with unit price shall be at his own expense, provided such pipe conforms in all other respects to the applicable provisions of these specifications.

3. Unless otherwise specified, pipe shall be either cast, spun, or manufactured by an approved equal method.

4. Concrete pipe shall not be utilized for sanitary sewers.

B. Pipe:

1. Each size, type, and class of concrete pipe specified shall meet the requirements of the applicable Standard Specifications:

1) ASTM C 14,

2) ASTM C 76,

3) ASTM C 118,

4) ASTM C 361,

5) Other Standard Specification as specified.

C. Joints:

1.) The type of joint to be used for each size, type, and class of pipe shall be as shown on the plans or as specified in the Special Provisions.

2.) Rubber Gasket Joints.

a) Rubber gaskets for making compression type joints for concrete pipe shall be factory fabricated in accordance with ASTM C 443 and for pipes 12 inches in diameter and larger shall be o-ring and shall be handled, primed, installed, etc. in strict accordance with the manufacturer's recommendations.

b) The CONTRACTOR'S attention is particularly called to ASTM C 443, regarding storage of rubber gaskets.

c) The CONTRACTOR shall furnish the ENGINEER complete information concerning the type and make of all joint material which he intends to use under this contract, including certification that the joint material meets the requirements of the specifications.

3.) If mortared joints are installed, the socket and spigot shall be free from any deleterious substance or condition which might prevent a satisfactory mortar bond at the joints.

D. Materials Testing:

1. If random testing is required by the OWNER or the ENGINEER, the ENGINEER will select at random at the point of manufacture test specimens of the pipe to be furnished for testing in accordance with the applicable Standard Specification from 2.04.B.

E. Basis for Rejection:

1. Basis for rejection shall be with the failure to conform to any of the requirements of the applicable Standard Specification from 2.04. B.

F. Special Pipe:

1. Where structural details of the special pipe are shown on the drawings, the manufacture of special pipe shall be checked by making the appropriate tests on the concrete placed in the pipe forms, by inspection of the steel reinforcing cages that are to be used in the pipe, by inspection of the fabrication of the pipe and by performing specimen tests in accordance with the requirements outlined in the Special Provisions.

G. "Downgrading" of pipe:

1. For the purpose of these specifications, "downgraded" pipe shall be defined as pipe which is to be used under loads less than that for which they have been designed.

2. Pipe manufactured in accordance with applicable specifications, but which have not met their designed test loads may be "downgraded" by the ENGINEER and used provided that:

a) Load tests are made to establish the load under which they may be used. The number of tests to be made shall be as determined by the ENGINEER; this may require the testing of each section for acceptance.

b) All other test and inspection requirements of applicable specifications are met.

3. Individual specimens of pipe embodying major repairs or having numerous hairline cracks extending the full length of the section on the inside of the pipe at the minor axis or on the outside of the pipe at the major axis shall not be accepted for use.

H. Stockpiled pipe:

1. Stockpiled pipe may be used only when approved in writing by the ENGINEER provided the pipe meets all other specified requirements.

2. For the purpose of these specifications, "stockpiled" pipe shall be defined as pipe manufactured in quantity which will meet all the requirements of applicable specifications, but which was not manufactured for use in this specific project.

3. Pipe which has been rejected by another agency will not be considered a "stockpiled" pipe, nor will such pipe be accepted for use on this project.

I. Marking:

1. Each section of pipe shall be marked in conformance with the requirements of applicable Standard Specifications. The OWNER or ENGINEER may, at the place of manufacture, indicate his acceptance of the pipe for delivery to the job by marking the pipe with the Contracting Agency's mark. Such acceptance, however, shall not be considered a final acceptance.

2. If the pipe is subsequently rejected, the mark placed thereon by the OWNER or ENGINEER shall be defaced. No pipe will be marked, "Reject." Only pipe accepted shall be marked, "Accepted."

2.05 CORRUGATED POLYETHYLENE PIPE (STORM SEWERS ONLY):

A. General:

1. High Density Polyethylene (HDPE) corrugated pipe shall be furnished in sizes as shown on the plans, as specified in the Special Provisions, or as specified by other documents of this contract.

2. Only trench installation of HDPE corrugated pipe shall be permitted.

B. Pipe:

1. HDPE corrugated pipe nominal sizes 12 inches to 36 inches shall meet the requirements of AASHTO M 294, ASTM F 894, and ASTM D 3350 for the cell class 324420C except that the carbon black content shall not exceed 5%.

2. HDPE corrugated pipe shall have an integrally smooth interior (Type S).

3. In accordance with ASTM D 2412, HDPE corrugated pipe shall have a minimum "pipe stiffness" value as follows:

Diameter		Stiffness
12"	----------	50 psi
15"	----------	42 psi
18"	----------	34 psi
24"	----------	28 psi
36"	----------	22 psi

C. Fittings:

1. Fittings shall meet the same specification requirements of HDPE corrugated pipe.

2. Fittings shall be supplied by the manufacturer of the HDPE corrugated pipe.

3. Fittings shall not reduce the nominal diameter of the pipe.

D. Joints

1. Pipe couplings shall maintain pipe alignment, prevent pipe separation, and prevent infiltration of backfill material for the life of the installation.

2. Pipe couplings shall be "bell and spigot," with gaskets, split collar with gasket, or an integral system with gasket and shall conform to ASTM D 3212.

3. Gasket material shall conform to ASTM 477. Neoprene gaskets must be approved in writing by the Engineer.

4. Pipe couplings shall be corrugated so as to engage a minimum of 4 pipe corrugations, 2 on each side of pipe print.

5. The CONTRACTOR must obtain written approval from the ENGINEER for the CONTRACTOR'S proposed method and system of pipe coupling.

6. When necessary to cut the pipe length, the ends shall be cut squarely and cleanly so as not to create a gap exceeding 1/8 inch between pipe ends.

7. The joining of pipes or fittings shall provide a soil-tite joint or connection.

8. If used, lubricant shall have no detrimental effect on the gasket or the pipe.

E. Material Testing:

1. Pipe, fittings, and gaskets shall conform to applicable test requirements set forth in AASHTO M 294, ASTM F 477, ASTM F 894, ASTM D 3350 for the cell class 32 4420 C, and ASTM 2412.

2. Test results shall be furnished to the ENGINEER upon request.

F. Basis for Rejection:

1. Basis for rejection shall be failure to conform to any of the requirements specified herein.

2. Fittings and gaskets not supplied by pipe manufacturer shall be rejected.

3. Pipe, fittings, and gaskets with foreign inclusions, visible defects or damage shall be rejected.

G. Cover:

1. Minimum cover for corrugated polyethylene pipe shall be as noted in Table 02571-1.

2. Cover limitations calculated using AASHTO load factor design with 110lb/cu.ft. backfill around pipe at a density of 90% AASHTO T-99.

TABLE 02571-1

HEIGHT OF COVER FOR CORRUGATED POLYETHYLENE PIPE

DIAMETER	MINIMUM COVER H20 (INCHES)	MINIMUM COVER E80 (INCHES)	MAXIMUM COVER (FEET)
12"	12	24	58
15"	12	24	59
18"	12	24	62
24"	12	24	61

PART 3 - EXECUTION

3.01 GENERAL:

A. Provide all labor, equipment, materials, and install all pipe, fittings, specials, and appurtenances as required or specified.

3.02 PIPE INSTALLATION:

A. Handling:

1. Handle in a manner to insure installation in sound and undamaged condition.

a. Do not drop or bump.

b. Use slings, lifting lugs, hooks and other devices designed to protect pipe, joint elements, and coatings.

2. Ship, move and store with provisions to prevent movements or shock contact with adjacent units.

3. Handle with equipment capable of work with adequate factor of safety against overturning or other unsafe procedures.

B. Installation:

1. Utilize equipment, methods, and materials insuring installation to lines and grades as indicated.

a. Do not lay pipe on blocks unless pipe is to receive total concrete encasement.

b. Use laser or minimum of 3 batter boards for control of line and grade.

c. Obtain approval from ENGINEER for method of proposed transfer of line and grade from control to the work.

2. Install pipe of size, material, strength class, and joint type with embedment as shown on plans or specified herein.

3. Insofar as possible, commence laying at downstream end of line and install pipe with bell ends in direction of laying. Sewer pipe shall have spigot ends in direction of flow. Deviations therefrom must be approved by the ENGINEER.

4. Clean interior of all pipe, fittings, and joints prior to installation. Do not allow foreign matter to enter pipeline during installation interruptions.

a. Close open ends of pipe with snug fitting closures.

b. Do not let water fill trench. Include provisions to prevent flotation should water control measures prove inadequate.

c. Remove water, sand, mud, and other undesirable materials from trench before removal of end closure.

5. Pipe shall be inspected prior to installation to determine if any pipe defects are present.

6. Brace or anchor as required to prevent displacement after establishing final position.

7. Perform pipe installation work only when weather and trench conditions are suitable.

8. Take extra care and precaution when hazardous atmospheres might be encountered.

9. Sanitary sewer relation to water mains:

   a. Maintain 9 feet horizontal separation whenever possible.

   b. When conditions prevent a horizontal separation of 9 feet, with written authorization from the OWNER or ENGINEER the sewer may be installed closer to a water main if:

      (1) The sewer line constructed of PVC pipe meeting AWA Specifications and having a minimum working pressure rating of 150 psi or greater and equipped with pressure type joints; and

      (2) the sewer line and water main are separated by a minimum vertical distance of 2 feet and a minimum horizontal distance of 4 feet, measured between the nearest outside diameters of the pipes.

   c. When a sanitary sewer crosses a water line that portion of the sewer line shall be constructed as described in 3.02 B.8.b (1). The sewer may be placed no closer than 6 inches from the water line with one length of the sewer pipe be centered on the water line and pressure rated joints at each end of this length of sewer pipe. The separation distance must be measured between the nearest outside pipe diameters. The sewer line otherwise directed by the ENGINEER.

10. Separation of water mains from sewer manholes:

   a. No water pipe shall pass through or come in contract with any part of a sewer manhole.

   b. A minimum horizontal separation of 9 feet shall be maintained.

11. Construct service lines where shown on plans in accordance with plan details. Use pipe material specified on plans or in contract documents.

C. Jointing:

1. General requirements:

a. Locate joints so as to provide for differential movement at changes in type of pipe embedment or at changes from rock to soil trench bottom, and structures.

b. Locate joints at structures:

(1) Not more than 18 inches from structure wall, or

(2) Support pipe from structure wall to first joint with concrete cradle structurally continuous with base slab or footing of structure.

c. Perform jointing in accordance with manufacturer's recommendations.

d. Clean and lubricate all joint and gasket surfaces with lubricant recommended by manufacturer.

e. Utilize methods and equipment capable of fully homing or making up joints without damage.

f. Check joint opening and deflection for specification limits.

D. Closure Pieces:

1. Connect two segments of pipelines or a pipeline segment and existing structure with short sections of pipe fabricated for the purpose.

2. Observe specifications and requirements regarding location of joints, type of joints, pipe materials, and strength classifications.

E. Temporary Plugs:

1. Furnish and install temporary plugs at each end of work for removal by others or where indicated.

2. Remove temporary plugs from pipe laid under adjacent contract in order to complete pipe connection under this contract.

3. Plugs:

a. Use test plugs as manufactured by pipe supplier, or

b. Fabricate by CONTRACTOR of substantial construction.

c. Must be watertight against heads up to 20 feet of water.

d. Secure in place in a manner to facilitate removal when required to connect additional pipe.

F. Special installation details for plastic pipe:

1. Plastic sewer and storm sewer pipe shall be installed in accordance with UNI-B-5, "Recommended Practice for the Installation of Polyvinyl Chloride (PVC) Sewer Pipe" or manufacturer's recommendations, whichever is applicable. Where a conflict rises with Section 02221 - Trench Excavation, Backfill, and Compaction, of these specifications, these specifications shall control.

2. The CONTRACTOR shall install an appropriately sized PS-10 press seal gasket as manufactured by Press Seal Gasket Corporation, (or approved equal) on PVC pipe at connecting manholes. The PS-10 gasket shall be installed per manufacturer's directions. No direct payment shall be made for this item, this cost shall be included in the pipe bid item price.

3.03 ACCEPTANCE TESTS FOR SANITARY SEWER PIPE LINES:

A. General:

1. Unless otherwise shown on the plans or specifically waived in writing by the ENGINEER, all sanitary sewers shall be tested for leakage. Each manhole shall be tested for leakage. An Air Test of the sanitary sewer pipeline shall be performed as stated in these specifications, as appropriate to the particular section of sanitary sewer pipeline being tested, and as directed by the ENGINEER.

2. The CONTRACTOR may, at his option, Air Test the sanitary sewer pipeline before backfilling the trench to aid the CONTRACTOR in checking the installation for any defects. Such testing is at the option of the CONTRACTOR and shall not constitute an acceptance test under these specifications.

3. The test for acceptance and compliance with these specifications shall be performed AFTER the pipe zone backfilling has been completed. In the case of new sanitary sewer pipelines with house laterals included as an integral part of the project, the test for acceptance and compliance with these specifications shall be performed AFTER the house laterals or stubs have been completed and backfilled.

4. If the leakage, as determined by the test(s) performed, is greater than allowed by these specifications, the CONTRACTOR at his expense, if necessary, shall excavate, repair or relay backfill and compact until the pipeline will satisfactorily pass the test(s) performed.

5. The CONTRACTOR shall, at his own expense, furnish all water, material, tools and labor for making the test required. All tests shall be made under the direction of the ENGINEER.

B. Air Test:

1. An Air Test may be conducted under all conditions of groundwater levels surrounding the sanitary sewer pipe subject to the pressure limits set out in c.2.c below.

2. Furnish all test equipment required including:

   a) Necessary piping connections;

   b) Test pumping equipment;

   c) Pressure gauges or manometers;

   d) Bulkheads and plugs;

   e) All miscellaneous items required.

3. Obtain approval from ENGINEER of equipment and methods proposed for testing.

4. Test pipe in sections determined by CONTRACTOR and approved by ENGINEER.

5. The procedure for conducting an Air Test shall be as follows:

   a) Clean the pipe section (manhole to manhole) being tested by propelling a snug-fitting inflated ball, or other adequate method, through the pipe with water. It is important that the pipe be thoroughly wetted if consistent results are to be expected.

   b) Plug all pipe outlets with pneumatic plugs. The pneumatic plugs shall be able to resist internal testing pressures without requiring external bracing. Give special attention to house laterals.

   c) Determine the groundwater level surrounding the section of sanitary sewer pipeline being tested. If the groundwater level is above the crown of the pipe, the test pressures shall be increased by 0.43 psig for each foot of water above the average elevation of the crown of the pipe. Test pressures shall not exceed 10 psig. If test pressures are to exceed 10 psig, an infiltration shall be performed instead under the direction of the ENGINEER.

d) Introduce air slowly to the section of pipe under evaluation until the internal air pressure is raised to 4.0 psig plus any increase required by a high groundwater level.

e) Allow the air pressure to stabilize. Air may be added slowly to maintain a pressure in the range of 3.5 to 4.0 psig (plus groundwater allowance) for two minutes.

f) After the stabilization period, when the pressure reaches exactly 3.5 psig (plus groundwater allowance) the stopwatch is started and when the pressure reaches exactly 2.5 psig (plus groundwater allowance) the stopwatch is stopped.

g) The time required for the one pound pressure drop shall not be less than the time in Table 02571-2 for the given pipe diameter:

TABLE 02571-2

Pipe Diameter (Inches)	Minutes
6	3.0
8	4.0
10	5.0
12	5.5
15	7.0
18	8.5
21	10.0
24	11.5
27	12.75
30	14.0
36	17.0

h) Repeat test as necessary after all leaks and defects have been repaired at no additional cost to the OWNER.

i) In all cases where an Air Test is conducted, the manholes shall be tested separately as previously specified.

j) All persons conducting Air Test must be made aware of the fact that an Air Test may be dangerous if improperly conducted.

E. Deflection Testing:

1. Deflection testing shall be performed on flexible thermoplastic (HDPE or PVC) pipe.

2. Not less than thirty (30) days after final backfill, the CONTRACTOR shall test for pipeline deflection with a mandrel in the presence of the OWNER'S or ENGINEER'S representative.

3. The mandrel shall be hand pulled; use no mechanical pulling devices.

4. The mandrel shall be provided by the CONTRACTOR and shall be sized and constructed as listed on the Table 02571-3 or 02571-4.

5. All pipe with test deflections in excess of 5 percent (unless otherwise specified as 7 1/2 percent) as determined by ASTM D 3034, ASTM F 679, or UNI-B-9 shall be excavated, rerounded, backfilled and retested after an additional period of thirty days.

6. Any pipe removed shall be replaced by use of gasketed repair couplings.

7. The pipeline shall be flushed and cleaned by the CONTRACTOR prior to any testing.

8. No flow shall be permitted in the pipeline while testing for deflections.

TABLE 02571-3
5 PERCENT DEFLECTION MANDREL

Type Pipe	Nominal Size, In	Mandrel O.D., In	Tolerance In	Nearest 1/16"	Minimum Length, In	Minimum Mandrel Runners
D3034 SDR 35	6	5.45	+0.01	5-7/16	4	6
D3034 SDR 35	8	7.28	+0.01	7-4/16	4	6
D3034 SDR 35	10	9.08	+0.01	9-1/16	5	8
D3034 SDR 35	12	10.79	+0.01	10-13/16	6	8
D3034 SDR 35	15	13.20	+0.01	13-3/16	8	8
F679	18	16.13	+0.01	16-2/16	8	12
F679	21	19.00	+0.01	19	8	12
F679	24	21.36	+0.01	21-6/16	8	12
F679	27	24.07	+0.01	24-1/16	8	12
F894	18	16.53	+0.01	16-1/2	8	9
F894	21	19.30	+0.01	19-5/16	8	9
F894	24	22.08	+0.01	22-1/16	8	9
F894	27	24.84	+0.01	24-13/16	8	9
F894	30	27.62	+0.01	27-5/8	10	9
F894	33	30.38	+0.01	30-3/8	10	9
F894	36	33.15	+0.01	33-1/8	12	9
F894	42	38.68	+0.01	38-11/16	12	9

TABLE 02574-4
7> PERCENT DEFLECTION MANDREL
(If otherwise specified in the contract document)

Type Pipe	Nominal Size, In	Mandrel O.D., In	Tolerance In	Nearest 1/16"	Minimum Length, In	Minimum Mandrel Runners
D3034 SDR 35	6	5.31	+0.01	5-5/16	4	6
D3034 SDR 35	8	7.09	+0.01	7-1/16	4	6
D3034 SDR 35	10	8.84	+0.01	8-13/16	5	8
D3034 SDR 35	12	10.51	+0.01	10-8/16	6	8
D3034 SDR 35	15	12.86	+0.01	12-14/16	8	8
F679	18	15.70	+0.01	15-11/16	8	12
F679	21	18.50	+0.01	18-8/16	8	12
F679	24	20.80	+0.01	20-13/16	8	12
F679	27	23.44	+0.01	23-7/16	8	12
F894	18	16.10	+0.01	16-1/8	8	9
F894	21	18.80	+0.01	18-13/16	8	9
F894	24	21.49	+0.01	21-1/2	8	9
F894	27	24.18	+0.01	24-1/8	8	9
F894	30	26.88	+0.01	26-13/16	10	9
F894	33	29.58	+0.01	29-5/8	10	9
F894	36	32.27	+0.01	32-1/4	12	9
F894	42	37.66	+0.01	37-5/8	12	9

3.04 CLEANING:

A. No pipe spalls, rocks, dirt, joint compounds, cement mortar, other trash or obstructions shall be left in a sewer pipeline of any size or type. During the flushing operations the manhole outlet shall be bagged or plugged so that this debris will not be carried into or contaminate an existing or active line.

3.05 SANITARY SEWER SERVICE CONNECTIONS:

A. Install service connections as required by the plans, Special Provisions, or other contract documents.

B. Service wyes: install wyes, 4-inch branch diameter unless shown otherwise on plans. See plan detail: "Typical Service Connection."

C. Risers: use in lieu of wyes for service connections where invert of sewer is 15 feet or more below ground surface or where required by plans. See plan detail: Typical Riser Service Connection."

D. Place suitable cap on end of connection, cement cap in place.

E. Make no connections to house sewers or extend service connections beyond this contract without written authorization of the ENGINEER.

F. Backfill trench only after recording exact location of service connection.

G. Backfill trench only after entire service line and wye connection has been inspected and approved by the OWNER or the ENGINEER. Compact as specified in Section 02221 - "Trench Excavation, Backfill and Compaction."

H. Street crossings shall have a minimum of 3 feet of cover to subgrade unless approved by ENGINEER.

I. No payment for service lines will be made until all specified requirements have been met.

J. Service lines shall be installed to the right-of-way line or 5 feet beyond any existing or proposed improvements (i.e., pavement, curb and gutter, sidewalk, etc.)

K. Saddle connections shall be installed at a 45 degree angle (upward) above the springline of the main sewer and shall be spaced a minimum of 3 feet apart (centerline to centerline).

L. Service lines shall be installed at a minimum slope of 2 percent with a minimum bury at the terminus of 4 feet, unless otherwise authorized by the ENGINEER. The pipe shall be placed on suitable bedding having a density of not less than 90 percent of maximum density. The pipe shall be uniformly supported by the bedding. Backfill of the service line shall be carefully placed and compacted per the requirements of Section 02221 - Trench Excavation, Backfill and Compaction.

M. An "S" (3 inches high and 1/4 inch depth) shall be stamped or chiseled into the curb directly over the service.

3.06 SANITARY SEWER RISERS:

A. Sanitary sewer risers shall be utilized where the sanitary sewer main is 15 feet or greater in depth.

B. The riser shall extend to an elevation such that the service line can be installed as specified.

C. The riser shall be installed in accordance with the plan detail; Typical Riser Service Connection.

D. The riser shall be one length of pipe cut to the appropriate length as necessary, unless otherwise approved by the ENGINEER.

E. Service risers and fittings shall be SCH 40 PVC sanitary sewer pipe.

3.07 SANITARY SEWER WET CONNECTIONS:

A. A wet connection is one in which the work and pipeline placement is physically within the flow of the liquid.

B. Connections to the shelf section of the floor will not be considered for payment as a wet connection.

C. Pipe being placed, where flows of liquids are minimal and below the invert elevation will not be considered for payment as a wet connection.

3.08 CONNECTIONS TO EXISTING SANITARY AND STORM SEWER SYSTEMS:

Connect existing sanitary sewer service, which crosses new sewer line through equal sized wye.

A. Connect no storm sewers to new sanitary sewers and visa-versa.

B. Connections to existing manholes:

1. Cut hole in existing manhole at required elevation.

2. Insert new sewer pipe flush with inside of manhole.

3. Grout new pipe in place.

4. Reconstruct manhole bottom to properly accommodate new connection.

C. Connections to existing sewer pipeline:

1. Build new manhole around existing sewer pipeline.

2. Break out existing sewer pipeline inside of manhole and construct bottom to properly accommodate new connection..

D. On replacement/rehabilitation type projects, all existing sanitary sewer services shall be reconnected to the new sanitary sewer main utilizing new saddles and sanitary sewer service line pipe.

E. The length of removed existing sanitary sewer service line shall be as necessary to accommodate the trench excavation and backfill conditions.

F. The CONTRACTOR shall visually observe the condition of the existing sanitary sewer service line and notify the ENGINEER of any obviously deteriorated or defective conditions.

G. The CONTRACTOR shall notify the property owner of the situation and the property owner shall be afforded the opportunity to visually observe the sanitary sewer service line within reasonable amount of time as dictated by normal construction activity.

H. If a new sanitary sewer service line is to be installed, the CONTRACTOR shall install it at the same slope and alignment as the existing service. Particular care shall be taken to assure sound connections. The service line shall be uniformly supported on suitable bedding compacted to a density of

not less than 90 percent of maximum density. If service lines are reconnected such that the pipe is not fully supported, hand tampers shall be used to properly compact under the pipe.

I. The CONTRACTOR shall chisel an "S" (3 inches high and 1/4 inch depth) into curb directly over a sanitary sewer service line.

J. The CONTRACTOR shall provide accurate record information to the ENGINEER regarding both the horizontal and vertical location of the sanitary sewer service line. The horizontal location shall be the distance to the nearest foot from both the upstream and downstream manhole lid center. Elevations to the nearest 0.05 feet shall be provided for inverts of the sanitary sewer service stub-outs, and top of risers, if used.

PART 4 - MEASURED AND PAYMENT

4.01 MEASUREMENT:

A. Sanitary and Storm Sewer Mains

Sanitary and storm sewer pipe shall be measured from center of manhole to center of manhole or end of main. The pipe shall be the measured along the center of the pipe without considering fittings or other pipe connections.

B. Storm Sewer Laterals

For storm sewer lateral lines, such as from main or manhole to a storm inlet, the pipe shall be measured from the center of manhole or main to the interior wall face of the storm inlet along the center of the pipe.

C. Sanitary Sewer Service Lines

Sanitary sewer service lines installed on new construction shall be measured per each service installed.

D. Sanitary Sewer Service Riser

Sanitary sewer service risers shall be measured per each installed.

E. Sanitary Sewer Service Reconnection

Sanitary sewer service reconnections shall be measured per each installed.

F. Wet Connection

Wet connections shall be measured per each within the size increments specified.

G. Vertical Drop Structures:

Vertical drop structures at manholes shall be measured per each drop structure.

H. Removal and proper disposal of sanitary and storm sewer pipe

Removal and proper disposal of sanitary or storm sewer lines shall be measured by the linear foot of the specified pipe sizes.

4.02 PAYMENT:

A. The accepted quantity of each item below will be paid as follows:

1. Sanitary and storm sewer mains and storm sewer laterals

Sanitary and storm sewer pipe will be paid at the contract unit price per linear foot complete in place at various depths for the type, size and depth constructed.

2. Sanitary sewer service lines

Sanitary sewer service lines shall be paid at the contract unit price per each service.

3. Sanitary sewer service risers

Sanitary sewer service risers shall be paid at the contract unit price per each riser.

4. Sanitary sewer service reconnection

Sanitary sewer service reconnections shall be paid at the contract unit price per each reconnection.

5. Wet connection

Wet connections shall be paid at the contract unit price per each of the specified pipe sizes.

6. Vertical Drop Structures

Vertical drop structures shall be paid at the contract unit price per each drop structure of the specified pipe size and type.

7. Testing

No payment will be made for any required testing or retesting.

8. Removal and proper disposal of sanitary or storm sewer pipe

a) Payment will be made at the contract unit price per linear foot of specified pipe size. If required, no payment will be made until delivery of salvageable materials is verified by the OWNER or the ENGINEER.

b) Trenching, backfilling, and pavement repair shall be included in the contract unit price for removal and proper disposal of sanitary or storm sewer pipe.

B. Compensation will be for furnishing all materials, labor, equipment, tools and incidentals required by the construction of the sanitary and storm sewer pipe and appurtanences, all in accordance with the plans and these specifications.

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

SECTION 02571 A

CONCRETE PIPE

DESCRIPTION

This item shall consist of concrete pipe of the types, classes, sizes and dimensions required on the plans, furnished and installed at such places as are designated on the plans and profiles, or by the ENGINEER in accordance with these specifications and in conformity with the lines and grades on the plans or as directed by the ENGINEER.

MATERIALS:

General: The pipe shall be the type, size and class called for on the plans or in the proposal, and shall be in accordance with the following appropriate requirements. When the plans or proposal permit a choice of pipe, the CONTRACTOR shall indicate in the bid the type of pipe proposed to be furnished.

Non-Reinforced Concrete Pipe: Non-Reinforced concrete pipe shall conform to the requirements of ASTM Specifications C412; C14 or C118.

Reinforced Concrete Pipe: Reinforced concrete pipe shall conform to ASTM Specification C76.

Mortar: Mortar for pipe joints and connections to other structures shall be composed of one part by volume of Portland Cement and two parts of mortar sand. The Portland Cement shall conform to the requirements of ASTM Specification C-150, Type 1. The sand shall conform to the requirements of AASHTO Specification M-45. Hydrated lime may be added to the mixture of sand and cement in the amount equal to 15% of the weight of cement used.

Rubber Joint Pipe: Rubber joint pipe shall be of the bell and spigot type with the adjacent surfaces of the bell and spigot parallel to the axis of the pipe. The dimension of the bell enlargement shall be such as to provide a minimum shell thickness in each the bell and spigot equal to the wall thickness of the pipe.

The inner surface of the bell and the outer surface of the spigot shall be true to design dimensions within a tolerance of 1/32 inch plus or minus. The annual space shall be properly designed to compress the rubber gasket to form a watertight seal when the joints are forced together.

Rubber Gasket: The rubber gasket shall be a round rubber ring seated in a shallow groove provided in the spigot to hold the ring in place.

CONSTRUCTION METHODS

Equipment: All equipment necessary, and required for the proper construction of pipe lines shall be on the project in first class working condition approved by the ENGINEER before construction is permitted to start. The CONTRACTOR shall provide hoisting equipment to handle the pipe in unloading and placing it in its final position without damage to the pipe.

The CONTRACTOR shall provide such hand tampers and pneumatic tampers to obtain the compaction of the pipe bed and the backfill as specified.

Excavation: The CONTRACTOR shall do all excavation to the depth shown on the plans. Excavated material not required or acceptable for backfill shall be disposed of by the CONTRACTOR as directed by the ENGINEER. Excavation shall not be carried below the required depth; when this is done the trench shall be backfilled at the CONTRACTOR's expense with sand or other granular material approved by the ENGINEER and adequately compacted so as to provide a stable foundation for the pipe.

When so directed by the ENGINEER, unstable soil shall be removed for the full width of the trench and replaced with sand or other approved granular material and shaped to form the bed for the pipe.

The depth of cut shown on the plans is to the invert of the pipe line.

The trench shall be excavated accurately to the established line and grade and the bed for the pipe shaped so that at least the lower 1/4 of the pipe shall be in continuous contact with the bottom of the trench.

Spaces for pipe bell shall be accurately excavated to size so that the barrel supports the entire weight of the pipe.

The CONTRACTOR shall do such trench bracing, sheathing, or shoring necessary to perform and protect the excavation, also as required for safety and to conform to governing laws.

The cost of bracing, sheathing and shoring and the removal of same shall be included in the price bid for pipe.

Cradles and Casing: When the ENGINEER finds the bottom of the trench to be an insufficient foundation for the pipe, he shall determine the location and dimensions of the necessary cradles to properly support the pipe. The design details for the cradles shall be shown on the plans.

Laying and Installing Pipe: The CONTRACTOR shall provide the necessary mason's lines and supports to insure installation of the pipe to line and grade, as staked by the

ENGINEER. The CONTRACTOR's facilities for lowering the pipe into the trench shall be such that neither the pipe nor the trench will be damaged or disturbed.

The ENGINEER shall inspect all pipe before it is laid, and reject any section that is damaged by handling or is found to be defective to a degree which will materially affect the function and service of the pipe.

The laying of the pipe in the finished trench shall be started at the lowest point and laid upgrade. When bell and spigot pipe is used the bell shall be laid upgrade. If tongue and groove pipe is used, the groove end shall be laid upgrade.

The pipe shall be firmly and accurately set to line and grade so that the invert will be smooth and uniform. The pipe shall be protected from water during placing and until the mortar in the joints has thoroughly set.

When placing concrete pipe constructed with elliptical reinforcing, the pipe shall be oriented in accordance with the manufacturer's markings of top or bottom.

The upgrade end of pipe lines not terminating in a structure shall be plugged with a cap or plug approved by the ENGINEER.

Pipe which is not true in alignment, or which shows any settlement after laying, shall be taken up and relaid without extra compensation.

Pipe Joints: Mortar joints shall be made as follows:

All pipe shall be carefully laid, bell or groove and upgrade, spigot or tongue and fully entered into the adjacent hub, with the inner surface of the abutting pipes flush and even and true to lines and grades given.

The joints of the concrete pipe shall be caulked and filled with specified mortar. Joints of concrete pipe shall be thoroughly wet before making the joint. The lower portion of the bell or groove of the pipe in place and the upper portion of the spigot or tongue of the succeeding pipe shall be filled with mortar so that when the spigot or tongue end is fully entered into the hub end, the mortar will be squeezed evenly into the joint. After the pipe is laid, mortar shall be added as required to completely fill the joint inside and out, wiped and finished smooth with the surface of the pipe. Particular care shall be taken that the joint inside is smooth and flush with the inside surface of the pipe. After the initial set the mortar on the outside shall be protected from the air and sun with a cover of thoroughly wetted earth or burlap, or sheet plastic. Joints for irrigation pipe lines shall be banded on the outside.

Rubber Joints shall be made as follows:

Round rubber ring gaskets shall be installed by forcing the spigot of each pipe section (with gasket in place) into the bell of the previously laid pipe with an approved pulling device that will force the sections together smoothly so that the gasket is properly seated

and compressed. The bell and spigot shall be lubricated with flax soap lubricant before the sections are forced together.

It shall be the prime requirement that the completed line have watertight joints throughout.

The method of pulling the joints together shall be such as to avoid disturbing the previously laid sections of the pipe, or allowing the rubber gaskets to lose compression.

Open Joints: Open joints for underdrains or subdrains shall be made by butting pipes tightly together without mortar. The top three-fourths of the joint shall be protected by covering with mortar or roofing felt or as specified in the plans.

Backfilling: All trenches and excavations shall be bacfilled in a reasonable time after the pipes are installed therein unless other protection of the pipe is directed by the ENGINEER. The backfill material shall be approved by the ENGINEER. Backfill material containing stones or rock exceeding three (3) inches in diameter shall not be used adjacent to the pipe or until the fill over the top of the pipe exceeds one (1) foot. Backfill material containing rock three (3) inches in diameter or larger shall not be used in trenches under paved areas. Special care shall be taken in placing the backfill. Great care shall be used to obtain thorough compaction under the haunches and along the sides to the top of the pipe.

The backfill shall be placed by hand in loose layers not to exceed six (6) inches in depth under and around the pipe and thoroughly compacted to the density of the surrounding earth until a cover of not less than twelve (12) inches over the pipe is attained. The remainder of the backfill may be placed by machine or other approved methods as follows:

Under paved areas and driveways the backfill shall be placed in loose layers not exceeding eight (8) inches in depth and compacted to the density of the surrounding earth or in any case, not less than 80% density as determined by AASHTO Test Method T-99 up to a point nine (9) inches below subgrade surface.

The top nine (9) inches of subgrade shall be compacted to 90% density.

In unpaved areas, backfill shall be placed in layers and controlled moisture added when so directed and shall be compacted to that density which will prevent caving of trench walls and will prevent excessive settling of backfill. Backfill shall be shaped neatly in a mound over the immediate area of the trench to a height six (6) inches above normal ground so that when completely settled, the area of the trench will be level with normal ground. Where trenches are adjacent to curbs, pavement, walks or other structures, care shall be taken to obtain that compaction necessary to prevent caveins and subsequent damage to said curbs and structures.

Water tampering or flooding will be permitted in unpaved areas unless otherwise directed by the ENGINEER.

Connections: Where the plans call for connections to existing or proposed structures, these connections shall be watertight and so made that a smooth uniform flow line will be obtained throughout the drainage system.

Cleaning and Restoration of Site: After the backfill is completed, the CONTRACTOR shall immediately dispose of all surplus material, dirt and rubbish from the site. The CONTRACTOR shall restore all disturbed areas to their original condition.

After all work is completed, the CONTRACTOR shall remove all tools and other equipment used by him, leaving the entire site free, clear and in good condition.

Performance of work described in this section shall not be paid for directly, but shall be considered as a subsidiary obligation of the CONTRACTOR, covered under the contract unit price for pipe.

Inspection: Prior to final approval of the pipe line the ENGINEER, accompanied by the CONTRACTOR's representative, shall make a thorough inspection, by an appropriate method, of the entire installation. Any indication of defects in material or workmanship or obstruction to flow in the pipe system shall be further investigated and corrected as necessary. Defects due to the CONTRACTOR's negligence shall be corrected by the CONTRACTOR without additional compensation, and as directed by the ENGINEER.

METHOD OF MEASUREMENT:

The footage of pipe to be paid for shall be the number of linear feet of pipe in place to the depth specified, completed and approved; measured along the centerline of the pipe from end or inside face of structure, to end or inside face of structure, whichever is applicable. Depth shall be measured from the ground surface to the invert of the pipe. The several classes, types, and sizes shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipe line being measured.

The volume of concrete for pipe cradles to be paid for shall be the number of cubic yards of concrete complete in place and accepted, determined from the dimensions shown on the plans, or as ordered by the ENGINEER.

METHOD OF PAYMENT:

The footage of pipe, measured as provided under "Method of Measurement" shall be paid for at the contract unit price per linear foot for " Concrete Pipe" of the several classes, types, sizes and depths, which price and payment shall constitute full compensation for furnishing, hauling and installing the pipe, for common excavation; for backfill and compaction; for jointing; for connections to structures; and for all material, labor, equipment, tools and incidentals necessary to complete the pipe as shown on the plans, but shall not constitute payment for manholes, catch basins, inlets, cradles, inspection holes, or headwalls, the payment for which is provided for as separate items.

The cubic yards of concrete determined as provided under "Method of Measurement" shall be paid for at the contract unit price per cubic yard for " Concrete for Pipe Cradles", which price and payment shall constitute full compensation for concrete in place including reinforcing when shown on the plans.

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

SECTION 02575

MANHOLES

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. This work consist of materials for and the installation of manholes for sanitary and storm sewer systems.

B. Manholes shall be constructed in accordance with the design and details shown on the plans and as hereinafter provided.

C. Precast concrete cone units may be used on brick, concrete block, and poured concrete manholes.

D. Invert elevations shall not vary more than 0.05 feet from the grade designated by the ENGINEER.

E. Manholes will not be constructed with cast in place steps. Where steps are required by the ENGINEER, the steps will be installed after the manhole has been constructed. The step used shall be a 1/2" grade 60 steel reinforcing rod incapsulated in a co-polymer polypropylene as manufactured by M.A. Industries, Inc. (Model #P-2-PFS) or equal as approved by the ENGINEER. Installation of the steps shall be as recommended by the manufacturer.

PART 2 - PRODUCTS

2.01 GENERAL:

A. All cement used shall by Type II Portland Cement.

B. All manhole foundations or bases shall be concrete and constructed as shown on the plans and in no case shall the thickness be less than 6 inches.

2.02 BRICK MANHOLES:

A. Unless otherwise specified, manholes described herein shall be constructed of grade MS Brick and Type M Concrete Mortar.

2.03 CONCRETE MANHOLES:

A. Precast Manholes & Sections

1. Construct eccentric or concentric top manholes as indicated of precast pipe on conformance with ASTM C-478 using Type II Portland Cement.

2. Provide factory block-outs at base or cast-in-place rubber gasket for connection of required sewer line.

3. Minimum wall thickness will be 5 inches.

4. Concrete in foundation shall comply with Section 03300 - Cast-in-Place Concrete.

5. Reinforcing steel shall comply with Section 03330 - Reinforcing Steel.

B. Cast-in-Place Manholes

1. Concrete shall comply with Section 03300 - Cast-in-Place Concrete.

2. Reinforcing Steel shall comply with Section 03330 - Reinforcing Steel.

3. Minimum wall thickness will be 5 inches.

4. Provide cast-in-place rubber gasket for connection of required sewer line.

C. Precast Concrete Manhole Bases

1. Precast concrete manhole bases may be used when approved by the ENGINEER. If approved, it shall be with the understanding that the CONTRACTOR shall be responsible for placing the bases at the specified elevation, location, and alignment.

2. Precast bases shall be manufactured with cast-in-place sewer pipe gaskets, such as: "A-LOK" or approved equal.

2.04 COATING OF MANHOLES:

A. Exterior of Manholes

1. If required, the coating shall be a waterproofing type of bitumastic or asphaltic material, as approved by the ENGINEER.

2. Application shall be in accordance with the manufacturer's published recommendations.

B. Interior of Manhole

1. If required, drain manhole coating shall be an epoxy type material conforming with Section 02590 - Polyurethane Protective Coatings.

2. All sanitary sewer manhole shall require two coating applications of Inertal Standard as manufactured by the Inertal Company, Inc. or equal as approved by ENGINEER.

C. Plastering of Manholes

1. The work shall include the coating of the surface of existing brick or block manholes with plaster as required on the plans or directed by the ENGINEER.

2.05 FRAMES, GRATES, RINGS AND COVERS:

A. Welded Steel

1. Welded steel grates and frames shall conform to the member, size, dimensions and details indicated and shall be welded into an assembly in accordance with those details.

2. Steel shall conform to the requirements of ASTM A 36.

B. Castings

1. Castings, whether Carbon-Steel, Gray Cast Iron, or Ductile Iron shall conform to the shape and dimensions required and shall be clean substantial castings, free from sand or blowholes or other defects. Surfaces of the castings shall be free from burnt on sand and shall be reasonably smooth.

2. Runners, risers, fins and other cast on pieces shall be removed from the castings and such areas ground smooth.

3. Bearing surfaces between manhole rings and covers or grates and frames shall be cast or machined with such precision that uniform bearing shall be provided throughout the perimeter area of contact.

4. Pairs of machined castings shall be matchmarked to facilitate subsequent identification at installation.

5. Steel castings shall conform to ASTM A 27, "Mild to Medium Strength Carbon Steel Castings or General Application." Grade 70-36 shall be furnished unless otherwise specified.

6. Cast iron castings shall conform to ASTM A 48, "Gray Iron Castings," Class 30.

7. Ductile Iron castings shall conform to ASTM A 536, "Ductile Iron Castings." Grade 60-40-18 shall be used unless otherwise specified.

C. Rings

1. Adjusting rings shall conform to ASTM A 536, "Gray Iron Castings."

D. Nuts and Bolts

1. Commercial grade galvanized nuts and bolts shall be as indicated. The zinc coating shall be uniform in thickness, smooth, and continuous.

E. Mortar

Mortar for bedding castings shall consist of 1 part cement and 3 parts sand meeting the requirements of fine aggregate Grade No. 1 in Section 03300 - Cast-In-Place Concrete.

F. Manhole Accessories

1. Manhole lid and cover:

a. Gray cast iron, with minimum clear opening 24-inches.
b. Use Neenah R-1916-F or approved equal for bolted covers.
c. Use Neenah R-1670-D or approved equal for lids not requiring bolting features.
d. Provide anchor bolt holes for exposed manhole tops.

2. Manhole Rings - provide minimum of three throat rings between cone and manhole lid and cover.

PART 3 - EXECUTION

3.01 GENERAL:

A. Foundations shall be poured in place

B. Construct manhole foundation and channel inverts integrally. See Plan details.

C. Precast manhole sections may be installed after foundation concrete has attained 75% of design strength.

D. Forms for cast-in-place manhole may be installed after foundation concrete has attained 75% of design strength.

E. Manhole foundation and manhole may be installed simultaneously if manhole section is supported on concrete blocks and foundation concrete placed under and around bottom section.

F. Completely fill joints with pre-formed plastic gasket.

G. Heat materials in freezing weather and protect work from cold; maintain temperature of work at 40o F. for at least 24 hours after placing.

H. Invert Channels:

1. Form invert channel as required.

2. Make changes in direction of flow with smooth curves of as large a radius as size of manhole permits.

3. Make changes in size and grade smoothly and uniformly.

4. Slope floor of manhole adjacent to channel and drain thereto.

5. Finish channel bottom smoothly without roughness, irregularity, or pockets.

I. Pipe Connections:

1. Make watertight.

2. Use rubber gasket.

3. All connections shall be at flowline of manhole, unless otherwise required.

J. Exterior Pipe Support:

1. Support vitirified clay pipe on concrete cradle from manhole connection to first joint.

2. Provide first pipe joint within 18 inches of manhole wall.

K. Castings, frames, and fittings:

1. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place and position before the concrete or mortar is place.

2. The unit shall be protected until mortar or concrete is set.

L. Coatings shall be applied after ENGINEER's approval of structure.

M. Soil foundations, one foot beyond perimeter of concrete to base shall be compacted to a depth of one foot to 95% maximum density of ASTM D 1557.

3.02 BRICK MANHOLES:

A. Brick shall be clean, saturated surface dry before laying and shall be laid on a full mortar bed with "push joints."

B. In no event will slushing or grouting of a joint be permitted nor shall a joint be made by working in mortar after the brick has been laid.

C. Joints between the courses of bricks in manholes and other structures shall be as nearly as possible to a uniform thickness of 3/8 inch.

D. The inside and outside of all brick sewer structures shall be neatly plastered with Type M mortar 1/2 inch thick and cured.

E. Brick work shall not be laid upon a concrete foundation less than 24 hours after such foundation has been poured.

F. No brick work shall be laid in water nor, except as prescribed for curing, shall water be allowed to stand or run on any brick work until the mortar has thoroughly set.

G. Where new work is joined to existing unfinished work, the contact surfaces of the latter shall be thoroughly cleaned and moistened.

3.03 CONCRETE MANHOLES

A. Manholes constructed of poured concrete (reinforced or non-reinforced) or precast reinforced concrete risers and tops shall comply with the requirements of ASTM C 478.

B. Circular precast manhole sections shall be provided with a rubber or mastic gasket to seal joints between sections.

C. All lifting holes, except Type "C" manhole cover lids, and gaps at joints shall be filled with a non-shrink grout.

3.04 ABANDONMENT OF MANHOLES:

A. Abandonment of manhole, which is part of a sewer line being abandoned, shall entail the following work and materials.

1. Manhole will not be removed but will be abandoned in place.

2. All manhole inlet and outlet lines shall be plugged with a 12-inch long concrete mortar plug.

3. Salvageable material shall be stockpiled on the job site. The CONTRACTOR shall contact the OWNER to inspect the materials for usability. Salvageable materials shall be transported for usability. Salvageable materials shall be transported by the CONTRACTOR to the OWNER'S storage yards. CONTRACTOR will receive a receipt for the turned-in materials. Receipts will be submitted to the ENGINEER prior to final acceptance of the Project.

4. Unusable material will be removed from the project site and properly disposed of by the CONTRACTOR.

5. Manhole bottom will be thoroughly pulverized, as directed by the ENGINEER.

6. The manhole shall be filled with cement treated base (CTB) material to the top of the proposed subgrade of the pavement or to the ground surface finished grade.

7. All labor, materials and equipment necessary to complete this work shall be furnished by the CONTRACTOR.

3.05 MANHOLE REHABILITATION IN REPLACEMENT WORK:

A. The work under this item shall be to replace the existing manhole frame and cover and to place a concrete pad around the existing manhole as required per the construction plans.

B. This work will be done when an existing manhole is encountered in the normal course of the replacement work that has a light weight, vented, multi-holed manhole cover.

C. This work shall include the following:

1. Remove any and all existing brick under frame and replace with new Grade MS brick as necessary to bring new frame and cover to street grade.

2. Remove and replace existing concrete pad, or construct a new pad around the collar.

3. Remove existing manhole steps and if manhole is greater than 10 feet deep, new steps will be installed.

4. Remove an repair pavement.

5. Excavation and compaction of backfill as required.

6. All materials, labor and equipment necessary to do the work under this item shall be furnished by the CONTRACTOR.

D. The work and materials under this item shall be done according to the manner set forth in the plan details and other sections of these specifications.

E. Salvageable material shall be stockpiled on the job site. The CONTRACTOR shall contact the OWNER to inspect the materials for usability. Salvageable materials shall be transported by the CONTRACTOR to the OWNER's Storage Yards. CONTRACTOR will receive a receipt for the turned-in materials. Receipts will be submitted to the ENGINEER prior to final acceptance of the Project. Unusable materials will be properly disposed of by the CONTRACTOR.

3.06 MANHOLE DATA SHEET:

A. Before this work is accepted, the CONTRACTOR shall provide to the ENGINEER a completed manhole data sheet for each new manhole constructed.

B. Manhole data sheet as shown in Exhibit 02575-1 will be completed in accordance with the following instructions:

1. A Manhole Data Sheet will be prepared for each manhole constructed.

2. The original copy of the Data Sheet will be filed with the ENGINEER. Distribution of copies will be made to all interested parties.

3. The Manhole Number will be assigned by the OWNER.

4. Manhole Type is the general description of the manhole, e.g.: 6 foot diameter Type C, or 4 foot diameter Type E as per plan details.

5. Manhole cover Size is the nominal diameter of the manhole cover. Type, Model and Pattern refers to the manufacturer, material made of, model number and design pattern to identify the identical manhole cover for replacement.

6. Section 3 requires the name of the CONTRACTOR, the name of the foreman, and the name of the inspector actually responsible for the construction of the manhole.

7. Under "Project Name" is the work order number under this contract.

8. Date Warranty Begins is the official date of acceptance of the Project or portion of the Project of which this manhole was a part.

9. Data Warranty expires is the expiration date under the Contract for requiring warranty repairs.

10. Street Location: Give both block number and street name. For manholes in intersections give both streets. The "Remarks" section may be used for further clarification of manhole location.

11. Disregard the section on coordinate location. To be filled in by the OWNER at a later date.

12. All applicable items on the Manhole Data Sheet should be filled in. However, accuracy is more important than filling in blank spaces. Therefore, if an item is unknown and cannot be determined, leave the space blank.

EXHIBIT 02575 - 1

MANHOLE DATA SHEET

SECTION 1

Manhole Number:

Manhole Type:

Date Installed:

Project Name:

SECTION 2

Manhole Cover Size:

Manhole Cover Type & Model:

Manhole Pattern:

Number of Rings Used:

SECTION 3

Contractor's Name:

Foreman's Name:

City Inspector's Name:

SECTION 4

Date Warranty Begins:

Date Warranty Expires:

SECTION 5

Street Location:

Intersection Location:

Remarks:

SECTION 6

Rim Elevation:

Invert Elevation:

SECTION 7 (To be completed by owner)

COORDINATE LOCATION

POINT	X (East) Departure	Y (North) Departure	Z Elevation
Center Manhole Invert:			
Center Manhole Cover:			
Electronic Marker Disc:			

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. New Manholes

1. Manholes of specified diameters with depths of 6 feet or less shall be measured per each.

2. Manholes of specified diameters with depths greater than 6 feet shall be measured per each. In addition, manholes for diameters specified shall be each measured per vertical linear foot of depth over 6 feet.

3. Measurements will be made to the nearest foot and will be from the manhole rim elevation to the manhole invert elevation.

B. Elevation Adjustments

1. When a new manhole is installed, no measurement or payment will be made for rim elevation adjustments to conform to proposed surface grades.

2. The following measurements for rim elevation adjustments on existing manholes will be made as follows:

   a. Adjustment to a manhole frame by the addition of adjustment rings (s) will be measured per each manhole adjusted.

   b. Leveling brick adjustment will be measured per each manhole adjusted.

   c. Adjustment of manhole cone or barrel will be measured by the manhole diameter per vertical foot.

C. Manhole Coating

1. If required, exterior coating of manholes will not be measured and will be considered incidental to the appropriate manhole.

2. Plastering of the interior of manholes will be measured per each manhole of specified diameter.

3. Polyurethane protective coatings will be measured as provided in Section 02590 - Polyurethane Protective Coatings.

4. Protective Inertal coatings for sanitary sewer manholes shall not be measured for payment.

D. Manhole Steps

1. If required, manhole steps will not be measured and will be considered incidental to the appropriate manhole.

E. Abandonment of Manholes

1. Abandonment of manholes will be measured per each for the work specified.

F. Manhole Rehabilitation

1. Manhole rehabilitation will be measured per each for the work specified.

4.02 PAYMENT:

A. New Manholes

1. Manholes of specified diameters with depths of 6 feet or less shall be paid for at the contract unit price per each manhole.

2. Manholes of specified diameters with depths greater than 6 feet shall be paid for at the contract unit price per each manhole as in 4.02 A.1 above. Additional payment shall be made at the contract unit price per each vertical linear foot of depth in excess of 6 feet for manholes of specified diameters.

3. Payment for manholes of any diameter and depth will include: excavation, compacted backfilling, shelving, cover or cone, leveling bricks, frame and cover, and concrete pad or collar.

B. Elevation Adjustments

1. The following payments for accepted quantities of rim elevation adjustments on existing manholes will be as follows:

a. Adjustment of a manhole frame by addition of adjustment ring(s) will be paid for at the unit contract price per each manhole adjusted.

b. Leveling brick adjustment will be paid for at the unit contract price per each manhole adjusted.

c. Adjustment of manhole cone or barrel will be paid for at the unit contract price per manhole diameter per vertical foot.

C. Manhole Coating

1. If required, no direct payment shall be made for coating of the exterior of manholes and will be considered incidental to the appropriate manhole.

2. Plastering of the interior of manholes will be paid for at the unit contract price per manhole.

3. Polyurethane protective coatings will be paid for as provided in Section 02590 - Polyurethane Protective Coatings.

D. Manhole Steps

1. If required no direct payment shall be made for manhole steps, where required, and will be considered incidental to the appropriate manhole.

E. Payment for abandonment of manholes will be paid for at the unit price per each for the work specified.

F. Payment for manhole rehabilitation will be paid for at the unit price per each for the work specified.

G. If required, the following items will be included in the unit price per appropriate adjustment: pavement removal and repair, excavation, compacted backfill, concrete collar or pad, leveling bricks, adjusting rings, and frame and cover.

H. Compensation will be for furnishing all materials, labor, equipment, tools and incidentals required including polyurethane protective coating if not included as a separate pay item in this contract. All in accordance with the plans and specifications herein.

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

SECTION 02580

STORM SEWER STRUCTURES

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

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

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

PART 2 - PRODUCTS

2.01 GENERAL:

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

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

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

2.02 MATERIALS:

A. Concrete

1. Concrete for cast-in-place structures shall be Class A concrete.

2. Concrete for precast structures shall be 4000 psi at 28 days and comply with the applicable requirements of ASTM C 478.

B. Mortar:

1. Mortar shall be composed of 1 part Portland Cement and 2 parts clean, sharp mortar sand suitably graded for the purpose by conforming in other respects to the provisions of Section 03300 - Cast In Place Concrete for fine aggregate.

2. Hydrated lime or lime putty may be added to the mix, but in no case shall it exceed 10 percent by weight of the total dry mix.

C. Reinforcement:

The inlet bases shall be reinforced with #4 rebar at 6" o/c (max).

D. Brick:

1. Bricks shall be of first quality, sound, hard-burned brick. Shale bricks, if used, shall be homogeneous, thoroughly and uniformly burned.

2. Bricks shall not absorb more than 17 percent of water by weight submerged in water for 24 hours, having been in a completely dry state prior to placing in water.

3. Clay brick shall conform to the requirements of ASTM C 62, Grade SW. Concrete brick meeting the requirements of ASTM C 55, Grade A, shall be acceptable.

E. Concrete Block:

Concrete blocks shall conform to ASTM C 139.

F. Frames, Grates, Rings and Covers:

Frames, grates, rings and covers shall conform to Section 02571 - Sanitary And Storm Sewers.

G. Miscellaneous Items:

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

PART 3 - EXECUTION

3.01 INSTALLATION OF DRAINAGE FACILITIES:

A. Excavation and Backfilling For The Storm Inlet.

(1) Excavation. Excavate a hole for the size of inlet and to the elevations shown in the attached plans and details. Trench protection shall be provided as required by OSHA. Care shall be exercised to avoid damaging any underground utilities.

(2) Backfill. As soon as practical, all portions of the excavation not occupied by the permanent structure shall be backfilled. Backfill material may be obtained from excavation or from other sources. Backfill material shall be free from stones of such size as to interfere with compaction; free from large lumps which will not break down

readily under compaction; and free from frozen lumps, wood, or other extraneous material.

Backfill which will not support any portion of the completed roadbed or embankment shall be placed in layers not more than 10 inches in depth (loose measurement). Backfill which will support any portion of the roadbed or embankment shall be placed in uniform layers not to exceed eight (8) inches in depth (loose measurement). Each layer of backfill shall be compacted to a density comparable with the adjacent undisturbed soil or as shown on the plans.

Each layer of backfill material, if dry, shall be wetted uniformly to optimum moisture content required to obtain a density comparable with the adjacent undisturbed soil or as shown on the plans and shall be compacted to that density by means of mechanical tamps or rammers. In no case will the compaction of the material be less than 95% of proctor with a moisture content between optimum and +3 percentage points. The use of rolling equipment of the type generally used in compacting embankments will be permitted on portions, which are accessible to such equipment.

When tamping equipment is furnished which, when proven to the satisfaction of the Engineer, will adequately compact the backfill material to the density required, the eight (8) inch and 10 inch lifts (loose measurement) specified above may be increased to lifts not to exceed 12 inches.

Cohesionless materials, such as sand, may be used for general backfilling purposes. Compaction of cohesionless materials shall be done with vibratory equipment, water ponding or a combination thereof.

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

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

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

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

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

E. Existing pavement removal and replacement shall conform to Section 02571 - Sanitary And Storm Sewers and shall conform to residential or arterial pavement

sections of the same material (asphalt or Portland Cement concrete) as the existing pavement.

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

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

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

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

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

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

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

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

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

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

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

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

4.02 PAYMENT:

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

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

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

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

SECTION 02601
FLEXIBLE BASE

PART I - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. This work shall consist of furnishing and placing a foundation course for surface courses or for other base courses.

B. Flexible base shall be composed of either caliche (argillaceous limestone, calcareous or calcareous clay particles, with or without stone, conglomerate, gravel, sand or other granular materials), crushed stone, gravel, iron ore topsoil, sand shell, or crushed slag.

C. Flexible base shall be constructed as specified herein in one or more courses in conformance with details, lines and grades shown on the plans, and as established by the ENGINEER.

D. When lime stabilization of the subgrade is specified, the flexible base is to be added in accordance with Section 02240, Lime stabilization.

PART 2 -PRODUCTS

2.01 MATERIALS:

A. Materials for flexible base shall be crushed or uncrushed as necessary to comply with the requirements hereinafter specified.

B. Materials shall consist of durable course aggregate particles mixed with approved binding materials.

2.02 LIME STABILIZATION:

A. Where shown on the plans, or directed by the ENGINEER, material for flexible base shall be lime stabilized in accordance with the provisions of Section 02240.

2.03 TYPES:

A. Type A - Crushed or broken aggregate (excluding gravel aggregate).

B. Type B - Gravel Aggregate

C. Type C - Iron Ore Topsoil

D. Type D - Shell Aggregate with Sand Admixture

E. Type E - Shell Aggregate with Sand and Caliche Admixture

F. Type F - Caliche

G. Type G - Crushed Slag

H. Unless otherwise noted on the plans, the CONTRACTOR may use any one type of these types provided the material used meet the requirements set forth in the specification test limits herein.

2.04 GRADES:

A. Unless otherwise shown on the plans or directed by the ENGINEER, the final course of base material shall consist of Grades 1 or 2 as specified in Table 02601-1.

B. Base courses or subbase materials, unless otherwise noted on the plans or directed by the ENGINEER, may consist of Grades 1, 2, 3, or 4, as specified in Table 02601-1.

C. All grades shall, when tested in accordance with standard laboratory test procedures, meet the physical requirements set forth in Table 02601-1.

D. Testing of flexible base materials shall be in accordance with the following test procedures:

TEST	TESTING PROCEDURE
Preparation for soil constants and sieve analysis	TEX-101-E
Liquid Limit	TEX-104-E
Plastic Limit	TEX-105-E
Plasticity Limit	TEX-106-E
Sieve Analysis	TEX-110-E
Wet Ball Mill	TEX-116-E
Triaxial Test	TEX-117-E (Part I or II)

E. Unless otherwise specified on the plans, samples for testing the material for Soil Constants, Gradation and Wet Ball Mill shall be taken prior to the compaction operations.

F. Unless otherwise specified on the plans, samples for triaxial tests shall be taken from the stockpile or from production, as directed by the ENGINEER, where stockpiling is required and from production where stockpiling is not required.

TABLE 02601-1

PHYSICAL REQUIREMENTS FOR FLEXIBLE BASE MATERIALS

	GRADES			
TYPES	Grade 1: (Triaxial class 1 Min. compressive strength, psi: 45 at 0 psi lateral pressure and 175 at 15 psi lateral pressure	Grade 2: (Triaxial Class 1 to 2.3) Min. compressive strength, psi: 35 at 0 psi lateral pressure and 175 at 15 psi lateral pressure	Grade 3: (Unspecified Tri axial Class)	Grade 4:
TYPE A Crushed or Broken Aggregate (excluding gravel aggregate)	Retained on % Sq. Sieve 1-3/4:.....0 7/8".....10-35 3/8".....30-50 No. 4.....45-65 No. 40.....70-85 Max LL.....35 Max PI.....10 Wet Ball Mill Max Amt.....40 in Passing No. 40.....20	Retained on % Sq. Sieve 1-3/4".....0-10 No. 4.....45-75 No. 40.....60-85 Max LL.....40 Max PI.....12 Wet Ball Mill Max. Amt.....50 Max Increase in Passing No. 40.....20	Retained on % Sq. Sieve 1-3/4".....0-10 No. 40.....60-85 Max LL.....45 Max PI.....15 Wet Ball Mill Max Amt.....55 Max Increase in passing No. 40.....20	As Shown on Plans
TYPE B Gravel Aggregate		Retained on % Sq. Sieve 1-3/4".....0-10 No. 4.....30-75 No. 40.....70-85 Max LL.....35 Max PI.....12	Retained on % Sq. Sieve 1-3/4".....0-5 No. 4.....30-75 No. 40.....65-85 Max LL.....35 Max PI.....12	As Shown On Plans

TYPE C Iron Ore Topsoil	Retained on % Sq. Sieve 2-1/2".....0 No. 40.....50-85 Max LL.....35 Max PI.....12	Retained on % Sq. Sieve 2-3/4".....0 No. 40.....45-85 Max LL.....35 Max PI.....12	As Shown on Plans
TYPE D Sand-Shell	Retained on % Sq. Sieve 1-3/4".....0-10 No. 4.....45-65 No. 40.....50-70 Max LL.....35 Max PI.....12	Retained % Sq. Sieve 1-3/4".....0 No. 40.....45-65 Max LL.....35 Max PI.....12	As Shown on Plans
TYPE E Shell with Sand and Caliche	Retained % Sq. Sieve 1-3/4".....0 No. 40.....45-65 Max LL.....35 Max PI.....10	Retained % Sq. Sieve 1-3/4".....0 No. 40.....45-65 Max LL.....35 Max PI.....12	As Shown on Plans
TYPE F Caliche	Retained % Sq. Sieve 1-3/4".....0 No. 4.....45-75 No. 40.....50-85 Max LL.....40 Max PI.....12	Retained % Sq. Sieve 1-3/4".....0 No. 40.....50-85 Max LL.....40 Max PI.....12	As Shown on Plans
TYPE G Crushed Blast Furnace Slag			As Shown on Plans

G. The limits establishing reasonable close conformity with the specified gradation and plasticity index are defined by the following:

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

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

2.05 STOCKPILING:

A. When specified on the plans, the material shall be stockpiled prior to delivery on the road. The stockpile shall be not less than the height indicated and shall be made up of layers of material not to exceed the depth shown on the plans.

B. After a sufficient stockpile has been constructed as specified on the plans, the CONTRACTOR may proceed with loading from the stockpile for delivery to the road.

C. In loading from the stockpile for delivery to the road, the material shall be loaded by making successive vertical cuts through the entire depth of the stockpile.

D. If the CONTRACTOR elects to produce the Type "A" material from more than one material or more than one source, each material shall be crushed separately and placed in separate stockpiles so that at least 75 percent of the material in the course aggregate stockpiles will be retained on the No. 4 sieve and at least 70 percent of the material in the fine aggregate stockpile will pass the No. 4 sieve.

E. The materials shall be combined in a central mixing plant in the proportions determined by the ENGINEER to produce a uniform mixture which meets all of the requirements of the specification. In the event that combinations of the materials produced fail to meet all of the specification requirements, the CONTRACTOR will be required to secure other materials which will meet specifications requirements.

F. The central mixing plant shall be either the batch or continuous flow type, and shall be equipped with feeding and metering devices which will add the materials into the mixer in the specified quantities.

G. Mixing shall continue until a uniform mixture is obtained.

PART 3 - EXECUTION

3.01 PREPARATION OF SUBGRADE:

A. Type roadbed shall be excavated and shaped in conformity with the typical sections shown on the plans and to the lines and grades as established by the ENGINEER.

B. All unstable or otherwise objectionable material shall be removed from the subgrade and replaced with approved material.

C. All holes, ruts and depressions shall be filled with approved material and, if required, the subgrade shall be thoroughly wetted with water and reshaped and rolled to the extent directed in order to place the subgrade in an acceptable condition to receive the base material.

D. The surface of the subgrade shall be finished to line and grade as established and in conformity with the typical section shown on plans, and any deviation in excess of 1/2 inch in cross section and in a length of 16-feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.

E. Sufficient subgrade shall be prepared in advance to insure satisfactory prosecution of the work.

F. Material excavated in the preparation of the subgrade shall be utilized in the construction of adjacent shoulders and slopes or otherwise disposed on as directed, and any additional material required for the completion of the shoulders and slopes shall be secured from sources indicated on plans or as directed by the Engineer.

3.02 PLACEMENT OF FIRST COURSE - TYPE A, TYPE B, TYPE C, TYPE F, AND TYPE G MATERIAL:

A. Immediately before placing the base material, the subgrade shall be checked as to conformity with grade and section.

B. The material shall be delivered in approved vehicles of a uniform capacity, and it shall be the charge of the CONTRACTOR that the required amount of specified material shall be delivered in each 100- foot station.

C. Material deposited upon the subgrade shall be spread and shaped the same day.

D. In the event inclement weather or other unforeseen circumstances render impractical the spreading of the material during the first 24-hour period, the materials shall be scarified and spread as directed by the Engineer.

E. The material shall be sprinkled, if directed, and shall then be bladed, dragged and shaped to conform to typical sections as shown on plans.

F. All areas and "nests" of segregated coarse or fine material shall be corrected to removed and replaced with well graded material, as directed by the ENGINEER.

G. If additional binder is considered desirable or necessary after the material is spread and shaped, it shall be furnished and supplies in the amount directed by the ENGINEER. Such binder material shall be carefully and evenly incorporated with the material in place by scarifying, harrowing, brooming or by other approved methods.

H. The course shall be compacted by method of compaction hereinafter specified as the "Ordinary Compaction" method or the "Density Control" method of compaction as indicated on the plans, or as directed by the ENGINEER.

1. When the "Ordinary Compaction" method is to be used, the following provisions shall apply:

   a) The course shall be sprinkled as required and rolled as directed until a uniform compaction is secured. Throughout this entire operation, the shape of the course shall be maintained by blading and the surface upon completion shall be smooth and in conformity with the typical sections shown on plans and to the established lines and grades.

   b) In that area on which pavement is to be placed, any deviation in excess of 1/4 inch in cross section in a length of 16 feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.

   c) All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling.

2. When the "Density Control" method of compaction is to be used, the following provisions shall apply:

a) The course shall be sprinkled as required and compacted to the extent necessary to provide not less than the percent density as hereinafter specified under "Density".

b) In addition to the requirements specified for density, the full depth of the flexible base shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment.

c) After each section of flexible base is completed, density tests shall be performed as required by the ENGINEER. If the material fails to meet the density requirements, it shall be reworked as necessary to meet the density requirements.

d) Throughout this entire operation, the shape of the course shall be maintained by blading, and the surface upon completion shall be smooth and in conformity with the typical sections shown on the plans and to the established lines and grades.

e) In that area on which pavement is to be placed, any deviation in excess of 1/4 inch in cross section in a length of 16 feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.

f) All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling.

I. Should the base course, due to any reason or cause, lose the required stability, density or finish before the surfacing is complete, it shall be recompacted and refinished at the sole expense of the CONTRACTOR.

J. Where Type C material is used, the material shall be scarified, thoroughly wetted, mixed, manipulated, and bladed so as to secure a uniformly wetted material, and pulled in over the subgrade in courses and set under the action of blading and rolling. The work of mixing, blading, rolling, shaping, and subsequent maintenance shall be performed by the continuous use of sufficient number of satisfactory rollers and power maintainers with adequate scarifier attachments.

3.03 PLACEMENT OF FIRST COURSE - TYPE D MATERIAL:

A. Immediately before placing the base material, the subgrade shall be checked as to conformity with grade and section, and corrections made if necessary.

B. All materials shall be delivered in approved vehicles of a uniform capacity.

C. The required amount of shell shall be uniformly spread across the section and allowed to dry sufficiently to insure proper slaking and mixing of the binder material. Immediately upon completion of the drying period, as determined by the ENGINEER, the specified amount of sand admixture as required to produce a combined material meeting the requirements hereinbefore specified, shall be spread uniformly across the shell.

D. The material shall then be sprinkled as required and thoroughly mixed by blading and harrowing, or other approved methods.

E. Failure to proceed with the placing of sand admixture or mixing and placing operations will be grounds for the suspension of placing of shell.

F. Under no conditions will the CONTRACTOR be allowed to place an excessive amount of shell without proceeding with the mixing and placing operations.

G. The course shall be compacted by the method of compaction hereinafter specified as the "Ordinary Compaction" method or the "Density Control" method of compaction as indicated on the plans, or as directed by the ENGINEER.

1. When the plans indicate that the "Ordinary Compaction" method is to be used, the following provisions shall apply:

a) After mixing, all material shall be windrowed, and then spread over the section in layers.

b) The layer shall not exceed 2 inches in loose depth.

c) If necessary to prevent segregation, the material shall be wetted in the window prior to spreading.

d) After each lift is spread, it shall be sprinkled and rolled to secure maximum compaction as directed by the ENGINEER. Succeeding layers shall then be placed similarly until the course is completed.

e) All areas and "nest of segregated coarse or fine material shall be corrected or removed and replaced with well graded material, as directed by the ENGINEER.

f) The course shall then be sprinkled as required and rolled as directed until a uniform compaction is secured.

g) Throughout this entire operation, the shape of the course shall be maintained by blading; and the surface, upon completion, shall be smooth and in conformity with the typical sections shown on plans, and to the established lines and grades.

h) In that area on which pavement is to be place, any deviation in excess of 1/4 inch in cross section in a length of 16-feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.

i) All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling.

2. When the plans indicate that the "Density Control" method of compaction is to be used, the compaction method shall be the same as prescribed for Type A, Type B, Type C, Type F and Type G material.

H. When indicated on the plans or permitted by the ENGINEER, Type D material may be mixed in a central mixing plant and delivered to the road as a combined mixture. When this method is used, the combined mixture shall meet the requirements for type D material as hereinbefore specified and the placing and compaction requirement shall be the same as prescribed for Type A, Type B, Type C, Type F and Type G material.

3.04 PLACEMENT OF FIRST COURSE - TYPE E MATERIAL:

A. The construction methods for placing the first course of Type E material shall be the same as prescribed for Type D material except that after the shell and sand have been placed, the prescribed amount of caliche shall then be spread across the sand and shell.

B. The composite mixture shall then be sprinkled as required and thoroughly mixed by blading and harrowing or other approved methods.

C. Compaction of the first course of Type E material shall be the same as prescribed above for Type D material.

D. Failure to proceed with placing the sand and caliche admixture or mixing and placing operations will be grounds for the suspension of placing of shell.

E. Under no conditions will the CONTRACTOR be allowed to place an excessive amount of shell without proceeding with the mixing and placing operations.

3.05 PLACEMENT OF SUCCEEDING COURSES - ALL MATERIAL TYPES:

A. Construction methods shall be the same as prescribed for the first course.

B. Prior to placing the surfacing on the completed base, the base shall be "dry cured" to the extent directed by the ENGINEER.

3.06 DENSITY CONTROL:

A. When the "Density Control" method of compaction is indicated on the plans, each course of flexible base shall be compacted to the percent density shown on the plans.

B. The testing will be as outlined in TX DOT Test Method Tex-114-E.

C. It is the intent of this specification to provide in the top 8 inches of the base material immediately below the finished surface of the roadway not less than 100 percent of the density as determined by the compaction ratio method.

D. Field density determination shall be made in accordance with TX DOT Test Method Tex-115-E.

3.07 TOLERANCES:

A. When tolerances are permitted by the plans, the limits establishing reasonable close conformity with percent density specified are defined by the following:

1. The ENGINEER may accept the work providing not more than 25 percent of the density tests performed each day are outside the specified density by no more than three pounds per cubic foot and where no two consecutive tests on continuous work are outside the specified limits.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. Flexible base will be measured by the square yard of surface area of completed and accepted work based on the width of flexible base as shown on the plans.

1. The flexible base shall be measured for depth by the units of 2000 square yards and remaining fraction of square yards, with one measurement taken at a location selected by the ENGINEER.

2. In that unit where flexible base is deficient by more than 1/2 inch in thickness, the deficiency shall be corrected by scarifying, adding material as required, reshaping and recompacting by sprinkling and rolling.

3. No additional payment over the contract unit price will be made for any flexible base of a thickness exceeding that required by plans.

B. The CONTRACTOR shall schedule his operations in such a manner as to facilitate the measurement of the pay item.

C. The ENGINEER may accept the work provided no more than 2 out of 10 depth tests performed are deficient by not more 1/2 inch and where no two consecutive tests on continuous work are outside the specified depth.

4.02 PAYMENT:

A. The accepted quantities of flexible base of the type, grade, and compaction method specified will be paid at the contract unit price per square yard, complete in place.

B. All sprinkling, rolling, and manipulation required will not be paid for directly, but will be considered incidental work.

C. Passing "Density Control" tests shall be paid by the OWNER. Failing "Density Control" tests shall be paid by the CONTRACTOR.

D. The unit prices bid shall each be full compensation for shaping and fine grading the roadbed; for securing and furnishing all materials, including all

royalty and freight involved; for furnishing scales and labor involved in weighing the material when required; for loosening, blasting, excavating, screening, crushing and temporary stockpiling when required; for loading all materials for all hauling and delivering. on the road; for spreading, mixing, blading, dragging, shaping and finishing and for all manipulation, labor, tools and incidentals necessary to complete the work.

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

SECTION 02612

HOT MIX ASPHALT CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Hot mix asphalt concrete (HMAC) pavement shall consist of a binder course, a leveling up course, a surface course or a combination of the courses as shown on the plans, or as directed by the ENGINEER.

B. HMAC pavement shall be composed of a compacted mixture of mineral aggregate and asphaltic material, constructed on previously completed and approved subgrade, subbase course, base course, or existing pavement.

C. HMAC pavement shall be in accordance with the specifications herein and in conformity with the lines, grades, quantities and typical sections in the contract and/or as directed by the ENGINEER.

1.02 QUALITY CONTROL:

A. HMAC pavement and its constituent part shall conform to the ASTM, AASHTO and/or Texas SDHPT test methods noted below.

PART 2 - PRODUCTS

2.01 ASPHALTIC MATERIALS:

A. Asphalt cement binders shall be uncracked petroleum asphalts and shall be carefully refined, by steam, vacuum, or solvent, from asphaltic or semi-asphaltic base crude petroleum at a temperature not to exceed 700 degrees F. Asphalt cements shall be free from thermal decomposition products and shall not be blended with any materials which have been subjected to cracking or produced from a crude petroleum source other than that of the original material. The asphalt cement shall not contain residues from non-asphaltic sources. Asphalt cement shall be homogeneous, free from water, and shall not foam when heated to 347 degrees F.

B. Paving asphalt shall be classified by penetration or viscosity and shall conform to the requirements set forth in one of the following tables as designated by the ENGINEER. The CONTRACTOR may supply asphalt meeting the requirements of one of the following tables provided that he obtains prior approval of the ENGINEER and with the provision that once approval has been obtained, that the CONTRACTOR will remain with that grade throughout the project.

TABLE 02612-1

Specification Designation	AASHTO Test Method	ASTM Test Method	40 to 50	60 to 70	85 to 100	120 to 150	150 to 200	200 to 250
Flash Point (Open cup) Min.	T48	D92		450	450	450	425	350
Penetration of Orig. Sample at 77°F	T49	D5	40 to 50	60 to 70	85 to 100	120 to 150	150 to 200	200 to 250
Thin-Film Oven Loss, Hours at 325°F, % Max	T179	D1754	0.75	0.75	0.75	0.75	1.00	1.00
Test of Residue from Thin-Film Oven Test: % of Orig. Pen., Min.	T49	D5	52	50	50	50	50	50
Ductility at 77°F, cm. after Loss at 325°F, Min.	T51	D113	50	50	100	100	100	100
Solubility in CC14 Min.	T44*	None	99.5	99.5	99.5	99.5	99.5	99.5
Reaction to Spot Test	T102**	None	-0-	-0-	-0-	-0-	-0-	-0-

* Procedure No. 1 with $CC1_4$ substituted for CS_2.

** Using 85% Standard Naphtha Solvent and 15% xylene.

TABLE 02612-2

TYPE-GRADE	OA-30 Min.	OA-30 Max.	OA-175** Min.	OA-175** Max.	OA-400 Min.	OA-400 Max.
Penetration at 32°F, 200g., 60 sec	15	--	--	--	--	--
Penetration at 77°F, 100g., 5 sec	25	35	150	200	--	--
Penetration at 115°F, 50g., 5 sec	--	65	--	--	--	--
Ductility at 77°F, 5 cm/min., cms: Original OA	2	--	70	--	--	--
Flash Point C.O.C., F	450	--	425	--	425	--
Softening Point, R. & B., F	185	--	95	130	--	--
Thin Film Oven Test, 1/8 in. Film 50 g., 5hrs., 325°F, % Loss by wt	--	0.4	--	1.4	--	2.0
Penetration of Residue, at 77°F, 100g., 5 sec. % of Original Pen	--	--	40	--	--	--
Ductility of Residue at 77°F, 5 cm/min., cms	--	--	--	100	--	--
Solubility in Trichloroethylene, %	99.0	--	99.0	--	99.0	--
Spot Test on Original OA	Neg.		Neg.		Neg.	
Float Test at 122°F, sec	--	--	--	--	120	150
Test on 85 to 115 Pen. Residue* Residue by Wt., %	--	--	--	--	75	--
Ductility, 77°F, 5 cm/min: Original Res., cms	--	--	--	--	100	--
Subjected to Thin Film Test, cms	--	--	--	--	100	--

*Determined by Vacuum Distillation (by evaporation if unable to reduce by vacuum).

**For use with Latex Additive only.

TABLE 02612-3

PROPERTIES	AC-1.5		AC-3		AC-5		AC-10		AC-20		AC-40	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity, 140°F strokes	150	50	300	100	500	100	1000	200	2000	400	4000	800
Viscosity, 275°F strokes	0.7	--	1.1	--	1.4	--	1.9	--	2.5	--	3.5	--
Penetration, 77°F 100 g, 5 sec.	250	--	210	--	135	--	85	--	55	--	35	--
Flash Point, C.O.C., F	425	--	425	--	425	--	450	--	450	--	450	--
Solubility in trichloroethylene, percent	99.0	--	99.0	--	99.0	--	99.0	--	99.0	--	99.0	--
Test on residues from thin film oven test: Viscosity, 140°F stokes	--	450	--	900	--	1500	--	3000	--	6000	--	12000
Ductility, 77°F, 5 cms per min, cms	100	--	100	--	100	--	70	--	50	--	30	--
Spot test. . . .	Negative for all grades											

C. A minimum of two percent, by weight, latex additive (solids basis) shall be AC-175 Asphalt or to AC-5 Asphalt when specified in the contract. The latex additive shall be governed by the following specifications:

The latex is to be an anionic emulsion of butadiene-styrene low-temperature copolymer in water, stabilized with fatty-acid soap so as to have good storage stability, and possessing the following properties:

Monomer ratio, B/S.....70/30
Minimum solids content.....67%
Solids content per gal. @ 67%.....5.3 lbs
Coagulum on 80-mesh screen.....0.01% max
Type Anti-oxidant.....staining
Mooney viscosity of Polymer (M/L 4@212F).....100 min.
pH of Latex.....9.4 - 10.5
Surface tension.....28-42 dynes/cm²

The finished latex-asphalt blend shall meet the following requirements:

Viscosity at 140° F, stokes.....1500 max.
Ductility at 39.2° F. 1 cm. per., min. cm.....100 min.

D. Asphalt content shall be within the limits noted below:

Table 02612-4

HMAC Type	Percent of Mixture by Weight	Percent of Mixture by Volume
"A"	3.5 - 7.0	8.0 - 16.0
"B"	3.5 - 7.0	8.0 - 16.0
"C"	3.5 - 7.0	8.0 - 16.0
"D"	4.0 - 8.0	9.0 - 19.0
"F"	3.5 - 6.5	8.0 - 16.0

E. At the time of delivery of each shipment of asphalt, the vendor supplying the material shall deliver to the purchaser certified copies of the test report which shall indicate the name of the vendor, type and grade of asphalt delivered, date and point of delivery, quantity delivered, delivery ticket number, and results of the above-specified tests. The test report shall be certified and signed by an authorized representative of the vendor that the product delivered conforms to the specifications for the type and grade indicated.

F. Until the certified test reports and samples of the material have been checked by the ENGINEER to determine their conformity with the prescribed requirements, the material to which such report relates and any work in which it may have been incorporated as an integral component will be only tentatively accepted by the City. Final acceptance will be dependent upon the determination of the ENGINEER that the material involved fulfills the requirements prescribed therefor. The certified test reports and the testing required in connection with the reports will be at the expense to the City.

G. Unless otherwise specified in these specifications or in the Supplementary Specifications, the various grades of paving asphalt shall be applied at a temperature range of from 210°F, the exact temperature to be determined by the ENGINEER.

H. Paving asphalt shall be heated in such a manner that steam or hot oils will not be introduced directly into the paving asphalt during heating. The CONTRACTOR shall furnish and keep on the site, at all times, an accurate thermometer suitable for determining the temperature of the paving asphalt.

I. HMAC asphalt shall be the grade having the highest penetration, within specified limits, to produce a mix having a maximum stability of the compacted mixtures.

J. Only one (1) grade of asphalt shall be required unless otherwise shown on the plans or as required by the ENGINEER.

2.02 AGGREGATES:

A. HMAC aggregate will be tested in accordance with the following test:

AASHTO T-30	Mechanic Testing
AASHTO T-27	Passing No. 200 Sieve
AASHTO T-89	Liquid Limit
AASHTO T-96	Los Angeles Abrasion
AASHTO T-104	Soundness (Magnesium Sulfate)
ASTM C-131	Resistance to Degradation
ASTM C-136	Sieve Analysis
ASTM C-2419	Sand Equivalence Value
SDHPT Tex-106-E	Method of Calculating Plasticity Index of Soils
SDHPT Tex-217-F	(I & II) Determination of Deleterious Materials and Decantation Test
SDHPT Tex-203-F	Quality Tests for Mineral Aggregates

B. Aggregates shall have an abrasion of not more than 40 for all course except the non-skid surface course, which shall have an abrasion of not more than 35.

C. When property proportioned, HMAC aggregate shall produce a gradation which will conform to the limitations for classification for HMAC type shown below, or as directed by the ENGINEER.

D. Course aggregate to be crushed limestone rock or crushed gravel with limestone filler. (Crushed gravel shall be per Highway Department Specifications.)

E. Binder Aggregate to be composed of crushed Limestone screenings.

1. Type "A" - Course Graded Base Course

	Percent Aggregate by Weight or Volume
Passing 2" sieve	100
Passing 1-3/4" sieve	95 to 100
Passing 1-3/4" sieve, retained on 7/8" sieve	16 to 42
Passing 7/8" sieve, retained on 3/8" sieve	16 to 42
Passing 3/8" sieve, retained on No. 4 sieve	10 to 26
Passing No. 4 sieve, retained on No. 10 sieve	5 to 21
Total retained on No. 10 sieve	68 to 84
Passing No. 10 sieve, retained on No. 40 sieve	5 to 21
Passing No. 40 sieve, retained on No. 80 sieve	3 to 16
Passing No. 80 sieve, retained on No. 200 sieve	2 to 16
Passing No. 200 sieve	1 to 8

2. Type "B" - Fine Graded or Leveling-Up Course

	Percent Aggregate by Weight or Volume
Passing 1" sieve	100
Passing 7/8" sieve	95 to 100
Passing 7/8" sieve, retained on 3/8" sieve	21 to 53
Passing 3/8" sieve, retained on No. 4 sieve	11 to 42
Passing No. 4 sieve, retained on No.10 sieve	5 to 26
Total retained on No.10 sieve	58 to 74
Passing No. 10 sieve, retained on No. 40 sieve	6 to 32
Passing No. 40 sieve, retained on No. 80 sieve	4 to 21
Passing No. 80 sieve, retained on No. 200 sieve	3 to 21
Passing No. 200 sieve	1 to 8

3. Type "C" - Course Graded Surface Course

	Percent Aggregate by Weight or Volume
Passing 7/8" sieve	100
Passing 5/8" sieve	95 to 100
Passing 5/8" sieve, retained on 3/8" sieve	16 to 42
Passing 3/8" sieve, retained on No.4 sieve	11 to 37
Passing No.4 sieve, retained on No.10 sieve	11 to 32
Total retained on No. 10 sieve	54 to 74
Passing No. 10 sieve, retained on No. 40 sieve	6 to 32
Passing No.40 sieve, retained on No.80 sieve	4 to 27
Passing No.80 sieve, retained on No.200 sieve	3 to 27
Passing No. 200 sieve	1 to 8

4. Type "D" - Fine Graded Surface Course

	Percent Aggregate by Weight or Volume
Passing 1/2" sieve	100
Passing 3/8" sieve	85 to 100
Passing 3/8" sieve, retained on No. 4 sieve	21 to 53
Passing No.4 sieve, retained on No.10 sieve	11 to 32
Total retained on No. 10 sieve	54 to 74
Passing No. 10 sieve, retained on No. 40 sieve	6 to 32
Passing No. 40 sieve, retained on No. 80 sieve	4 to 27
Passing No. 80 sieve, retained on No. 200 sieve	3 to 27
Passing No. 200 sieve	1 to 8

5. Type "F" - Fine Graded Surface Course

	Percent Aggregate by Weight or Volume
Passing 3/8" sieve	100
Passing No. 4 sieve	95 to 100
Passing No. 4 sieve, retained on No. 10 sieve	58 to 73
Passing No. 10 sieve, retained on No. 40 sieve	6 to 26
Passing No. 40 sieve, retained on No. 80 sieve	3 to 13
Passing No. 80 sieve, retained on No. 200 sieve	2 to 11
Passing No. 200 sieve	1 to 8

2.03 PRIME COAT:

A. Prime coat, when specified on the plans, or as directed by the ENGINEER, shall be in accordance with Section 02610 - Prime Coat, and as specified herein.

B. Prime coat shall be applied to surfaces of bases at least 12 hours prior to placing the HMAC unless otherwise directed by the ENGINEER.

C. Asphalt prime shall be applied uniformly at the rate of 0.10 to 0.30 gallon per square yard or as directed by the ENGINEER. It shall be applied only when permitted by the ENGINEER and when the air temperature is not less than 40oF.

D. In order to prevent lapping at the junction of two applications, the distributor shall be promptly shut off. A hand spray shall be used to touch up all spots unavoidably missed by the distributor.

E. Immediately prior to application of the asphalt prime, an inspection will be made by the ENGINEER to verify that the base course has been constructed as specified. Also, all loose and foreign material shall be removed by light sweeping. Material so removed shall not be mixed with cover aggregate.

F. The surface to be primed shall be in a smooth an well-compacted condition, true to grade and cross section, and free from ruts and inequalities.

G. The pressure distributor used for applying prime coat material shall be equipped with pneumatic tires and shall be so designed and operated as to distribute the prime material in a uniform spray without atomization, in the amount and between the limits of temperature specified. It shall be equipped with a speed tachometer registering feet per minute and so located as to be visible to the truck driver to enable him to maintain the constant speed required for application at the specified rate.

H. The pressure distributor shall be equipped with a tachometer registering the pump speed, pressure gauge, and a volume gauge. The rates of application shall not vary from the rates specified by the ENGINEER by more than 10%. Suitable means for accuracy indicating at all times the temperatures of the prime material

shall be provided. The thermometer well shall be so placed as not to be in contact with a heating tube.

I. The distributor shall be so designed that the normal width of application shall be not less than 6 feet, with provisions for the application of lesser width when necessary. If provided with heating attachments, the distributor shall be so equipped and operated that the prime material shall be circulated or agitated through the entire heating process.

J. The asphalt prime coat should preferably be entirely absorbed by the base course and, therefore, require no sand cover. If, however, it has not been completely absorbed prior to the start of placing the asphalt concrete mixture and in the meantime it is necessary to permit traffic thereon, just sufficient sand shall be spread over the surface to blot up the excess liquid asphalt and prevent picking it up under traffic. Also, sand shall be used in amounts deemed necessary by the ENGINEER at intersections and such areas where traffic may pass over the prime coat. Prior to placing the asphalt concrete, loose or excess sand shall be swept from the base. If a sand cover is specified in the Supplementary Specifications or noted on the plans to cover asphalt prime, it shall be applied within 4 hours after the application of said prime coat, unless otherwise ordered by the ENGINEER.

K. Liquid asphalt shall be prevented from spraying upon adjacent pavements, structures, guard rails, guide posts, culvert markers, trees, and shrubbery that are not to be removed; adjacent property and improvements; and other facilities or that portion of the traveled way being used by traffic.

L. The CONTRACTOR shall protect the prime coat against all damage and markings, both from foot and other traffic. Barricades shall be placed where necessary to protect the prime coat. If, after prime coat has been applied to the satisfaction of the ENGINEER and has been accepted by him, it is disturbed by negligence of the part of the CONTRACTOR, it shall be restored at his expense to its condition at the time of acceptance. No material shall be placed until the prime coat is in a condition satisfactory to the ENGINEER.

2.04 TACK COAT:

A. If the asphalt concrete pavement is being constructed directly upon an existing hard-surfaced pavement, a tack coat shall be evenly and uniformly applied to such existing pavement preceding the placing of the asphalt concrete. The surface shall be free of water, all foreign material, or dust when the tack coat is applied. No greater area shall be treated in any one day than will be covered by the asphalt concrete during the same day. Traffic will not be permitted over tack coating.

B. Tack coat for HMAC shall consist of either rapid curing cut-back asphalt RC-2 diluted by addition of (not to exceed 15 percent by volume) an approved grade of gasoline and/or kerosene; emulsified asphalt, EA-11M diluted with 50 percent

water, or a cut-back asphalt made by combining 50 to 70 percent of the asphaltic materials specified for the paving mixture with 30 to 50 percent gasoline and/or kerosene by volume.

C. Tack coat shall conform to the requirements of Section 02620 - Tack Coat, or as specified herein.

D. Application rate shall be 0.10 to 0.15 gallons per square yard as directed by the ENGINEER.

E. A similar tack coat shall be applied to the surface of any course if, in the opinion of the ENGINEER, the surface is such that a satisfactory bond cannot be obtained between it and the succeeding course.

F. When required, the contact surfaces of all cold pavement joints, curbs, gutters, manholes, and the like shall be painted with a tack coat immediately before the adjoining asphalt concrete is placed. Asphalt tack coat shall be applied in controlled amounts as shown on the plans or determined by the ENGINEER. Surfaces where a tack coat is required shall be cleaned to the satisfaction of the ENGINEER before the tack coat is applied.

2.05 MINERAL FILLER:

A. Mineral filler, other than hydrated lime, shall consist of a thoroughly dry stone dust, portland cement or other mineral dust approved by the ENGINEER.

B. The mineral filler shall be free from foreign or other deleterious matter.

C. When tested by the method outlined in SDHPT Test Method Tex-200-F (Part 1 or 3), mineral filler shall meet the following gradations by weight:

Passing No. 30 Sieve	95-100%
Passing No. 80 Sieve	75%
Passing No. 200 Sieve	55%

2.06 HYDRATED LIME:

A. Hydrated lime shall conform with the requirements of ASTM C-207, Type N

B. Hydrated lime shall be furnished in amounts shown on the plans or as directed by the ENGINEER.

2.07 JOB MIX FORMULA:

A. A job mix formula based on representative samples, including filler if required, shall be determined by the ENGINEER, or submitted by the CONTRACTOR for approval of the ENGINEER.

B. The resultant job mix formula shall be within the master range for the specified type of HMAC.

C. When lime is added, it shall be included in the gradation for establishing job mix formula.

D. The job mix formula for each mixture shall establish a single percentage of aggregate passing each required sieve size, and a single percentage of bituminous material to be added to the aggregate and shall provide for 3 to 5% air voids in the resultant design mix. During the mix design process the ENGINEER will consider other factors, in addition to air voids and Marshall stability, such as durability, water resistance and asphalt film thickness when developing the mix design.

E. After the job mix formula is established, mixtures for the project shall conform thereto within the following tolerances which may fall outside of the specified master range:

	Percent by Weight or Volume as Applicable
Passing 1-3/4" sieve, retained on 7/8" sieve.....	Plus or minus 5
Passing 7/8" sieve, retained on 3/8" sieve.....	Plus or minus 5
Passing 5/8" sieve, retained on 3/8" sieve.....	Plus or minus 5
Passing 3/8" sieve, retained on No. 4 sieve.....	Plus or minus 5
Passing No. 4 sieve, retained on No. 10 sieve.....	Plus or minus 5
Total retained on No. 10 sieve.....	Plus or minus 5
Passing No. 10 sieve, retained on No. 40 sieve.....	Plus or minus 3
Passing No. 40 sieve, retained on No. 80 sieve.....	Plus or minus 3
Passing No. 80 sieve, retained on No. 200 sieve.....	Plus or minus 3
Passing No. 200 sieve.....	Plus or minus 3
Asphaltic Material.....	Plus or minus 0.05 by wt or 1.2 by vol.
Hydrated Lime.....	Plus or minus 0.3
Mixing Temperature.....	Plus or minus 20°F

F. Asphaltic mixture shall be tested in accordance with SDHPT Test Method Tex-200-4 (Part I or Part III) and shall have the following laboratory values:

	Surface Course	Base Course
Density - Minimum	95%	95%
Maximum	99%	99%
Optimum	97%	97%
Stability (Hveem)		
Minimum	30%	30%
Maximum	45%	45%
Stability (Marshall - 75 Blow Briquette)	1500 lbs.	1500lbs.
Voids	3 - 7%	4 - 7%
Voids Filled With Asphalt	75 - 85%	65 - 80%
Sand Equivalent	40	40

2.08 EQUIPMENT:

A. All equipment for the handling of all material, mixing, and placing of HMAC shall be in accordance with the provisions of Texas SDHPT Item 340.

2.09 STOCKPILING, STORAGE, PROPORTIONING AND MIXING:

A. Stockpiling, storage proportioning and mixing operations shall be in accordance with the Provisions of Texas SDHPT Item 340.

PART 3 - EXECUTION

3.01 WEATHER AND TEMPERATURE LIMITATIONS:

A. Asphaltic mixture, when placed with a spreading and finishing machine, or the tack coat shall not be placed when the air temperature is 50°F and falling, but may be placed when the air temperature is 40°F and rising.

B. Asphaltic mixture, when placed with a motor grader, shall not be placed when the air temperature is 60°F and falling, but may be placed when the air temperature is 50°F and rising.

C. Mat thicknesses of 1> inches or less shall not be placed when the temperature on which the mat is to be laid is below 50°F.

D. No tack coat or asphaltic mixture shall be placed when the humidity, general weather conditions and temperature and moisture condition of the base, in the opinion of the ENGINEER, are unsuitable.

E. If, after being discharged from the mixer and prior to placing, the temperature of the asphaltic mixture is 50°F or more below the temperature established by the ENGINEER, all or any part of the load may be rejected and payment will not be made for the rejected material.

3.02 EQUIPMENT:

A. Hauling Equipment:

1. Trucks used for hauling asphaltic mixtures shall have tight, clean, smooth metal beds which have been thinly coated with a minimal amount of paraffin oil, lime slurry, tine solution or other approved material to prevent mixture adhesion to the bed.

2. The dispatching of hauling equipment shall be arranged so that all material delivered may be placed and all rolling completed during daylight hours, unless otherwise directed by the ENGINEER.

3. All trucks shall be equipped with a cover of canvas, or other suitable material to protect the mixture from weather or on hauls where the temperature of the mixture will fall below specified level. Use of covers will be as directed by the ENGINEER.

B. Rollers:

1. Pneumatic Tire Roller. This roller shall consist of not less than seven pneumatic tire wheels, running on axles in such manner that the rear group of tires shall cover the entire gap between adjacent tires of the forward group; mounted in a rigid frame; and provided with a loading platform or body suitable for ballast loading. The front axle shall be attached to the frame in such manner that the roller may be turned within a minimum circle. The tire shall afford surface contact pressures up to 90 pounds per square inch or more. The roller shall be so constructed as to operate in both a forward and a reverse direction with suitable provisions for moistening the surface of the tires while operating; and shall be approved by the ENGINEER.

2. Two Axle Tandem Roller. This roller shall be acceptable power-driver, steel-wheel, tandem roller weighing not less than eight tons. It must operate in forward and reverse directions; contain provision for moistening the surface of the wheels while in motion; and shall be approved by the ENGINEER.

3. Three Wheel Roller. This roller shall be an acceptable power-driven, all steel three wheel roller weighing not less than 10 tons. It must operate in forward and reverse directions; contain provisions for moistening the surface of the wheels while in motion; and shall be approved by the ENGINEER.

4. Vibratory Steel Wheel Roller. If approved for use by the OWNER, this roller shall have a minimum weight of six tons. The compactor shall be equipped with amplitude and frequency controls and shall be specifically designed to compact the material on which it is used. It shall be operated in accordance with the manufacturers recommendations.

C. Straight Edges:

1. The CONTRACTOR shall provide an acceptable 16-foot straight-edges for surface testing. Satisfactory templates shall be provided as required by the ENGINEER.

D. Spreading and Finishing Machine:

1. Bituminous pavers shall be self-contained, power-propelled units, provided with an activated screed or a strike-off assembly, heated if necessary, and capable of spreading and finishing courses of bituminous plant mix material in lane widths applicable to the specified typical section and thickness shown on the plans.

2. The paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed. Design will be such that no part of the truck weight will be supported by the paver.

3. The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture. When laying mixtures, the paver shall be capable of being operated at forward speeds consistent with satisfactory laying of the mixture. The screed shall be adjustable for both height and crown and shall be equipped with a controlled heating device.

4. The bituminous paver shall be equipped with an automatic leveling device controlled from an external guide. The initial pass for each course shall be made using a paver equipped with a 40-foot minimum external reference, except that this requirement will not apply when asphalt concrete is placed adjacent to portland cement concrete pavement. Subsequent passes may utilize the matching device of one foot minimum length riding on the adjacent lay.

3.03 CONSTRUCTION METHODS:

A. Addition of Hydrated Lime:

1. Hydrated lime shall be added to the entire portion of asphalt concrete aggregate in an enclosed plug mill or other methods approved by the Engineer.

2. The hydrated lime shall be added to the aggregate such that loss of hydrated lime is minimal or nonexistent. Placement of the lime on an open conveyer belt will not be permitted. Placement of the lime on an enclosed belt that does not permit blowing or loss of lime is acceptable.

3. The CONTRACTOR shall provide appropriate weighing devices, approved by the ENGINEER, to assure that the proportionate amounts of hydrated lime are being added to the coarse aggregate, fine aggregate and filler (if required).

4. The addition of the hydrated lime to the aggregate shall be accomplished by Method A or B as follows:

Method A

The hydrated lime shall be added to the entire aggregate portion prior to stockpiling. The lime, aggregate and moisture will be mixed in a pugmill prior to the aggregate being stockpiled. Twenty-five (25) percent by weight of the hydrated lime shall be added to the coarse aggregate and seventy-five (75) percent by weight of the hydrated lime shall be added to the fine aggregate. If filler is required, the above percentages by weight will be adjusted by the ENGINEER to provide for addition of lime to all aggregate fractions to be incorporated into the PMBP. Minimum moisture content shall be 2 percent by weight for the coarse aggregate and 4 percent by weight for the fine aggregate, at the time the aggregate and lime are mixed.

OR

5. Method B
Hydrated lime shall be added to the combined aggregate materials in a pugmill immediately after leaving the cold feed and just prior to introduction into the dryer drum or dryer.

6. Minimum moisture content of the combined aggregates shall be 3 percent by weight, at the time the aggregate and lime are mixed.

7. The following parameters are applicable when utilizing Method A or Method B:

   a) ENGINEER may increase the moisture content of the coarse and fine aggregates or the combination of coarse and fine aggregates to obtain proper coating of the aggregates with hydrated lime and to eliminate dust pollution. The CONTRACTOR will provide a method to positively determine the amount of moisture added to lime-aggregate mix.

   b) The CONTRACTOR shall provide a method for determining the weight of the lime used in the plant mix bituminous pavement. The method to be used will be approved by the Materials Laboratory Bureau prior to the production of any plant mix bituminous pavement.

B. Spreading and Finishing:

1. The asphalt concrete mixture shall be laid on the approved surface, spread and struck off to the grade and elevation established. It shall be spread and compacted in layers as shown on the plans or as directed by the ENGINEER. Bituminous pavers shall be used to distribute the mixture either over the entire width or over such partial width as may be practicable.

2. The ENGINEER will determine a minimum placement temperature within a range from 220°F to 300°F which will produce the required density. The established placement temperature, which is measured immediately behind the laydown machine, shall not vary more than 20°F.

3. A conventional paver or suitable equipment approved by the ENGINEER may be used to place asphalt concrete material on shoulders depressed from the traveled lanes in order to establish a uniform typical section. Approval of the equipment used will be based upon the results obtained.

4. The asphalt concrete may be dumped from the hauling vehicles directly into the paving machine or it may be dumped upon the surface being paved and subsequently loaded into the paving machine; however, no asphaltic concrete shall be dumped from the hauling vehicles at a distance greater than 250 feet in front of the paving machine. When asphaltic concrete is dumped first upon the surface being paved, the loading equipment shall be self-supporting and shall not exert any vertical load on the paving machine. Substantially all of the asphaltic concrete dumped shall be picked up and loaded into the paving machine.

5. To achieve, as far as practicable, a continuous operation, the speed of the paving machine shall be coordinated with the production of the plant. Sufficient hauling equipment shall be available to insure continuous operation.

6. The control system shall control the elevation of the screed at each end by controlling the elevation of one end directly and the other indirectly either through controlling the transverse slope or alternately when directed, by controlling the elevation of each end independently, including any screed attachments used for widening, etc. Failure of the control system to function properly shall be cause for the suspension of the asphaltic concrete operations.

7. When dumping directly into the paving machine from trucks, care shall be taken to avoid jarring the machine or moving it out of alignment.

8. All courses of asphaltic concrete shall be placed and finished by means of self-propelled paving machines except under certain conditions or at certain locations where the ENGINEER deems the use of self-propelled paving machines impracticable.

9. Self-propelled paving machines shall spread the asphaltic concrete without segregation or tearing within the specified tolerances, true to the line, grade, and crown indicated on the plans. Pavers shall be equipped with hoppers and augers which will place the asphaltic concrete evenly in front of adjustable screeds without segregation. Screeds shall include any strike-off device operated by tamping or vibrating action which is effective without tearing, shoving or gouging the asphaltic concrete and which produces a finished surface of an even and uniform texture for the full width being paved. Screeds shall be adjustable as to height and crown and shall be equipped with a controlled heating device for use when required.

10. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the mixture shall be spread, raked, fluted and compacted with hand tools. For such areas the mixture shall be dumped, spread and screed to give the required compacted thickness.

C. Compaction:

1. Rolling with the 3-wheel and tandem roller shall start longitudually at the sides and proceed toward the center of the surface course, overlapping on successive trips by at least half the width of the rear wheels.

2. Alternate trips of the roller shall be slightly different in length.

3. Rolling with a pneumatic tired roller shall be as directed by the ENGINEER.

4. Rolling shall continue when no further compression can be obtained and all roller marks are eliminated.

5. The motion of the roller shall be slow enough at all times to avoid displacement of asphaltic materials. If displacement occurs, it shall be corrected immediately by use of rakes and fresh asphaltic mixtures, where required.

6. The roller shall not be allowed to stand on the surface course when it has not been fully compacted and allowed to cool.

7. To prevent adhesion of the surface course to the roller, the wheels shall be kept thoroughly moistened with water; however, excess water shall not be allowed.

8. All precautions shall be taken to prevent dripping of gasoline, oil, grease, or other foreign substances on the surface or base courses during rolling operations or while rollers are standing.

9. With the approval of the ENGINEER, a vibratory steel wheeled roller may be substituted for the 3-wheel roller and tandem roller.

10. Along forms, curbs, headers, walls and other places not accessible to the rollers, the mixture shall be thoroughly compacted with hot hand tampers, smoothing irons, or with mechanical tampers. On depressed areas, a trench roller may be used or cleated compression strips may be used under the roller to transmit compression to the depressed area.

11. Any mixture that becomes loose, broken, mixed with dirt, segregated, or is in any way defective shall be removed and replaced with fresh hot bituminous mixture, which shall be compacted to conform with the surrounding area. Any area showing excess or deficiency of bituminous material shall be corrected immediately as directed by the ENGINEER.

D. In-Place Density:

1. In-place density shall be required for all mixtures except thin irregular depth leveling courses.

2. Each course, after final compaction, shall have a density of not less than 95 percent of the density developed in the laboratory test method outlined in Texas SDHPT Bulletin C-14.

3. Density shall be determined with a portable nuclear test device in conformity with ASTM D-2950.76.

4. Calibration of the portable nuclear device will be established by the ENGINEER from cut pavement samples tested in accordance with AASHTO T-166 (weight, volume method). The density readings of the cut pavement samples determined in accordance with AASHTO T-166 (weight, volume method), and the density readings of the pavement determined by the portable nuclear nuclear test device in conformity with ASTM D 2950 will be correlated by the ENGINEER.

5. Other methods of determining in-place density may be used as deemed necessary by the ENGINEER.

6. It is intended that acceptance density testing will be done while the bituminous mixture is hot enough to permit further compaction if necessary. If the density of an acceptance section does not meet the specified requirements, the CONTRACTOR shall continue the compaction effort until the optimum density is obtained, but rolling for any compactive effort will not be allowed when the temperature of the mix is below 175oF unless authorized in writing by the ENGINEER. Rerolling the paved surface after it has initially cooled will not be allowed.

7. If in-place density tests of the mixture produce a value lower than specified and in the opinion of the ENGINEER is not due to a change in the quality of the material, production may proceed with subsequent changes in the mix and/or construction procedures until in-place density equals or exceeds the specified density.

8. In-place density tests will be provided by the ENGINEER unless otherwise specified.

E. Joints:

1. Placing of the asphalt concrete shall be as continuous as possible. Rollers shall not pass over the unprotected end of a freshly laid mixture unless authorized by the ENGINEER.

2. When plant mix bituminous pavement is placed over plant mix bituminous treated base or when plant mixed seal coat is placed over plant mix bituminous pavement, longitudinal joints shall be staggered at least 6 inches with relation to the longitudinal joints of the underlying course.

3. Transverse joints shall have a two foot or 12:1 minimum taper. Longitudinal joints shall have a one foot or 6:1 minimum taper. All transverse tapers shall be cut and squared off prior to commencing new work. Tapered longitudinal joints from previous operations shall be

cleaned and tack coated if directed by the ENGINEER. All joints shall be completely bonded. The surface of each course at all joints shall be smooth and shall not show any deviations in excess of 3/16 of an inch when tested with a 10-foot straightedge in any direction.

4. When paving under traffic the CONTRACTOR shall plan his daily surfacing operations on a schedule which will result in not more than one (1) day's operation of exposed longitudinal joints. The longitudinal joints shall not have a height greater than two (2) inches and shall not be left exposed longer than 24 hours.

F. Surface Tolerance:

1. Upon completion, the pavement shall be true to grade and cross section. Except at intersections or any changes of grade, when a 16 foot straight edge is laid on the finished surface parallel to the centerline of the roadway, the surface shall not vary from the edge of the straight edge more than 1/16-inch per foot. Areas that are not within this tolerance shall be brought to grade immediately following the initial rolling. After the completion of final rolling, the smoothness of the course shall be checked, and the irregularities that exceed the specified tolerances or that retain water on the surface shall be corrected by removing the defective work and replacing with new material as directed by the ENGINEER at the expense of the CONTRACTOR.

G. Manholes and Valve Covers:

1. Manhole frames and valve covers shall be adjusted prior to placing the surface course.

H. Compacted Thickness of HMAC Surface and Base Courses:

1. Surface Courses. The compacted thickness or depth of the asphaltic concrete surface course shall be as shown on the plans. Where the plans require a depth or thickness of the surface course greater than two inches compacted depth, same shall be placed in multiple courses of equal depth, each of which shall not exceed two inches compacted depth. If, in the opinion of the ENGINEER, an additional tack coat is considered necessary between any of the multiple courses, it shall be applied at the rate as directed.

2. Base Courses. The compacted thickness or depth of each base course shall be as shown on the plans. Where the plans require a depth or thickness of the course greater than 4 inches, same shall be accomplished by constructing multiple lifts of approximately equal depth, each of which shall not exceed these maximum compacted depths. If, in the opinion of the ENGINEER, an additional tack coat is considered necessary between

any of the multiple lifts, it shall be applied as hereinbefore specified and at the rate as directed.

I. Pavement Thickness Tests:

1. Pavement Thickness Test. Upon completion of the work and before final acceptance and final payment shall be made, pavement thickness test shall be made by the ENGINEER or his authorized representative unless otherwise specified in the special provisions or in the plans. The number and location of tests shall be at the discretion of the OWNER. The cost for the initial pavement thickness test shall be at the expense of the ENGINEER. In the event a deficiency in the thickness of pavement is revealed during normal testing operations, subsequent tests necessary to isolate the deficiency shall be at the CONTRACTOR's expense. The cost for the additional coring test shall be at the same rate charged by commercial laboratories.

J. Price Adjustment for Roadway Density

1. The payment of the unit price will be adjusted for roadway density as outlined in the following table. The adjustment will be applied on a lot by lot basis for each lift. The adjustment will be based on the average of five density tests. The price adjustment will be applied to the entire asphalt concrete mix which includes the HMAC aggregate, the asphalt cement and the lime.

Average Density % of Lab Density	Percent of Contract Price To Be Paid
Above 95%	100%
94.0 to 94.99	96%
93.0 to 93.99	91%
92.0 to 92.99	85%
Less than 92.00	*

*This lot shall be removed and replaced to meet specification requirements as ordered by the ENGINEER. In lieu thereof, the CONTRACTOR and the ENGINEER may agree in writing that for practical purposes, the lot shall not be removed and will be paid for at 50% of the contract price.

PART 4 - MEASUREMENT AND PAYMENT

4.01 INCIDENTAL WORK:

A. Prime coat, lime, and tack coat shall not be measured for direct payment, but shall be considered as subsidiary work pertaining to the placing of asphaltic mixtures of the type specified.

4.02 MEASUREMENT:

A. Hot-mix asphalt concrete material shall be measured by the ton of 2,000 pounds or by the square yard of the type or types used in the completed and accepted work.

B. Weight shall be determined by a certified scale approved by the OWNER and recorded serially numbered weight tickets, identifying the vehicle and presented to the ENGINEER's representative on the job.

4.03 PAYMENT:

A. Work performed and materials furnished, as prescribed by this item, measured as provided herein, shall be paid at the unit bid price per ton or square yard for the type or types of hot mix asphalt concrete pavement shown on the proposal.

B. Unit bid price shall be payment in full for quarrying; furnishing all materials; for all heating; mixing; hauling; cleaning existing base course or pavement; placing asphaltic mixtures; rolling and finishing; and for all labor, tools, equipment and incidentals necessary to complete the work, including the work and materials involved in the application of prime coat and tack coat.

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

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK COVERED:

A. Mixing, placing, finishing and providing all related services necessary to construct all cast-in-place concrete work indicated on plans.

1.02 QUALITY ASSURANCE:

A. Comply with the latest published edition of the American Concrete Institute (ACI) and American Society of Testing and Materials (ASTM) standards and codes:

1. ACI 315 - Manual of Standard Practice of Detailing.
2. ACI 318 - Building Code Requirements for Reinforced Concrete.
3. ACI 347 - Recommended Practice for Concrete Formwork.
4. ASTM A36 - Structural Steel.
5. ASTM C33 - Concrete Aggregates.
6. ASTM C39 - Concrete Strength of Molded Concrete Cylinders.
7. ASTM C94 - Ready-Mixed Concrete.
8. ASTM C143- Slump of Portland Cement Concrete.
9. ASTM C150- Portland Cement.
10. ASTM C309- Liquid Membrance-Forming Compounds for Curing Concrete.
11. ACI 304 - Recommended Practice for Measuring, Mixing, Transportation and Placing Concrete.
12. ACI 301 - Specification for Structural Concrete for Building.

B. Submit compliance submittals as specified in Division 1, including but not limited to the following: bar schedule, bar details, shop drawings including size and location of openings, waterstops, joint systems and curing method.

C. Submit proposed concrete mix proportions to ENGINEER prior to placing concrete.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT:

A. Type I, Type II or Type III conforming to ASTM C150 as modified by Texas State Department of Highways and Public Transportation, 1982 Standard Specifications.

B. Type I or II cement may be used unless Type II is specified.

C. Except when Type II specified, Type III may be used when the anticipated air temperature for the succeeding 12 hours will not exceed 60o F.

D. Type III may be used in all pre-cast pre-stressed concrete except in piling when Type II cement is required for substructure concrete.

E. All cement used in a monolithic placement shall be of the same type.

F. May be either bagged or bulk. Partially set or caked cement will be rejected.

G. All types of cements shall be "low-alkali" cements.

2.02 WATER:

A. Clear, fresh, free from injurious amounts of oil, alkaline, acid or organic matter or other deleterious substances and shall not contain more than 1000 parts per million of chlorides as C1 nor more than 1000 parts per million of sulfates as SO_4.

B. Water of known potable quality requires no testing. Other sources shall meet the requirements of AASHTO T-26.

C. Water shall have a pH of not less than 4.5 or more than 8.5.

2.03 FINE AGGREGATE:

A. Natural sand, manufactured sand or a combination of the two, with or without mineral filler.

B. The sand, or mixture of sand, comprising a single fine aggregate, shall consist of clean, hard, durable, uncoated grains and shall be essentially free from clay lumps, salt or alkali, and other foreign material

C. The maximum permissible percentage, by weight, of deleterious substances shall not exceed the following:

Material removed by decantation	3.0%
Other deleterious substances such as coal, shale, coated grains and soft flaky particles	3.0%

An additional loss of 2% by decantation may be allowed, provided this new additional loss is material of the same quality as specified for fine aggregate or mineral filler.

D. Gradation, percent of weight retained:

Sieve Size	% Retained
3/8 inch	0
No. 4	0 - 5
No. 8	0 - 20
No. 16	15 - 50
No. 30	35 - 75
No. 50	65 - 90
No. 100	90 - 100
No. 200	97 - 100

E. Fineness Modulus: for Grade 1 only - 2.3 minimum, 3.1 maximum.

F. Mineral filler:

1. May be added upon written authorization of ENGINEER.

2. Shall be stone dust or clean crushed sand, or other approved inert material.

3. Shall not exceed 5% of the fine aggregate.

4. Shall meet the following requirements:

Passing No. 30 sieve	95 to 100%
Passing No. 100 sieve	70 to 100%

2.04 COARSE AGGREGATE:

A. Crushed stone, gravel, crushed gravel, crushed blast furnace slag or a combination of these.

B. Gravel and crushed gravel shall consist of clean, hard durable particles, free from adherent coating, thin or elongated pieces, soft or disintegrated

particles, dirt, organic or deleterious substances, salt or alkali, and other foreign material.

C. Crushed stone shall consist of the clean, dust free product resulting from crushing of stone. There shall be no adherent coatings, clay, loam organic or deleterious substances, salt or alkali, and other foreign material.

D. The maximum permissible percentage, by weight, of deleterious substances shall not exceed the following:

Material removed by decantation	1.0%
Shale, slate or other similar material	1.0%
Clay lumps	0.25%
Soft fragments	3.0%
Other deleterious substances, including friable, thin, elongated or laminated pieces	3.0%
The sum of all deleterious substances, exclusive of material removed by decantation, shall not exceed by weight	5.0%

E. Course aggregates shall have a percent wear of not more than 45 when tested in accordance with Test Method Tex-410-A.

F. Gradation, percent of weight retained on:

Grade No. 1 - Maximum Nominal Size 2 1/2 in. (63 mm)

Sieve	Percentage Retained
2 1/2 in.	0%
2 in.	0 - 20%
1 1/2 in.	15 - 50%
3/4 in.	60 - 80%
No. 4	95 -100%

Grade No. 2 - Maximum Nominal Size 1 1/2 in. (37.5 mm)

Sieve	Percentage Retained
2 in.	0%
1 1/2 in.	0 - 5%
3/4 in.	30 - 65%
3/8 in.	70 - 90%
No. 4	95 -100%

Grade No. 3 - Maximum Nominal Size 1 in. (25 mm)

Sieve	Percentage Retained
1 1/2 in.	0 - 5%
3/4 in.	10 - 40%
1/2 in.	40 - 75%
No. 4	95 - 100%

Grade No. 4 - Maximum Nominal Size 3/8 in. (9.5 mm)

Sieve	Percentage Retained
1/2 in.	0 - 5%
3/8	5 - 30%
No. 4	75 -100%

G. Gradation Requirements - maximum size of aggregate for structural concrete shall not exceed three inches, and shall be reduced in size to meet the following conditions:

1. One-sixth of the least dimension between forms of that part of the structure in which concrete is to be placed; and

2. Three-fourths of the clear space between reinforcement.

3. The maximum size aggregate is defined as the clear space between the sides of the smallest square openings through which 95 percent of the weight of the aggregate can be passed.

4. Unless otherwise noted or restricted by above Grade No. 2, gradation shall be used.

2.05 PIT-RUN AGGREGATE:

A. Pit-run aggregate is the natural gravel and sand obtained from pits without the addition of other fine or course aggregates, and shall consist of hard, durable, uncoated pebbles or stone particles mixed with sand.

B. Pit-run aggregate shall be free from lumps of clay and injurious amounts of dust, shale, soft or flaky particles, salt and alkali.

C. Pit-run aggregate shall be well graded from course to fine when tested by standard laboratory methods and shall meet the following minimum requirements for percentages by weight:

Retained on 1/4 in sieve 55% to 60%

D. Pit-run aggregate shall not be used for high-strength concrete of 3000 psi and above.

E. Pit-run aggregate may be used only for concrete cushion, cradle and protection for pipe.

2.06 ADMIXTURES:

A. Concrete admixtures shall comply with Section 03320.

2.07 REINFORCING STEEL:

A. Reinforcing steel shall comply with Section 03330.

2.08 CURING MATERIALS:

A. Liquid Membrane: white pigmented chlorinated rubber, ASTM C309.

B. Liquid Membrane: resin base, clear compound, permitting application of paint, Servicised Product Corp. - Code 2802 or equal.

C. Plastic Film: white pigmented, 0.00085" (minimum) thick.

D. Burlap: jute fabric, lean, free of impurities.

E. Surface Hardener: gray crystal, acidic fluosilicate base, slightly hygroscopic chemical surface hardener, SIKA Hardener, Sika Chemical Corp. or equal.

2.09 JOINT MATERIALS:

A. Joint Sealer: hot poured, non-extruding, elastic, ASTM D1190.

B. Preformed Expansion Joint Filler: non-extruding, bituminous fiber, ASTM D1751.

2.10 WATERSTOP:

A. Polyvinyl chloride or rubber, centerbulb.

B. Size to suit joints, minimum 6".

2.11 FORM MATERIALS:

A. Use plywood, metal, metal framed plywood faced or other acceptable panel-typed material.

B. Coat forms with non-bonding, non-staining commercial compounds.

2.12 MOISTURE BARRIER:

A. Polyethylene sheet, minimum 8 mil., ASTM E154.

2.13 CONCRETE MIX DESIGN AND CONTROL:

A. Submit not less than 10 days prior to the start of concreting operations, to the ENGINEER.

1. Mix design, using a course aggregate factor acceptable to the Engineer.

2. Sufficient samples of all materials to be incorporated into the mix for testing.

3. Full description of the source of supply of each material component.

B. Course aggregate factor:

1. Not more than 0.82 when voids less than 48%.

2. Not more than 0.85 when voids exceed 48%.

3. Not less than 0.68.

C. No changes or deviations from proportions or sources of supply without approval of ENGINEER.

D. No concrete may be placed on the job site until the mix design has been approved by ENGINEER in writing to the CONTRACTOR.

2.14 CONCRETE QUALITY:

A. Consistency:

1. Mortar shall cling to the course aggregate.

2. The aggregate shall not segregate during transport.

3. The concrete and mortar shall show no free water when removed from the mixer.

B. The consistency should allow the completion of all finishing operations with the addition of water to the surface.

C. The concrete shall be uniform, workable, cohesive, possess satisfactory finishing qualities and be of the stiffest consistency that can be placed and vibrated into a homogenous mass.

D. Excessive bleeding shall be avoided.

E. Slump requirements shall be as follows:

Structural Concrete	Avg. Slump	MaxSlump
(a) Cased Drilled Shafts and Thin-walled Sections (9 inches or less) . . .	4	5
(b) Slabs, Caps, Column, Pipers, Wall Sections Over 9 inches, etc.	3	4
(c) Slip Form Paving	1/2	2
(d) Underwater or Seal Concrete	5	6
(e) Rip-Rap, Curb, Gutter and Other Miscellaneous Concrete	(As Specified by ENGINEER)	

NOTE:No concrete shall be permitted with slump in excess of the maximum shown. Any concrete mix failing to meet the above consistency requirements, although meeting the slump requirements shall be considered unsatisfactory; and the mix shall be changed to correct such unsatisfactory conditions.

F. The concrete shall comply with Table 1 below:

TABLE 1 - CLASSES OF CONCRETE

Class Of Concrete	Min.-Max. SX.Cement per C.Y.	Min. Comp. Strength 28-day psi	Min. Beam Strength 7-day psi ****	Max. Water Cement Ratio Item 2.1.1. (c)(4)	Coarse Aggr. No.
A	5.0	3000	500	6.5	2-3-4
B	4.0	2000	330	8.0	2-3-4
C*	6.0	3600	600	6.0	1-23**
D	3.0	1500	250	11.0	2-3-4
E	6.0	3000	500	7.0	2-3
F	6.5	4200	700	5.5	2-3
H***	6.5-8.0	As specified on plans	N.A.	5.5	3

*Entrained Air.

**No. 1 course aggregate may be used in foundations only (except cased drilled shafts).

***Prestressed Concrete.

****ASTM C 293 (Center Point)

2.15 GROUT

A. Non-Shrink:

1. Use pre-mixed non-shrink, Embeco Pre-Mixed Grout or Embeco Pre-Mixed Mortar by Master Builders Company or equal.

2. Keep water to a minimum for placing by the dry packing method.

B. Grout for Bonding:

1. 1 part cement to 1 1/2 parts sand by weight.

2. Keep water to a minimum.

PART 3 - EXECUTION

3.01 SUBGRADE:

A. Insure subgrade is true to line and grade and compacted as specified.

B. Fill and recompact any ruts or depressions.

C. Check cross section with a template.

D. Place moisture barrier or moisten subgrade prior to placing of concrete. Method to be approved by the ENGINEER.

3.02 FORMS:

A. Provide forms for all concrete work including footings and base slabs.

B. Construct forms so that completed concrete will conform to shapes, lines, grades and dimensions indicated and required.

C. Forms shall be true, plumb and level with reasonably tight joints. Adequately support and brace forms.

D. Place anchors, inserts, bolts, sleeves and other devices indicated or required for the various portions of all the work.

E. Oil temporary forms with non-staining form oil before reinforcing steel is placed.

F. Rough form finish as defined by ACI 301 permitted for concealed concrete.

G. Smooth form finish as defined by ACI 301 permitted for concealed concrete.

H. Provide 3/4 inch chamfer on exposed corners and edges, and 1-foot below ground level.

3.03 REMOVAL OF FORMS:

A. Do not remove forms or supports until concrete has acquired sufficient strength to safely support its own weight and the superimposed loads.

B. Remove formwork for columns, walls, beam sides and other parts not supporting the weight of the concrete as soon as the concrete has hardened sufficiently to resist damage from removal operations.

C. Formwork for slabs, beam soffits and other parts supporting the weight of the concrete shall remain in place until the concrete has reached its specified 28-day strength.

D. Protect concrete from damage prior to acceptance.

E. Prohibit traffic until concrete is at least 10 days old.

F. Cure areas previously covered by forms.

3.04 MIXING CONCRETE:

A. Maintain all equipment, tools, and machinery used for hauling materials and performing any part of the work to insure completion of the work underway without excessive delays for repairs or replacement.

B. Mixing shall be done in a mixer of adequate size and type to produce uniform distribution of the material throughout the mass.

C. The mixer shall have a plate affixed showing the manufacturer's recommended operating data and it shall be operated within the speed and capacity limits stated thereon.

D. The absolute volume of the concrete batch shall not exceed the rated capacity of the mixer.

E. The entire contents of the drum shall be discharged before any materials are placed.

F. Improperly mixed concrete will not be placed.

G. The mixing time shall be in accordance with the recommendations of the mixer manufacturer.

H. Transit Mix Concrete:

1. Sufficient transit mix equipment shall be assigned exclusively to the project as required for continuous operation.

2. Satisfactory evidence shall be furnished so that the delivery of concrete shall be continuous at regular and uniform intervals, without stoppage or interruption.

3. Concrete shall not be placed on the job after a period of 1 hours after the cement has been placed in the mixer, with mixer turning; 30 minutes without mixer tuning.

I. Continuous Volumetric Mix Concrete:

1. A mobile, continuous, volumetric mixer of the rotating puddle type may be used for when approved by ENGINEER.

2. Mixers shall be designed to receive all the concrete ingredients, including admixtures, required by the mix design in a continuous uniform rate and mix them to the required consistency before discharging.

3. The mixers shall have adequate water supply and metering devices.

4. Calibration of these mixers will be required.

3.05 PLACING CONCRETE:

A. The minimum temperature of all concrete at the time of placement shall not be less than 50° F.

B. Clean transporting equipment, reinforcing and embedded items before placing concrete.

C. Batch trucks or paving equipment not permitted on prepared subgrade unless authorized by the ENGINEER based on actual job conditions.

D. Place no concrete until after inspections of forms by ENGINEER.

E. The maximum time interval between the addition of cement to the batch, and the placing of concrete in the forms shall not exceed the following:

Air or Concrete Temperature	Maximum Time
Nonagitated Concrete	
80° F or above (26.6° C)	15 minutes
35° F or 79° F (1.6 to 26.1° C)	30 minutes
Agitated Concrete	
90° F or above (32.2° C)	45 minutes
75° F to 89° F (23.9 to 31.6° C)	60 minutes
35° F to 74° F (1.6 to 23.3° C)	90 minutes

F. Prevent segregation during placing.

G. Consolidate flat work with one pass of mechanical vibrator moving parallel to centerlines. Unusual sections and widths may be hand puddled and finished.

H. Place concrete continuously so that each pour unit will be monolithic in construction and will terminate at expansion, contraction or construction joint. Permit not more than 30 minutes between depositing adjacent batches.

I. Place slab concrete over membrane waterproofing before waterproofing has become damaged or dirty.

J. Concrete placement will not be permitted when impending weather conditions will impair the quality of the work.

K. Slope horizontal surfaces of exterior concrete for drainage.

L. Deposit concrete in forms in horizontal layers not deeper than 24 inches. Avoid inclined construction joints. Place each layer while preceding layer is still plastic to avoid cold joints.

M. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.

N. Do not use vibrators to transport concrete inside of forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to penetrate placed layer of concrete and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. Limit vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

3.06 PLACING CONCRETE IN WATER:

A. Concrete shall be deposited in water only when specified on the plans or with written permission of the ENGINEER.

B. The forms or cofferdams shall be sufficiently tight to prevent any water current passing through the space in which the concrete is deposited.

C. Pump will not be permitted during the concrete placing, nor until it has set for at least 36 hours.

D. The concrete shall be placed with a tremie, closed bottom-dump bucket or other approved method.

E. The concrete shall not be allowed to fall freely though the water nor shall it be disturbed after it has been placed. Its surface shall be kept approximately level during placement.

F. The tremie shall consist of a water-tight tube 14-inches or less in diameter. It shall be constructed so that the bottom can be sealed and opened after it is in place and fully charged with concrete. It shall be supported so that it can be easily moved horizontally to cover all the work area and vertically to control the concrete flow. The lower end of the tremie shall be submerged in the concrete at all times.

G. Bottom-dump buckets used for underwater placing shall have a capacity of not less than one-half cubic yard. It shall be lowered gradually and carefully until it rests upon the concrete already placed and raised very slowly during the upward travel; the intent being to maintain still water at the point of discharge and to avoid agitating the mixture.

H. The placing operations shall be continuous until the work is complete.

I. Unless otherwise specified all concrete placed under water, except seal concrete, shall contain an additional sack of cement per cubic yard.

3.07 JOINTS:

A. CONTRACTOR:

1. Extend entirely across flat slabs at locations shown.

2. Location where not shown; maximum spacing is:

a. Driveways: 10'.
b. Sidewalks: 4'.

c. Other flat slabs: 20 times slab thickness.

3. Saw depth not less than 1/4 slab thickness.;

B. Expansion:

1. Install where shown on the plans.

2. Location where not shown: all structures and features which project through, into or against slab.

3. Install according to manufacturer's recommendations, set material securely before placing concrete.

4. Install 1 inch width unless shown otherwise.

C. Filling Joints:

1. Fill not later than 14 days after sawing.

2. Fill immediately following cleaning.

3. Fill to 1/8" of surface.

4. Remove excess while material is still pliable.

5. Refill low areas where necessary.

6. Omit filling sidewalk joints.

3.08 FINISHING EXTERIOR FLAT WORK:

A. Strike off and float as required.

B. Check surface with ten foot straight edge, maximum variance allowed - 1/8".

C. Drag concrete surface longitudinally with double thickness burlap drag after completion of straight edging unless noted otherwise.

D. Use edger on edges of slab.

E. Use hand finishing only when approved by ENGINEER.

3.09 FINISHING OTHER CONCRETE:

A. Interior floors: smooth, steel-trowled finish; use edger on exposed edges. Grind smooth defects which would telegraph through applied finish flooring.

B. Exterior walks and steps lightly broomed finish transverse to traffic flow; use edger on exposed edges.

C. Other Surfaces:

1. Remove fins, projections and loose material.

2. Clean surfaces of form oil.

3. Patch honeycomb, aggregate pockets, voids and holes as follows:

a. Chip out until sound concrete is exposed to minimum depth of 1 inch.

b. Prepare patching mortar with approximately two parts of normal Portland Cement, one part white cement, nine parts fine aggregate; vary proportions of aggregate as necessary to match color of adjacent concrete.

4. Fill holes left by form ties to within 1 inch of surface with non-shrink grout. Fill remainder with patching mortar specified hereinbefore.

5. Apply grout-cleaned finish to all exposed vertical surfaces. Wet surface and rub grout on surfaces with rubber or cork float. Scrape off excess grout and finish with brick rubbing or as approved by ENGINEER.

D. Coordinate required finish with ENGINEER.

3.10 CURING:

A. CONTRACTOR shall inform the ENGINEER fully of the methods and procedures proposed for curing; shall provide proper equipment and material in adequate amounts; and shall have approval of the proposed method, equipment and material prior to placing concrete.

B. All concrete shall be cured for a period of 4 curing days except as noted herein.

EXCEPTIONS TO 4-DAY CURING

Description	Required Curing
Upper Surfaces of Bridge Roadway, Median and Sidewalk Slabs and Top Slabs of Direct Traffic Culverts	8 Curing Days

A curing day is defined as a calendar day when the ambient temperature, taken in the shade away from artificial heat, is above 50 degrees Fahrenheit (10°C) for at least 19 hours, or the ambient temperature is 50 degrees or less; and if satisfactory provisions are made to maintain the temperature at all surfaces of the concrete above 40 degrees Fahrenheit (4.4°C) for the entire 24 hours.

C. Form Curing: when forms are left in contact with the concrete, other curing methods shall not be required except for cold-weather protection.

D. Water Curing: all exposed surfaces of the concrete shall be kept wet continuously for the required curing time. The water used for curing shall meet requirements for concrete mixing water.

1. Wet Mat:

   a. Cotton mats shall be used for this curing method. The mats shall not be placed in contact with the concrete until such time that damage shall not occur to the surfaces

   b. Damp burlap blankets made from 9-ounce stock may be placed on the damp concrete surface for temporary protection prior to the application of the cotton mats.

   c. The mats may be placed dry and wetted down after placement.

   d. Mat curing, expect for continuous placements, shall commence not later than three hours after finishing of the roadway slab.

   e. The mats shall be weighted down adequately to provide continuous contact with all concrete surfaces where possible.

   f. The surfaces of the concrete shall be kept wet for the required curing time.

   g. Surfaces which cannot be cured by contact shall be enclosed with mats, anchored positively to the forms, or to the ground, so that outside air cannot enter the enclosure. Sufficient moisture shall be provided inside the enclosure to keep all surfaces of the concrete wet.

2. Water Spray. This method shall be accomplished by overlapping sprays or sprinklers, so that all unformed surfaces are kept continuously wet.

3. Ponding. This method requires the covering of the surface with a minimum of two inches (5 cm) of clean granular material, kept wet at all times; or water to a minimum depth of one inch (2.5 cm). Satisfactory provisions shall be made to provide a dam to retain the granular material or water.

E. Membrane Curing:

1. Unless otherwise shown on the plans, Type 2 membrane curing compound may be used where permitted.

2. Membrane shall be applied in a single, uniform coating at the rate of coverage recommended by the manufacturer and as

approved by the ENGINEER, but not less than nine gallons per 210-feet (.0038M3 63M) of area. Tests for acceptance shall be at this specified rate.

3. Membrane curing shall not be applied to dry surfaces; but shall be applied to horizontal surfaces just before free moisture has disappeared.

4. Formed surfaces and surfaces which have been given a first rub shall be dampened and shall be moist at the time of application of the membrane.

STRUCTURE UNIT DESCRIPTION	REQUIRED		PERMITTED	
	Water for Complete Curing	Membrane for Interim Curing	Water for Complete Curing	Membrane for Interim Curing
1. Upper surfaces of bridge roadway; median, and sidewalk slabs; top slabs of direct traffic culverts; top surface of any concrete unit upon which concrete is to be placed and bonded at a later interval (stub walls, risers, etc.). Other super-structure concrete (curbs wing-walls, parapet walls, etc.)	X	X (Resin Basin)		
2. Top surface of precast and/or prestressed piling	X	X		
3. All substructure concrete, culverts, box sewers, inlets, manholes, retaining walls, riprap.			*X	*X

*Polyethylene sheeting or burlap polyethylene mats fastened to prevent outside air from entering shall be considered equivalent to water or membrane curing per this item.

5. When membrane is used for complete curing, the film shall remain unbroken for the minimum curing period specified. Membrane which is damaged shall be corrected immediately by reapplication of membrane.

3.11 TESTING:

A. Furnish at least three cylinders or beams from each 40 cubic yard, or portion there of for test purposes unless otherwise directed by ENGINEER. Test one cylinder at 7 days, test second cylinder at 28 days and test third cylinder only if needed for confirmation of compression strength.

3.12 MISCELLANEOUS CONCRETE ITEMS:

A. Filling-in: fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Use non-shrink grout as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

B. Equipment bases and foundations: provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of the manufacturer furnishing machines and equipment. Use non-shrink grout as shown on plans.

C. Steel pan stairs: provide concrete fill for steel pan stair treads and landing and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp and finish concrete surfaces as scheduled.

D. Reinforced masonry: provide concrete grout for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. Cast-in-place concrete for the work shown on the plans shall be measured by the cubic yard as specified in the plans and contract.

4.02 PAYMENT:

A. The accepted quantities of cast-in-place concrete shall be paid for at the unit bid price per cubic yard.

B. The unit bid price shall be full compensation for furnishing, hauling, and mixing all concrete materials, including trial batches; placing, curing and finishing all concrete; for all grouting and joints; furnishing and placing all expansion and construction joints, except as provided in the plans; furnishing and placing metal flashing strips and waterstops; and for all forms and false-work, labor, tools, equipment and incidentals necessary to complete the work.

C. The preceding provisions for payment shall not be interpreted to provide payment for concrete in railing, piling, precast pre-stressed concrete units or other concrete items for which provision is otherwise made in the contract.

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

SECTION 03330

REINFORCING STEEL

PART 1 - GENERAL

1.01 This work shall consist of the furnishing and placing of reinforcing steel, deformed and smooth, of the size and quantity indicated and in accordance with these specifications.

PART 2 - PRODUCTS

2.01 BARS:

A. Bar reinforcement shall be deformed and shall conform to ASTM A 615, A 616, Grades 40, 60, or 75 and shall be open-hearth, basic oxygen or electric furnace new billet steel, unless otherwise indicated. Large diameter new billet steel (Nos. 14 and 18), Grade 75, will be permitted for straight bars only.

B. Where bending of bar sizes No. 14 or No. 18 of Grades 40 or 60 is required, bend testing shall be performed on representative specimens as described for smaller bars in the applicable ASTM specification. The required bend shall be 90 degrees at a minimum temperature of 60°F around a pin having a diameter of 10 times the nominal diameter of the bar ad shall be free of cracking.

C. Spiral reinforcement shall be either smooth or deformed bars or wire of the minimum diameter indicated. Bars for spiral reinforcement shall comply with ASTM A 675, A 615 or A 617, Wire shall comply with ASTM A 82. The minimum yield strength for spiral reinforcement shall be 40,000 psi.

D. In cases where the provisions of this item are in conflict with the provisions of the ASTM Designation to which reference is made, the provisions of this item shall govern.

E. Report of chemical analysis showing the percentages of carbon, manganese, phosphorus and sulfur will be required for all reinforcing steel when it is to be welded, except for drill shafts. No tack welding will be allowed. All welding shall conform to the requirements of AWS D-1-72.

F. The nominal size and area and the theoretical weight (lbs.) of reinforcing steel bars covered by these specifications are as follows:

Bar Size Number	Nominal Diameter Inches	Nominal Area Square Inches	Weight Per Linear Foot
2	0.250	0.05	0.167
3	0.375	0.11	0.376
4	0.500	0.20	0.668
5	0.625	0.31	1.043
6	0.750	0.44	1.502
7	0.875	0.60	2.044
8	1.000	0.79	2.670
9	1.128	1.00	3.400
10	1.270	1.27	4.303
11	1.410	1.56	5.313
14	1.693	2.25	7.65
18	2.257	4.00	13.60

G. Smooth bars, larger than No. 4, may be steel conforming to the above or may be furnished in any steel that meets the physical requirements of ASTM A36.

H. Smooth, round bars shall be designated by size number through No. 4. Smooth bars above No. 4 shall be designated by diameter in inches.

2.03 WELDED WIRE FABRIC:

A. Wire for fabric reinforcement shall be cold-drawn from rods hot-rolled from open-hearth, basic oxygen or electric furnace billet. Wire shall conform to the requirements of the standard Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement, ASTM A 82 or A496. Wire fabric, when used as reinforcement, shall conform to ASTM A 185 or A 497.

B. When wire is ordered by size numbers, the following relations between size number, diameter in inches and area shall apply unless otherwise indicated:

SIZE W NUMBER	NOMINAL DIAMETER (INCH)	NOMINAL AREA SQUARE INCHES
31	0.628	0.310
30	0.618	0.300
28	0.597	0.280
26	0.575	0.260
24	0.553	0.240
22	0.529	0.220

(contd.)

SIZE W NUMBER	NOMINAL DIAMETER (INCH)	NOMINAL AREA SQUARE INCHES
20	0.505	0.200
18	0.479	0.180
16	0.451	1.160
14	0.391	0.140
12	0.391	0.120
10	0.357	0.100
8	0.319	0.080
7	0.299	0.070
6	0.276	0.060
5.5	0.265	0.055
5	0.252	0.050
4.5	0.239	0.045
4	0.226	0.040
3.5	0.211	0.035
3	0.195	0.030
2.5	0.178	0.025
2	0.160	0.020
1.5	0.138	0.015
1.2	0.124	0.012
1	0.113	0.010
0.5	0.080	0.005

C. When deformed wire is required, the size number shall be preceded by D and for smooth wire the prefix W shall be shown.

2.04 CHAIRS AND SUPPORTS:

A. Chairs and Supports shall be steel, precast mortar or concrete blocks cast in molds meeting the approval of the ENGINEER of sufficient strength to position the reinforcement as indicated when supporting the dead load of the reinforcement, the weight of the workers placing concrete and the weight of the concrete bearing on the steel.

B. Chairs shall be plastic coated when indicated.

C. Chair types and uses shall be as follows:

Chair Types and Applicable Uses

Structural or Architectural Elements (columns, beams, walls, slabs) exposed to weather, not subjected to sand blasting water blasting or grinding.	Galvanized steel or steel chairs with plastic coated feet.
Structural or Architectural Elements exposed to weather and subject to sand blasting, water blasting or grinding.	Stainless steel chairs.
Structural or Architectural Elements not exposed to weather or corrosive conditions.	Uncoated steel chairs.
Slabs and grade beams cast on grade.	Steel chairs with a base with 9 inch2 minimum area or sufficient area to prevent the chair from sinking into fill or sub-grade. Precast mortar or concrete blocks meeting the requirements of this item may be used.

2.05 BENDING:

A. The reinforcement shall be bent cold, true to the shapes indicated. Bending shall preferably be done in the shop.

B. Irregularities in bending shall be cause for rejection.

C. Unless otherwise indicated, the inside diameter of bar bends, in terms of the nominal bar diameter (d), shall be as follows:

1. Bends of 90 degrees and greater in stirrups, ties and other secondary bars that enclose another bar in the bend:

Bar Number	Grade 40	Grade 60
3, 4, 5	3d	4d
6, 7, 8	4d	5d

2. All bends in main bars and in secondary bars not covered above:

Bar Number	Grade 40	Grade 60	Grade 75
3 thru 8	6d	6d	--
9, 10	8d	8d	--
11	8d	8d	8d
14, 18	10d	10d	--

2.06 STORAGE:

A. Steel reinforcement shall be stored above the surface of the ground upon platforms, skids or other supports and shall be protected as far as practicable from mechanical injury and surface deterioration caused by exposure to conditions producing rust.

B. When placed in the work, reinforcement shall be free from dirt, paint, grease, oil or other foreign materials. Reinforcement shall be free from injurious defects such as cracks and laminations.

C. Rust, surface seams, surface irregularities or mill scale will not be cause for rejection, provided the minimum dimensions, cross sectional area ad tensile properties of a hand wire brushed specimen meets the physical requirements for the size and grade of steel indicated.

2.07 SPLICES:

A. No splicing of bars, except when indicated or specified herein, will be permitted without written approval of the ENGINEER.

B. No substitution of bars will be allowed without the approval of the ENGINEER. Any splicing of substituted bars shall conform to Table 03330-1.

C. Splices not indicated will be permitted in slabs no more than 15 inches in thickness, columns, walls and parapets, but not included for measurement, subject to the following:

1. Splices will not be permitted in bars 30 feet or less in plan length.

2. For bars exceeding 30 feet in plan length, the distance center to center of splices shall not be less than 30 feet minus 1 splice length, with no more than 1 individual bar length less than 10 feet.

3. Splices not indicated, but permitted hereby, shall conform to Table 03330-1. The specified concrete cover shall be maintained at such splices and the bars placed in contact and securely tied together.

Table 03330-1

Minimum Lap Requirements

Bar Number	Grade 40	Grade 60
3	1 foot 0 inches	1 foot 0 inches
4	1 foot 2 inches	1 foot 9 inches
5	1 foot 5 inches	2 feet 2 inches
6	1 foot 9 inches	2 feet 7 inches
7	2 feet 4 inches	3 feet 5 inches
No. 8	3 feet 0 inches	4 feet 6 inches
No. 9	3 feet 10 inches	5 feet 8 inches
No. 10	4 feet 10 inches	7 feet 3 inches
No. 11	5 feet 11 inches	8 feet 11 inches

D. Spiral steel shall be lapped a minimum of 1 turn. Bar No. 14 and No. 18 may not be lapped.

E. Welding of reinforcing bars may be used only when indicated or as permitted herein. All welding operations, processes equipment, materials, workmanship and inspection shall conform to the requirements indicated. All splices shall be of such dimension and character as to develop the full strength of the bar being spliced.

F. End preparation for butt welding reinforcing bars shall be done in the field, except Bar No. 6 and larger shall be done in the shop. Delivered bars shall be of sufficient length to permit this practice.

G. For box culvert extensions with less than 1 foot of fill, the existing longitudinal bars shall have a lap with the new bars as shown in Table 03330-1.

H. For box extensions with more than 1 foot of fill, a minimum lap of 6 inches will be required.

I. Unless otherwise indicated, dowel bars transferring tensile stress shall have a minimum embedment equal to the minimum lap requirements shown in Table 03330-1.

J. Shear transfer dowels shall have a minimum embedment of 12 inches.

PART 3 - EXECUTION

3.01 PLACING:

A. Reinforcement shall be placed as near as possible in the position indicated. Unless otherwise indicated, dimensions shown for reinforcement are to the centers of the bars.

B. In the plane of the steel parallel to the nearest surface of concrete, bars shall not vary from plan placement by more than 1/12 of the spacing between bars. In the plane of the steel perpendicular to the nearest surface of the concrete, bars shall not vary from plan placement by more than 1/4 inch.

C. Cover of concrete to the nearest surface of steel shall be as follows:

Item		Minimum Cover, Inches
1.	Concrete cast against and permanently exposed to earth.	3
2.	Concrete exposed to earth or weather:	
	Bar No. 6 through 18 bars	2
	Bar No. 5, W31 or D31 wire and smaller	1 1/2
3.	Concrete not exposed to weather or in contact with ground:	
	Slabs, walls, joists:	
	Bar No. 14 and 18	1 1/2
	Bar No. 11 and smaller	1
	Beams, columns:	
	Primary reinforcement, ties, stirrups, spirals	1 1/2
	Shells, folded plate members:	
	Bar No. 6 and larger	1
	Bar No. 5, W31 or D31 wire, and smaller	1

D. Vertical stirrups shall always pass around the main tension members and be attached securely thereto. The reinforcing steel shall be spaced its required distance from the form surface by means of approved galvanized metal spacers, metal spacers with plastic coated tips, stainless steel spacers, plastic spacers or approved precast mortar or concrete blocks. For approval of plastic spacers on a project, representative samples of the plastic shall show no visible indications of deterioration after immersion in a 5 percent solution of sodium hydroxide for 120 hours.

E. All reinforcing steel shall be tied at all intersections, except that where spacing is less than 1 foot in each direction, alternate intersections only need by tied. For reinforcing steel cages for other structural members, the steel shall be tied at enough intersections to provide a rigid cage of steel. Mats of wire fabric shall overlap each other 1 full space as a minimum to maintain a uniform strength and shall be tied at the ends and edges.

F. Where prefabricated deformed wire mats are specified or if the CONTRACTOR requests, welded wire fabric may be substituted for a comparable area of steel reinforcing bar plan, subject to the approval of the ENGINEER.

G. A suitable tie wire shall be provided in each block, to be used for anchoring to the steel. Except in unusual cases and when specifically authorized by the ENGINEER, the size of the surface to be placed adjacent to the forms shall not exceed 2 1/2 inches square or the equivalent thereof in cases where circular or rectangular areas are provided. Blocks shall be cast accurately the thickness required and the surface to be placed adjacent to the forms shall be a true plane, free of surface imperfections.

H. Reinforcement shall be supported and tied in such a manner that sufficiently rigid case of steel is provided. If the cage is not adequately supported to resist settlement or floating upward of the steel, overturning of truss bars or movement in any direction during concrete placement, permission to continue concrete placement will be withheld until corrective measures are taken. Sufficient measurements shall be made during concrete placement to insure compliance with the above.

I. No concrete shall be deposited until the ENGINEER has reviewed the placement of the reinforcing steel and all mortar, mud, dirt, etc., shall be cleaned from the reinforcement, forms workers' boots and tools.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. The measurement of quantities of reinforcement furnished and placed will be based on the calculated weight of the steel actually placed as indicated, with no allowance made for added bar lengths for splices requested by the CONTRACTOR nor for extra steel used when bars larger than those indicated or with a higher grade of steel are substituted with the permission of the ENGINEER.

B. Tie wires and supporting devices will not be included in the calculated weights.

C. The calculated weight of bar reinforcement will be determined using the theoretical bar weight set forth in this item.

D. Measurement required by a change in design will be computed as described above for the actual steel required to complete the work.

4.02 PAYMENT:

A. The accepted quantities of reinforcing steel will be paid for at the contract unit bid price per pound complete in place.

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

C. Compensation, whether by contract pay item or incidental work, will be for furnishing, bending, fabricating, welding and placing reinforcement, for all clips, blocks, metal spacers, ties, chairs, wire or other materials used for fastening reinforcement in place and for all tools, labor, equipment and incidentals necessary to complete the work.

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

SECTION 09100

CONSTRUCTION TRAFFIC CONTROL

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

A. This item shall consist of the construction, manipulation, maintenance and removal, if required, of detours of the length and to the lines, grades, and typical sections indicated and providing for installing, moving, replacing, maintaining, cleaning and removing upon completion of the work, as required, all detour markers, signs, barricades and other devices used in traffic control and handling at the construction site as indicated or as directed by the ENGINEER.

B. This item shall also consist of providing, installing, moving, replacing, maintaining, cleaning and removing temporary or permanent street closure barricades, signs or other devices required to handle the traffic in conformance with the current edition of the Texas Manual of Uniform Traffic Control Devices for Street and Highways and as indicated or directed by the ENGINEER.

PART 2 - PRODUCTS

2.01 CONSTRUCTION TRAFFIC CONTROL SIGNS:

A. Construction traffic control signs shall conform to the provisions of Section 9000 except as noted in the plans or as directed by the ENGINEER.

B. Construction traffic control signs used herein shall be fabricated using sheeting conforming to the requirements of Table 9000-3.

C. The substrate for construction signs need only be sufficiently durable to last the life of the project and sufficiently rigid to hold the sheeting in a flat plane.

2.02 SIGN SUPPORTS:

A. Supports for construction traffic control signs shall be grade #2 fir or yellow pine, pressure treated with pentachlorophenol.

B. Supports shall have a minimum nominal size of 4-inches x 4-inches and conform to the details shown on the plans.

2.03 PORTABLE SIGN SUPPORT:

A. Materials for portable sign supports shall comply with the details shown on the plans. Portable sign supports other than those shown on the plans shall be submitted to the Project Manager for approval prior to use.

2.04 BARRICADES:

A. Barricades shall be classified as Type I, Type II, or Type III and shall comply with the details shown on the plans and the TMUTCD.

B. Barricade rails shall be fabricated using S4S grade #2 fir or yellow pine and reflectorized sheeting conforming to the requirements shown in Table 9000-3.

2.05 VERTICAL PANELS:

A. Materials for vertical panels shall conform to the details shown on the plans. Vertical panels shall be reflectorized with orange and white reflective sheeting or tape in accordance with the requirements of the TMUTCD and Table 9000-3.

2.06 CONSTRUCTION TRAFFIC MARKINGS:

A. Construction traffic markings shall comply with Section 09990 and the details shown in the plans.

2.07 ABBREVIATED PAVEMENT MARKINGS FOR CONSTRUCTION:

A. The pavement-marking material shall consist of an adhesive-backed reflective tape which can be applied to the pavement. Markings shall be of good appearance, have straight, unbroken edges and have a color that complies with all federal regulations.

1. Color

a) The markings, as well as retroreflected light from the markings, shall be white or yellow as indicated.

2. Visibility

a) The pavement markings (during daylight hours) shall be distinctively visible for a minimum of 300 feet unless sight distance is restricted by geometric roadway features.

b) The pavement markings (when illuminated by automobile low beam headlights at night) shall be distinctly visible for a minimum of 160 feet unless sight distance is restricted by geometric features.

c) The above day and night visibility requirements shall be met when viewed from an automobile traveling on the roadway.

2.08 CHANNELIZATION DEVICES:

A. Barrels

1. Barrels shall be of metal or nonmetal composition approved by the ENGINEER and of 30 to 55 gallon capacity. Only one size may be used on the project. The barrels shall be reflectorized with orange and white reflective sheeting or tape in accordance with the requirements of TMUTCD and Table 9000-3. The markings on the barrels shall be horizontal, circumferential, orange and white reflectorized stripes 4-inches to 8-inches wide. There shall be a minimum of 55 alternating orange and white stripes on each barrel. Barrels shall also conform to the details shown on the plans.

2. Type "B" barrels shall be equipped with either Type "A" low intensity or Type "C" steady-burn warning lights complying with the provisions to TMUTCD and the ITE standard for flashing and steady-burn lights. The use warning lights shall be as directed by the ENGINEER.

B. Traffic Cones

1. Traffic cones shall conform to the details shown on the plans.

C. Tubular Traffic Markers

1. Post

a) The post shall be of a thermoplastic or pliable elastomer composition meeting the manufacturer's requirements.

b) Dimensions:

Outside Diameter.....2.23 inches to 4 inches
Wall Thickness.....0.125 inch minimum
Length.....18 to 36 inches
Color.....Orange

2. Base

a) The base shall be of a thermoplastic or pliable elastomer composition meeting the manufacturer's requirements.

b) Dimensions:

Height.....1/2 to 2 inches
Outside Diamete.....7 to 12 inches
Color.....black or same color as post

3. Assembly Units

a) Assembly units which are inherent with the particular marker shall be as per manufacturer's recommendations.

4. Adhesives

a) Adhesive shall be epoxy type (permanent installation or butyl type (temporary installation) as per manufacturer's recommendations.

b) Other methods approved by the ENGINEER prior to initiating the work may be used; however, said approval does not abrogate the CONTRACTOR'S responsibility of effecting the temporary or permanent installation.

5. Reflectorization

a) If used at night, tubular traffic markers shall have two 3-inch, circumferential reflective bands, no more than 2-inches from the top with no more than 6-inches separating the bands. Reflective material shall be SIA-250 or higher sheeting conforming to the provisions of Section 9000. The color of reflective material shall be as shown in the plans.

2.09 SEQUENTIAL ARROW DISPLAYS

A. Sequential arrow displays shall be sequentially lighted and roof or trailer mounted. The minimum panel size shall be 30-inches high an 54-inches wide. The display shall have 22 hooded sealed beam amber lamps rated at a maximum intensity of 8800 candlepower.

B. Light intensity shall be adjustable by dimmer switch. The operating modes shall be as follows:

1. Pass Left. 3 chevrons of 5 lamps each sequence in right to left pattern 40 to 50 times per minute.

2. Pass Right. 3 chevrons of 5 lamps each sequence in left to right pattern 40 to 50 times per minute.

3. Pass Either Side. The two outermost chevrons on each end of the panel pointing like arrowheads and flashing 40 to 50 times per minute with crossing row of lamps burning continuously.

4. Warning. 4 lamps, one at each corner of the panel, flashing 40 to 50 times per minute.

2.10 MATERIALS FOR CONSTRUCTION DETOURS

A. Flexible Base

1. Flexible base shall conform to Section 02601.

B. Asphalt Treated Base

1. Asphalt treated base shall conform to Section 02604.

C. Prime Coat

1. Prime Coat shall conform to Section 02610.

D. Tack Coat

1. Tack Coat shall conform to Section 02620.

E. Seal Coat

1. Seal Coat shall conform to Section 02617 or Section 02645.

F. Hot Mix Asphaltic Concrete Pavement

1. Hot Mix shall be Type D conforming to Section 02612.

G. Seeding

1. Seeding shall conform to Section 0000.

PART 3 - EXECUTION

3.01 CONSTRUCTION TRAFFIC CONTROL SIGNS AND SIGN SUPPORTS:

A. Construction traffic control signs and sign supports shall be installed at locations noted on the plans in conformance with the TMUTCD or as directed by the ENGINEER.

3.02 PORTABLE SIGN SUPPORTS:

A. Portable sign supports for traffic control devices for detours shall be furnished by the CONTRACTOR, shall be installed at the locations shown on the plans, unless otherwise shown on the plans, and shall remain the property of the CONTRACTOR.

B. Unless otherwise specified, portable sign supports shall be of the dimensions shown on the plans.

3.03 BARRICADES:

A. Barricades shall be installed in conformity with the details noted on the plans or as directed by the ENGINEER.

3.04 VERTICAL PANELS:

A. Vertical panels shall be installed in conformity with the details noted on the plans or as directed by the ENGINEER.

3.05 CONSTRUCTION TRAFFIC MARKINGS:

A. Construction traffic markings shall be installed in conformity with Section 9990 and the details shown on the plans or as directed by the ENGINEER.

3.06 ABBREVIATED PAVEMENT MARKING FOR CONSTRUCTION:

A. Abbreviated markings meeting all specification requirements shall be in place on all roadways on which traffic is allowed and where suitable standard pavement marking is not in place. The transverse location of the line(s) formed by the markings shall be as determined by the ENGINEER.

B. Unless otherwise indicated, the abbreviated markings shall be placed as follows:

Condition	Spacing	Length of Stripe
Straight	40 feet approximately	48 inch
Curve greater than 2 degrees	20 feet maximum	48 inch
Curve less than or equal 2 degrees	40 feet maximum	48 inch

C. Pavement markings shall be a minimum of 3 7/8 inches wide. Length and spacings will be in accordance with these specifications.

D. The spacing of stripes may be modified by the ENGINEER. However, the maximum spacing specified above shall not be exceeded in any case.

E. The CONTRACTOR will be responsible for maintaining the abbreviated pavement markings until standard pavement markings are in place.

F. Abbreviated pavement markings shall be removed after all permanent markings have been place.

3.07 CHANNELIZATION DEVICES:

A. Type "A" Barrels

1. Type "A" barrels shall be used during daylight hours only and shall not be equipped with warning lights of any type.

B. Type "B" Barrels

1. Type "B" barrels shall be equipped with warning lights. Type "B" barrels shall be used during nighttime hours only, unless otherwise shown on the plans or directed by the Project Manager.

2. The term "daylight hours" refers to those hours between dawn and dusk. The term "nighttime hours" refers to those hours between dusk and dawn.

C. Traffic Cones

1. Traffic cones shall be installed in conformity with the plans and the TMUTCD or as directed by the ENGINEER.

D. Tubular Traffic Markers

1. The metal, concrete, or bituminous surface where the tubular traffic markers are to be placed shall be thoroughly cleaned.

2. Metal and concrete surfaces shall be sandblasted or wire brushed. Bituminous surfaces shall be cleaned in accordance with manufacturer's recommendations.

3. All loose sand, dust and other deleterious debris from cleaned mounting surfaces shall be removed.

4. Tubular traffic markers shall be installed in conformity with details and at locations shown on the plans or as directed by the ENGINEER and in accordance with the manufacturer's recommendation.

5. In the event that removal of an installation (temporary or permanent) is effected and the metal, concrete, or bituminous surface is damaged the CONTRACTOR shall repair and otherwise restore said surface to its original condition at no additional cost to the City.

6. All defective post(s), base(s), assembly unit(s), adhesive(s), or reflective sheeting contributing to the detriment of the intended function of the tubular traffic markers shall be replaced by the CONTRACTOR at no additional cost to the City.

E. Channelization devices shall be and installed in accordance with the details shown on the plans, except that barrels shall be as noted herein.

3.08 SEQUENTIAL ARROW DISPLAY:

A. Sequential arrow displays shall be used according to the requirements shown on the plans and shown in TMUTCD.

3.09 CONSTRUCTION DETOURS:

A. The detours shall be constructed at the locations and to the lines and grades indicated and it shall be the entire responsibility of the CONTRACTOR to provide for the passage of traffic in comfort and safety without creating a dust problem.

3.10 CONSTRUCTION METHODS:

A. Prior to commencing construction, suitable "Construction Traffic Control" devices shall be installed to protect the workers and the public.

B. The CONTRACTOR shall be responsible for installing all markers, signs to The Texas Manual on Uniform Traffic Control Devices and/or as indicated. If, in the opinion of the ENGINEER, additional markers, signs or barricades are needed in the interest of safety, the CONTRACTOR will install such as are required or as directed by the ENGINEER.

3.11 MAINTENANCE:

A. It shall be the CONTRACTOR'S responsibility to maintain, clean, move and replace if necessary, barricades, signs and traffic handling devices during the time required for construction of the project. Permanent barricades shall be constructed as required after the completion of the street by drilling holes to place the posts and concrete foundations. Foundation concrete shall be cured before the rails are attached.

B. When no longer needed all temporary barricades, signs and traffic handling devices shall be removed and the area restored to its original condition or as directed by the ENGINEER.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. Measurement of various items described in this specification complete in place will be made as follows:

1. Construction traffic control sign assemblies, consisting of the applicable signage mounted on either sign supports or portable sign supports, shall be measured per each or lump sum.

2. Barricades shall be measured by the type per each.

3. Vertical panels shall be measured per each. Supports required for vertical panels will not be measured for payment but will be considered incidental to the completion of the work.

4. Construction traffic markings shall be measured per linear foot.

5. Abbreviated pavement markings for construction shall be measured per linear foot.

6. Channelization devices shall be measured per each for the category and type shown.

7. Sequential arrow display shall be measured per each.

8. Construction detours shall be measured per each or considered incidental to completion of construction.

9. Construction traffic control plan, consisting of any or all of the items described herein, shall be measured lump sum or incidental to completion of construction.

4.02 PAYMENT:

A. The accepted quantities of construction traffic control devices shall be paid at the contract unit bid price per the unit of measurement noted above.

B. Compensation will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

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

SECTION 19000

TRENCH PROTECTION SYSTEM

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK

A. This work shall consist of shoring, bracing, bank stabilization, bank sloping, providing trench boxes or trench shields or other equivalent means to protect employees from the effects of moving ground or cave-ins for all trenches 5-feet or more in depth.

B. All working shall be done in conformance with OSHA Safety and Health Standards (29 CFR 1926/1010 Chapter XVII Subpart P - Excavations, Trenching and Shoring).

1.02 DEFINITIONS APPLICABLE TO THIS SPECIFICATION

A. "Accepted engineering requirements (or practices)" - Those requirements or practices which are compatible with standards required a Registered Professional Engineer, or other duly licensed or recognized authority.

B. "Angle or repose" - The greatest angle above the horizontal plane at which a material will lie without sliding.

C. "Bank" - A mass of soil rising above a digging level.

D. "Belled excavation" - A part of shaft or footing excavation, usually near the bottom and bell-shaped; i.e., an enlargement of the cross section above.

E. "Braces (trench)" - The horizontal members of the shoring system whose ends bear against the uprights or stringers.

F. "Excavation" - Any manmade cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal and producing unsupported earth conditions by reasons of the excavation. If installed forms or similar structures reduce the depth-to-width relationship, an excavation may become a trench.

G. "Faces" - See paragraph (k) of this section.

H. "Hard compact soil" - All earth materials not classified as running or unstable.

I. "Kickouts" - Accidental release or failure of a shore or brace.

J. "Sheet pile" - A pile, or sheeting, that may form one of the continuous interlocking line, or a row of timber, concrete, or steel piles, driven in close contact to provide a tight wall to resist the lateral pressure of water, adjacent earth, or other materials.

K. "Sides," "Walls," or "Faces" - The vertical or inclined earth surfaces formed as a result of excavation work.

L. "Slope" - The angle with the horizontal at which a particular earth material will stand indefinitely without movement.

M. "Stringers" (wales) - The horizontal members of a shoring system whose sides bear against the uprights or earth.

N. "Trench" - A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15-feet.

O. "Trench" - A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15-feet.

P. "Trench shield" - A shoring system composed of steel plates and bracing, welded or bolted together, which support the walls of a trench from the ground level to the trench bottom and which can be moved along as work progresses.

Q. "Unstable soil" - Earth material, other than running, that because of its nature of the influence of related conditions, cannot be depended upon to remain in place without extra support, such as would be furnished by a system of shoring.

R. "Uprights" - the vertical members of a shoring system.

S. "Wales" - See paragraph (m) of this section.

T. "Walls" - See paragraph (k) of this section.

PART 2 – PRODUCTS

(OMITTED INTENTIONALLY)

PART 3 - EXECUTION

3.01 GENERAL PROTECTION REQUIREMENTS

A. Walkways, runways, sidewalks shall be kept clear of excavated material or other obstructions and no sidewalks shall be undermined unless shored to carry a minimum live load of one hundred and twenty-five (125) pounds per square foot.

B. If planks are used for raised walkways, runways, or sidewalks they shall be laid parallel to the length of the walk and fastened together against displacement.

C. Planks shall be uniform in thickness and all exposed ends shall be provided with beveled cleats to prevent tripping.

D. Raised walkways, runways, and sidewalks shall be provided with plank steps on strong stringers. Ramps, used in lieu of steps, shall be provided with cleats to insure a safe walking surface.

E. All employees shall be protected with personal protective equipment for the protection of the head, eyes, respiratory organs, hands, feet, and other parts of the body as set forth in OSHA Standards.

F. Employees exposed to vehicular traffic shall be provided with and shall be instructed to wear warning vests marked with or made or reflectorized or high visibility material.

G. Employees subjected to hazardous dusts, gases, fumes, mists or atmospheres deficient in oxygen, shall be protected with approved respiratory protection as set forth in OSHA Standards.

H. No person shall be permitted under loads handled by power shovels, derricks, or hoists. To avoid injury from any spillage employees shall be required to stand away from any vehicle being loaded.

I. The CONTRACTOR shall provide daily inspections of excavations shall be made by a competent person. If evidence of possible cave-ins or slides is apparent, all work in the excavation shall cease until the necessary precautions have been taken to safeguard the employees.

3.02 SPECIFIC EXCAVATION REQUIREMENTS

A. Prior to opening an excavation, effort shall be made to determine whether underground installations, i.e., sewer, telephone, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation.

B. Trees, boulders, and other surface encumbrances, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.

C. The walls and faces of all excavations in which employees are exposed to danger from moving ground shall be guarded by a shoring system, sloping of the ground, or some other equivalent means.

D. Excavations shall be inspected by a competent person after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased if necessary.

E. The determination of the angle of repose and design of the supporting system shall be based on careful evaluation of pertinent factors such as: Depth of cut; possible variation in water content of the material while the excavation is open; anticipated changes in materials from exposure to air, sun, water, or freezing; loading imposed by structures, equipment, overlying materials, or stored material; and vibration from equipment, blasting, traffic, or other sources.

F. Supporting systems, i.e., piling, cribbing, shoring, etc., shall be designed by a qualified person and meet accepted engineering requirements. When tie rods are used to restrain the top of sheeting or other retaining systems, the rods shall be securely anchored well back of the angle of repose. When tight sheeting or sheets piling is used, full loading due to ground water table shall be assumed, unless prevented by weep holes or drains or other means. Additional stringers, ties, and bracing shall be provided to allow for any necessary temporary removal of individual supports.

G. All slopes shall be excavated to at least the angle of repose except for areas where solid rock allows for line drilling or presplitting.

H. The angle of repose shall be flattened when an excavation has water conditions, silty materials, loose boulders, and areas where erosion deep frost action and slide planes appear.

I. Clearances:

1. In excavations which employees may be required to enter, excavated or other material shall be effectively stored and retained at least 2-feet or more from the edge of the excavation.

2. As an alternative to the clearance prescribed in subparagraph (1.) of this paragraph, the CONTRACTOR may use effective barriers or other effective retaining devices in lieu thereof in order to prevent excavated or other materials from falling into the excavation.

J. Sides, slopes, and faces of all excavations shall meet accepted engineering requirements by scaling, benching, barricading, rock bolting, wire meshing, or other equally effective means. Special attention shall be given to slopes which may be adversely affected by weather or moisture content.

K. Support systems shall be planned and designed by a qualified person when excavation is in excess of 20-feet in depth, adjacent to structures or improvements, or subject to vibration or ground water.

L. Materials used for sheeting, sheet piling, cribbing, bracing, shoring, and underpinning shall be in good serviceable condition, and timbers shall be sound, free from large or loose knots, and of proper dimensions.

M. Special precautions shall be taken in sloping or shoring the sides of excavations adjacent to previously backfilled excavation for a fill, particularly when the separation is less than the depth of the excavation. Particular attention also shall be paid to joints and seams of material comprising a face and the slope of such seams and joints.

N. Except in hard rock, excavations below the level of the base of footing of any foundation or retaining wall shall not be permitted, unless the wall in underpinned and all other precautions taken to insure the stability of the adjacent walls for the protection of employees involved in excavation work or in the vicinity thereof.

O. If the stability of adjoining building or walls is endangered by excavations, shoring, bracing, or underpinning shall be provided as necessary to insure their safety. Such shoring, bracing, or underpining shall be inspected daily

or more often, as conditions warrant, by a competent person the protection effectively maintained.

P. Diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Water shall not be allowed to accumulate in an excavation.

Q. If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above and near an excavation, the side of the excavation shall be sheet-piled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads.

R. Blasting and the use of explosives are not allowed unless authorized in other portions of the specifications.

S. When mobile equipment is utilized or allowed adjacent to excavations, substantial stop logs or barricades shall be installed. If possible, the grade should be away from the excavation.

T. Adequate barrier physical protection shall be provided at all remotely located excavations. All wells, pits shafts, etc., shall be barricaded or covered. Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., shall be backfilled.

U. If possible, dust conditions, shall be kept to a minimum by the use of water, salt, calcium chloride, oil, or other means.

V. In locations where oxygen deficiency or gaseous conditions are possible, air in the excavation shall be tested. Controls, as set forth in OSHA Standards shall be established to assure acceptable atmospheric conditions. When flammable gases are present, adequate ventilation shall be provided or sources of ignition shall be eliminated. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line basket stretcher, etc., shall be readily available where adverse atmospheric conditions may exist or develop in an excavation.

W. Where employees or equipment are required or permitted to cross over excavations, walkways or bridges with standard guardrails shall be provided.

X. Where ramps are used for employees or equipment, they shall be designed and constructed by qualified persons in accordance with accepted engineering requirements.

Y. All ladders used on excavation operations shall be in accordance with the requirements of OSHA Standards.

3.03 SPECIFIC TRENCHING REQUIREMENTS

A. Banks more than 5-feet high shall be shored, laid back to a stable slope, or some other equivalent means of protection shall be provided where employees may be exposed to moving ground or cave-ins. Refer to Figure 19000-1 as a guide in sloping of banks. Trenches less than 5-feet in depth shall also be effectively protected when examination of the ground indicates hazardous ground movement may be expected.

B. Sides of trenches in unstable or soft material, 5-fet or more in depth, shall be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength to protect the employees working within them. See Figure 19000-1 and Table 19000-1.

C. Sides of trenches in hard or compact soil, including embankments, shall be shored or otherwise supported when the trench is more than 5-feet in depth and 8-feet or more in length. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each 1/2-foot horizontal. When the outside diameter of a pipe is greater than 6-feet, a bench of 4-feet minimum shall be provided at the toe of the sloped portion.

D. Materials used for sheeting and sheet piling, bracing, shoring, and under pinning, shall be in good serviceable conditions, and timbers used shall be sound and free from large or loose knots, and shall be designed and installed so as to be effective to the bottom of the excavation.

E. Additional precautions by way of shoring and bracing shall be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.

F. Employees entering bell-bottom pier holes shall be protected by the installation of a removable-type casing of sufficient strength to resist shifting of the surrounding earth. Such temporary protection shall be provided for the full depth of that part of each pier and securely fastened to shoulder harness, shall be worn by each employee entering the shafts. This lifeline shall be individually manned and separate from any line used to remove materials excavated from the bell footing.

G. Minimum requirements for trench timbering shall be in accordance with Table 19000-1. Braces and diagonal shores in wood shoring system shall be subjected to compressive stress in excess of values given by the following formula:

$$S = 1300 - \frac{20L}{D}$$

$$\text{Maximum ratio } L = \frac{50}{D}$$

Where:

L = Length, unsupported, inches.
D = Least side of the timber in inches.
S = Allowable stress in pounds per square inch of cross-section.

H. When employees are required to be in trenches 4-feet deep or more, an adequate means to exit, such as a ladder or steps shall be provided and located so as to require no more than 25-feet of lateral travel.

I. Bracing or shoring of trenches shall be carried along with the excavation.

J. Cross braces or trench jacking shall be placed in true horizontal position, be spaced vertically, and be secured to prevent sliding, falling, or kickouts.

K. Portable trench boxes or sliding trench shields may be used for the protection of personnel in lieu of a shoring system or sloping. Where such trench boxes or shields are used, they shall be designed, constructed, and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench. The CONTRACTOR shall provide a statement certified by a Registered Professional Engineer of the adequacy of trench boxes or shields.

L. Backfilling and removal of trench supports shall progress together from the bottom of the trench. Jacks or braces shall be released slowly and, in unstable soil. Ropes shall be used to pull out the jacks or braces from above after employees have cleared the trench.

3.05 CONSTRUCTION REQUIREMENTS

A. The CONTRACTOR unless provided for in the plans otherwise shall provide the minimum shoring shown in Table 19000-1 for the soil class noted in the plans. If approved by the ENGINEER, the CONTRACTOR may slope the excavation in accordance with Figure 19000-1.

B. Should the soil conditions differ from those specified or should ground water be encountered in the excavation the CONTRACTOR shall notify the ENGINEER immediately. The CONTRACTOR shall refrain from operating in that portion of the trench where changed conditions are noted until such time as an inspection of conditions takes place and the CONTRACTOR is notified of measures necessary for continued operation.

C. The CONTRACTOR shall prepare and submit a plan of operation. This plan of operation shall identify material, equipment, methods and installation and shall be inspected by a Registered Professional Engineer. The CONTRACTOR's ENGINEER shall certify the adequacy of the trench protection system and its adherence of OSHA Standards.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Providing shoring and trenching or other alternate means in accordance with this specifications shall be measured by the linear foot of trench for specified types or sizes of pipe or structure in ranges of depth to the invert elevation of the pipe or structure. Additional depth for foundations etc., shall be considered incidental to the price bid for the protection.

B. If the plans require sloping the excavation or the excavation is sloped in accordance with Figure 19000-1 after receiving permission from the ENGINEER, no payment will be made under this item.

C. The CONTRACTOR shall provide shoring systems for construction of structure 5' or greater in depth. There will be no direct payment for these systems but it shall be considered incidental to the price bid for the structure.

4.02 PAYMENT

A. The unit price bid for trench protection shall be full compensation for providing acceptable shoring or other alternate means, installing, inspecting, certifying and maintaining the shoring and for all manipulations, labor, tools, equipment and incidentals necessary to complete the work.

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

OPENED
9:11 8-2-17

EXHIBIT "B"

Witnessed

BID PAGE

Hidalgo County – Urban County Program
Hidalgo County Precinct No. 3 – Flood Drainage Improvements
Bid No.: 6540-60-0309-5200-6000-UCP-ET

SCOPE OF WORK DESCRIPTION:
"Flood Drainage Improvements Project known as the "Peñitas Drain Phase I" for the Texas General Land Office (GLO) Contract No. 12-406-000-6453-DRS-210068"

BID PRICE: $ 952,250.00

ALTERNATE PRICE: $ 820 600.00

BIDDER/COMPANY NAME: Saenz Brothers Construction, LLC

ADDRESS: 3226 North Victoria Road

CITY/STATE/ZIP CODE: Donna, Texas 78537

PHONE & FAX NO.'S: (956) 464-3400 Fax (956) 464-3401

CELLULAR #: (956) 650-5207

AUTHORIZED SIGNATURE:

PRINTED NAME: Fernando Saenz

TITLE: Manager

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

BID FOR UNIT PRICE CONTRACTS

PLACE Hidalgo County Purchasing Dept.
DATE Wednesday, August 2, 2017
PROJECT NO. 6540-60-0309-5200-6000-UCP-ET

Proposal of Saenz Brothers Construction, LLC (hereinafter called "Bidder") a corporation/ a partnership, or an individual doing business as: Limited Liability Company.

TO the _____ (hereinafter called "Owner")

Gentlemen:

The Bidder, in compliance with your invitation for bids for the construction of **GLO Flood & Drainage Improvements Project known as "Peñitas Drain Phase I" Colonia Infrastructure Improvements Daniel Ozuna Subdivision, Reina Subdivision, Ramona Subdivision and Puerta Blanca Subdivision** having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies; and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is part.

Bidder hereby agrees to commence work under this contract on or about date to be specified in written "Notice to Proceed" of the owner and to fully complete the project within **150** consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages the sum of **$300.00** for each consecutive calendar day thereafter as herein after provided in Paragraph 19 of the General Conditions.

BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDUM:

_____

_____

*Insert corporation, partnership or individual as applicable.

Bidder agrees to perform all of the **GLO Flood & Drainage Improvements Project known as "Peñitas Drain Phase I" Colonia Infrastructure Improvements Daniel Ozuna Subdivision, Reina Subdivision, Ramona Subdivision and Puerta Blanca Subdivision** work described in the specifications and shown on plans, for the following unit prices:

Item No.	Estimated Quantity	Description	Unit Price (each)	Total
A. Peñitas Drain Phase I - Base Bid				
1.	425 LF	42" RC Pipe	Eighty Five Dollars and No Cents ($ 85.00) (Dollars & Cents)	Thirty Six Thousand One Hundred Twenty Five Dollars and No Cents ($ 36,125.00) (Dollars & Cents)
2.	5,000 LF	36" RC Pipe	Sixty Seven Dollars and No Cents ($ 67.00) (Dollars & Cents)	Three Hundred Thirty Five Thousand Dollars and No Cents ($ 335,000.00) (Dollars & Cents)
3.	5,500 LF	24" RC Pipe	Forty Eight Dollars and No Cents ($ 48.00) (Dollars & Cents)	Two Hundred Sixty Four Thousand Dollars and No Cents ($ 264,000.00) (Dollars & Cents)
4.	10,925 LF	Trench Protection	One Dollar and No Cents ($ 1.00) (Dollars & Cents)	Ten Thousand Nine Hundred Twenty Five Dollars and No Cents ($ 10,925.00) (Dollars & Cents)
5.	25 EA	Grate Inlet (4' X 6')	Two Thousand Five Hundred Dollars and No Cents ($ 2,500.00) (Dollars & Cents)	Sixty Two Thousand Five Hundred Dollars and No Cents. ($ 62,500.00) (Dollars & Cents)
6.	10 EA	7' Dia. Manhole (Depths as shown on plans)	Four Thousand Five Hundred Dollars and No Cents ($ 4,500.00) (Dollars & Cents)	Forty Five Thousand Dollars and No Cents ($ 45,000.00) (Dollars & Cents)

OPENED 9:11 8-2-17

Witness

7.	8 EA	5' Dia. Manhole (Depths as shown on plans)	Three Thousand Five Hundred Dollars and No Cents ($ 3,500.00 (Dollars & Cents))	Twenty Eight Thousand Dollars and No Cents ($ 28,000.00 (Dollars & Cents))
8.	1 EA	42" Down Drain	Two Thousand One Hundred Dollars and No Cents ($ 2,100.00 (Dollars & Cents))	Two Thousand One Hundred Dollars and No Cents ($ 2,100.00 (Dollars & Cents))
9.	4 EA	24" Safety End Treatment	Nine Hundred Fifty Dollars and No Cents ($ 950.00 (Dollars & Cents))	Three Thousand Eight Hundred Dollars and No Cents ($ 3,800.00 (Dollars & Cents))
10.	1,500 LF	Pavement Repair 8" Flexible Base 2" HMAC	Thirty Eight Dollars and No Cents ($ 38.00 (Dollars & Cents))	Fifty Seven Thousand Dollars and No Cents ($ 57,000.00 (Dollars & Cents))
11.	250 LF	Remove & Replace 18" Culvert	Thirty Two Dollars and No Cents ($ 32.00 (Dollars & Cents))	Eight Thousand Dollars and No Cents ($ 8,000.00 (Dollars & Cents))
OPENED 9:11 8-21				
~~12.~~	~~400 SY~~	Driveway Repair (Concrete)	Forty Five Dollars and No Cents ($ 45.00 (Dollars & Cents))	Eighteen Thousand Dollars and No Cents ($ 18,000.00 (Dollars & Cents))
Witnessed				
13.	100 SY	Driveway Repair (Asphalt)	Twenty Five Dollars and No Cents ($ 25.00 (Dollars & Cents))	Two Thousand Five Hundred Dollars and No Cents ($ 2,500.00 (Dollars & Cents))
14.	600 SY	Driveway Repair (Caliche)	Thirteen Dollars and no Cents ($ 13.00 (Dollars & Cents))	Seven Thousand Eight Hundred Dollars and No Cents ($ 7,800.00 (Dollars & Cents))

15.	Lump Sum	Traffic Control	Eight Thousand Five Hundred Dollars and No Cents ($ 8,500.00) (Dollars & Cents)	Eight Thousand Five Hundred Dollars and No Cents ($ 8,500.00) (Dollars & Cents)
16.	Stated Amount	Utility Adjustment	Fifty Thousand and no cents ($50,000.00) (Dollars & Cents)	Fifty Thousand and no cents ($50,000.00) (Dollars & Cents)
17.	Lump Sum	Erosion Control	Twelve Thousand and no cents ($ 12,000.00) (Dollars & Cents)	Twelve Thousand and no cents ($ 12,000.00) (Dollars & Cents)
18.	1 EA	Remove 25' X 25' Concrete Slab	One Thousand and no cents ($ 1,000.00) (Dollars & Cents)	One Thousand and no cents ($ 1,000.00) (Dollars & Cents)

OPENED
9:21 8-2-17

Witnes

TOTAL BASE BID (ITEM A): $ 952,250.00

Nine Hundred Fifty Two Thousand Two Hundred Fifty Dollars and No Cents.

(AMOUNTS ARE TO BE SHOWN IN BOTH WORDS AND FIGURES. IN CASE OF DISCREPANCY, THE AMOUNT SHOWN IN WORDS WILL GOVERN)

A-1 Alternate No. 1. Peñitas Drain Phase I

1.	425 LF	42" HPP Drain Line	Sixty Five Dollars and no cents ($ 65.00) (Dollars & Cents)	Twenty Seven Thousand Six Hundred Twenty Five Dollars and No cents ($ 27,625.00) (Dollars & Cents)
2.	5,000 LF	36" HPP Drain Line	Fifty Two Dollars and no cents ($52.00) (Dollars & Cents)	Two Hundred Sixty Thousand Dollars and no Cents ($ 260,000.00) (Dollars & Cents)

3.	5,500 LF	24" HPP Drain Line	Thirty Eight Dollars and no cents ($ 38.00) (Dollars & Cents)	Two Hundred Nine Thousand Dollars and no cents ($ 209,000.00) (Dollars & Cents)
4.	10,925 LF	Trench Protection	One Dollar and no cents ($ 1.00) (Dollars & Cents)	Ten Thousand Nine Hundred Twenty Five Dollars and no cents ($ 10,925.00) (Dollars & Cents)
5.	25 EA	Grate Inlet (4' X 6')	Two Thousand Five Hundred Dollars and No cents ($ 2,500.00) (Dollars & Cents)	Sixty Two Thousand Five Hundred Dollars and no cents ($ 62,500.00) (Dollars & Cents)
6.	10 EA	7' Dia. Manhole (Depths as shown on plans)	Four Thousand Five Hundred Dollars and no cents ($ 4,500.00) (Dollars & Cents)	Forty Five Thousand Dollars and no cents ($ 45,000.00) (Dollars & Cents)
	8 EA	5' Dia. Manhole (Depths as shown on plans)	Three Thousand Five Hundred Dollars and no cents ($ 3,500.00) (Dollars & Cents)	Thirty Eight Thousand Dollars and no cents ($ 28,000.00) (Dollars & Cents)
8.	1 EA	42" Down Drain	Two Thousand One Hundred Dollars and no cents ($ 2,100.00) (Dollars & Cents)	Two Thousand One Hundred Dollars and no cents ($ 2,100.00) (Dollars & Cents)
9.	4 EA	24" Safety End Treatment	One Thousand One Hundred Dollars and no cents ($ 1,100.00) (Dollars & Cents)	Four Thousand Four Hundred Dollars and no cents ($ 4,400.00) (Dollars & Cents)
10.	1,500 LF	Pavement Repair 8" Flexible Base 2" HMAC	Thirty Eight Dollars and no cents ($ 38.00) (Dollars & Cents)	Fifty Seven Thousand Dollars and no cents ($ 57,000.00) (Dollars & Cent

OPENED
9:11 8-27-19

Witness

11.	250 LF	Remove & Replace 18" Culvert	Forty Five Dollars and no cents ($ 45.00) (Dollars & Cents)	Eleven Thousand Two Hundred Fifty Dollars and no cents ($ 11,250.00) (Dollars & Cents)
12.	400 SY	Driveway Repair (Concrete)	Forty Five Dollars and no cents ($ 45.00) (Dollars & Cents)	Eighteen Thousand Dollars and no cents ($ 18,000.00) (Dollars & Cents)
13.	100 SY	Driveway Repair (Asphalt)	Twenty Five Dollars and no cents ($ 25.00) (Dollars & Cents)	Two Thousand Five Hundred Dollars and No cents ($ 2,500.00) (Dollars & Cents)
14.	600 SY	Driveway Repair (Caliche)	Thirteen Dollars and no cents ($ 13.00) (Dollars & Cents)	Seven Thousand Eight Hundred Dollars and No cents ($ 7,800.00) (Dollars & Cents)
15.	Lump Sum	Traffic Control	Eight Thousand Five Hundred Dollars and No cents ($ 8,500.00) (Dollars & Cents)	Eight Thousand Five Hundred Dollars and No cents ($ 8,500.00) (Dollars & Cents)
16.	Stated Amount	Utility Adjustment	Fifty Thousand and no cents ($50,000.00) (Dollars & Cents)	Fifty Thousand and no cents ($50,000.00) (Dollars & Cents)
17.	Lump Sum	Erosion Control	Fifteen Thousand Dollars and No cents ($ 15,000.00) (Dollars & Cents)	Fifteen Thousand Dollars and No cents ($ 15,000.00) (Dollars & Cents)

OPENED
8-2-1

Witnessed

18.	1 EA	Remove 25' X 25' Concrete Slab	One Thousand Dollars and No cents ($ 1,000.00) (Dollars & Cents)	One Thousand Dollars and No cents ($ 1,000.00) (Dollars & Cents)

TOTAL ALTERNATE NO. 1 (ITEM A-1): $ 820,600.00

Eight Hundred Twenty Thousand Six Hundred Dollars and no cents

(AMOUNTS ARE TO BE SHOWN IN BOTH WORDS AND FIGURES. IN CASE OF DISCREPANCY, THE AMOUNT SHOWN IN WORDS WILL GOVERN)

OPENED
9:11 8-2-11

Witnessed

The above unit price shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, Bidder will execute the formal contract attached within 10 days and deliver a Surety Bond, or Bonds as required by Paragraph 29 of the General Conditions. The bid security attached in the sum of $_____.

($ 5%) is to become the property of the Owner in the event that contract and the bond are not executed within the time above set forth, as liquidated damages for the delay and additional expenses to the owner caused thereby.

Respectfully submitted:

By: _____ Manager
(Title)

3226 N. Victoria Rd Donna, Texas 78537
(Business Address and Zip Code)

(SEAL – if bid is by a corporation)

BID BOND

KNOWN ALL MEN BY THESE PRESENTS, that we, the undersigned, Saenz Brothers Construction, LLC as Principal Arch Insurance Company and _____ as Surety, are hereby held and firmly bound unto Hidalgo County Precinct No 3 as Owner in the penal sum of $ Five Percent of the Amount Bid (5% GAB) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors an assigns.

Signed, this 28th **day of** July, 2017.

The condition of the above obligation is such that whereas the Principal has submitted to Hidalgo County Precinct No. 3 a certain Bid, attached hereto and hereby made a part hereof to enter a contract in writing, for the Flood Drainage Improvements Project Known as the "Penitas Drain Phase I" #12-406-000-6453-DRS-210068

NOW THEREFORE,

(a) If said Bid shall be rejected, or in the alternate,

(b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract and for the payment of all persons performing labor or using furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid.

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event, exceed he penal amount of this obligation as herein stated.

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

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

Saenz Brothers Construction, LLC

_____ (L.S.)
PRINCIPAL

Arch Insurance Company
SURETY

SEAL:

BY: Sophinie Hunter
Sophinie Hunter, Attorney-In-Fact

AIC 0000219422

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON BLUE BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for Mortgage, Note, Loan, Letter of Credit, Bank Deposit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWER OF ATTORNEY

Know All Persons By These Presents:

That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the "Company") does hereby appoint:

Don E. Correll, Kelly A. Westbrook, Ricardo J. Reyna, Robbi Morales, Sophnie Hunter, Tina McEwan and V. DeLonie Marshall of Dallas, TX (EACH)

its true and lawful Attorney(s)-in-Fact, to make, execute, seal, and deliver from the date of issuance of this power for and on its behalf as surety, and as its act and deed:

Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars ($90,000,000.00).

This authority does not permit the same obligation to be split into two or more bonds in order to bring each such bond within the dollar limit of authority as set forth herein.

The execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and amply to all intents and purposes, as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on September 15, 2011, true and accurate copies of which are hereinafter set forth and are hereby certified to by the undersigned Secretary as being in full force and effect.

"VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitations set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process."

This Power of Attorney is signed, sealed and certified by facsimile under and by authority of the following resolution adopted by the unanimous consent of the Board of Directors of the Company on September 15, 2011:

VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or their appointees designated in writing and filed with the Secretary, and the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile on any power of attorney or bond executed pursuant to the resolution adopted by the Board of Directors on September 15, 2011, and any such power so executed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company.

IMPORTANT NOTICE TO ALL TEXAS POLICYHOLDERS

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Arch Insurance Group's toll-free telephone number for information or to make a complaint at:

1-866-413-5550

You may also write to Arch Insurance Group at:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

1-800-252-3439

You may write the Texas Department of Insurance:

P.O. Box 149091
Austin, TX 78714-9091
Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

PREMIUM OR CLAIM DISPUTES:
Should you have a dispute concerning your premium or about a claim you should contact the Arch Insurance Group first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR POLICY:
This notice is for information only and does not become a part or condition of the attached document.

AVISO IMPORTANTE

Para obtener informacion o para someter una queja:

Usted puede llamar al numero de telefono gratis de Arch Insurance Group para informacion o para someter una queja al:

1-866-413-5550

Usted también puede escribir a Arch Insurance Group:

Arch Insurance Group
Harborside 3
210 Hudson Street, Suite 300
Jersey City, NJ 07311-1107

Puede comunicarse con el Departamento de Seguros de Texas para obtener informacion acerca de companias, coberturas, derechos o quejas al:

1-800-252-3439

Puede escribir al Departamento de Seguros de Texas:

P.O. Box 149091
Austin, TX 78714-9091
Fax: (512) 490-1007
Web: http://www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.texas.gov

DISPUTAS SOBRE PRIMAS O RECLAMOS:
Si tiene una disputa concerniente a su prima o a un reclamo, debe comunicarse con el Arch Insurance Group primero. Si no se resuelve la disputa, puede entonces comunicarse con el departamento (TDI).

UNA ESTE AVISO A SU POLIZA: Este aviso es solo para proposito de informacion y no se convierte en parte o condicion del documento adjunto.

EXHIBIT "C"
Insurance Requirements

The Bidder awarded the contract shall furnish proof of insurance, which will also include any subcontractor that is subcontracted by the bidder in at least the following limits, to be in place prior to providing any services under this Contract and to continue at all times in force in effect during the term of this Contract:

1. A Five Hundred Thousand Dollar ($500,000.00) Comprehensive General Liability insurance policy providing additional coverage to all underlying liabilities of County.

2. Automobile liability insurance policy with limits of at least Three Hundred Thousand Dollars ($300,000.00) per person and Five Hundred Thousand Dollars ($500,000.00) per occurrence. Coverage should include injury to or death of persons and property damage claims with limits up to Five Hundred Thousand ($500,000.00) arising out of the services provided to County hereunder.

3. Uninsured/Underinsured motorist coverage in an amount equal to the bodily injury limits set forth immediately above;

4. Workers compensation insurance in amounts established by Texas law, unless the Bidder is specifically exempted from the Texas Workers Compensation Act, Texas Labor Code Chapter 401, et. seq.

Certificates of insurance naming County as an additional insured shall be submitted to County for approval prior to any services being performed by Contractor. Each policy of insurance required hereunder shall extend for a period equivalent to, or longer than the term of the Contract, and any insurer hereunder shall be required to give at least thirty (30) days written notice to the County prior to the cancellation of any such coverage on the termination date, or otherwise. This Contract shall be automatically suspended upon the cancellation, or other termination, of any required policy of insurance hereunder, and such suspension shall continue until evidence adequate replacement coverage is provided to County. If replacement coverage is not provided within thirty (30) days following suspension of the Contract, this Contract shall automatically terminate.

Insurance Requirement Acknowledgment

I, Fernando Saenz, authorized representative for Saenz Brothers Construction, LLC, Company/Vendor

hereby acknowledge receipt of the County's required insurance limits. Said requirements:

☑ will be acquired within 10 working days after notification from the Urban County Program Coordinator of bid awarded by the Hidalgo County Commissioners' Court;

☐ will acquire additional amounts required to meet the County's requirements within 10 working days after notification from the Urban County Program Coordinator of bid award by the Hidalgo County Commissioners' Court; currently carry the following:

Automobile Liability: $_____ General Liability: $_____

☐ have already been met, see attached copy of insurance certificate.

_____ Authorized Representative

8/2/17 Date

Notice to Bidder:
A certificate of insurance for the required insurance limits shall be provided to the Urban County Program Coordinator in order to qualify for award of bid and to execute a contract between your Company and the County.

Failure to provide Certificates of Insurance to the Urban County Program Coordinator will cause the bid award to be rescinded and re-awarded to next lowest bidder. Certificates of Insurance will be monitored and verified on a **quarterly basis** to ensure coverage policy is in place. It is the Company's obligation to maintain the appropriate insurance coverage throughout the term of the contract.

THIS FORM MUST ACCOMPANY BID PACKET

PROJECT REQUIREMENTS ACKNOWLEDGMENT

This is to certify that I, Fernando Saenz, possess all of the APPLICABLE:

1. Licenses: N/A
2. Bonds: _____
3. Certificates: N/A
4. Permits: N/A
5. Other: _____

necessary to carry out the required project. Furthermore, I am providing copies of the required documentation so that, if my company is awarded this bid, I may be eligible to enter into a contract with Hidalgo County and proceed to complete the project in a timely manner.

* Any licenses, bonds, certificates, permits, etc. which are required must be presented as part of the bid packet in order to expedite the bid evaluation process. Failure to provide said documentation will result in the disqualification of your bid.

Authorized Signature

8/2/17
Date

Saenz Brothers Construction, LLC
Company

3226 North Victoria Road
Address

Donna, Texas 78537
City, State, Zip

EXHIBIT D-1

VG-120-2017-2789575

Hidalgo County
Arturo Guajardo Jr.
County Clerk
Edinburg, Texas 78540

Document No: 2789575
Recorded On: February 22, 2017 11:25 AM

Billable Pages: 1
Number of Pages: 2

*****Examined and Charged as Follows*****

Total Recording: $ 36.00

*****THIS PAGE IS PART OF THE DOCUMENT*****

Any provision herein which restricts the Sale, Rental, or use of the described REAL PROPERTY because of color or race is invalid and unenforceable under federal law.

File Information:

Document No:	2789575
Receipt No:	20170222000210
Recorded On:	February 22, 2017 11:25 AM
Deputy Clerk:	Joey Eufracio
Station:	CH-1-CC-K14

Record and Return To:

SAENZ BROTHERS CONSTRUCTION LLC
3226 N. VICTORIA RD
Original returned to customer
DONNA TX 78537

COUNTY COURT * COUNTY OF HIDALGO, TEXAS *

STATE OF TEXAS
COUNTY OF HIDALGO

I hereby certify that this instrument was FILED in the File Number sequence on the date/time printed hereon, and was duly RECORDED in the Official Records of Hidalgo County, Texas.

Arturo Guajardo Jr.
County Clerk
Hidalgo County, Texas

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

FORM CIQ

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

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

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. *See* Section 176.006(a-1), Local Government Code.

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

OFFICE USE ONLY
Date Received

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

SAENZ BROTHERS CONSTRUCTION, LLC

2 [X] **Check this box if you are filing an update to a previously filed questionnaire.** (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 **Name of local government officer about whom the information is being disclosed.**

NONE

Name of Officer

4 **Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.**

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

[ ] Yes [X] No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

[ ] Yes [X] No

5 **Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.**

NONE

6 [ ] Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7 Fernando Saenz

Signature of vendor doing business with the governmental entity

2-22-17

Date

CONFLICT OF INTEREST QUESTIONNAIRE
For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;

(B) a transaction conducted at a price and subject to terms available to the public; or

(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

***

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds $2,500 during the 12-month period preceding the date that the officer becomes aware that

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than $100 in the 12-month period preceding the date the officer becomes aware that:

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.

(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(2) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or

(C) of a family relationship with a local government officer.

EXHIBIT D-2

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY
CERTIFICATION OF FILING

Certificate Number:
2017-243740

Date Filed:
08/01/2017

Date Acknowledged:

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.
Saenz Brothers Construction, LLC
Donna, TX United States

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.
Hidalgo County Precinct No. 3

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.
12-406-000-6453-DRS-2100068
Drainage

4 Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
		Controlling	Intermediary
Saenz, Manuel	Donna, TX United States		X
Saenz, Ramon	Donna, TX United States		X
Saenz, Arturo	Donna, TX United States		X
Saenz, Fernando	Donna, TX United States	X	

5 Check only if there is NO Interested Party. ☐

6 AFFIDAVIT

I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

NEREYDA SAENZ
Notary ID # 129039486
My Commission Expires
June 29, 2020

Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said Fernando Saenz, this the 2nd day of August, 20 17, to certify which, witness my hand and seal of office.

Signature of officer administering oath	Printed name of officer administering oath	Title of officer administering oath
	Nereyda Saenz	office Admin.

LOCAL GOVERNMENT OFFICER CONFLICTS DISCLOSURE STATEMENT

Section 176.003 of the Local Government Code requires certain local government officers to file this form. A "local government officer" is defined as a member of the governing body of a local governmental entity; a director, superintendent, administrator, president, or other person designated as the executive officer of a local governmental entity; or an agent of a local governmental entity who exercises discretion in the planning, recommending, selecting, or contracting of a vendor. This form is required to be filed with the records administrator of the local governmental entity not later than 5 p.m. on the seventh business day after the date on which the officer becomes aware of the facts that require the filing of this statement.

A local government officer commits an offense if the officer knowingly violates Section 176.003, Local Government Code. An offense under this section is a misdemeanor.

Refer to chapter 176 of the Local Government Code for detailed information regarding the requirement to file this form.

INSTRUCTIONS FOR COMPLETING THIS FORM

The following numbers correspond to the numbered boxes on the other side:

1. Name of Local Government Officer. Enter the name of the local government officer filing this statement.

2. Office Held. Enter the name of the office held by the local government officer filing this statement.

3. Name of vendor described by Sections 176.001(7) and 176.003(a), Local Government Code. Enter the name of the vendor described by Section 176.001(7), Local Government Code, if the vendor: a) has an employment or other business relationship with the local government officer or a family member of the officer as described by Section 176.003(a)(2)(A), Local Government Code; b) has given to the local government officer or a family member of the officer one or more gifts as described by Section 176.003(a)(2)(B), Local Government Code; or c) has a family relationship with the local government officer as defined by Section 176.001(2-a), Local Government Code.

4. Description of the nature and extent of each employment or other business relationship and each family relationship with vendor named in item 3. Describe the nature and extent of the employment or other business relationship the vendor has with the local government officer or a family member of the officer as described by Section 176.003(a)(2)(A), Local Government Code, and each family relationship the vendor has with the local government officer as defined by Section 176.001(2-a), Local Government Code.

5. List gifts accepted, if the aggregate value of the gifts accepted from vendor named in item 3 exceeds $100. List gifts accepted during the 12-month period (described by Section 176.003(a)(2)(B), Local Government Code) by the local government officer or family member of the officer from the vendor named in item 3 that in the aggregate exceed $100 in value.

6. Affidavit. Signature of local government officer.

Local Government Code § 176.001(2-a): "Family relationship" means a relationship between a person and another person within the third degree by consanguinity or the second degree by affinity, as those terms are defined by Subchapter B, Chapter 573, Government Code.

Local Government Code § 176.003(a)(2)(A):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

***

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds $2,500 during the 12-month period preceding the date that the officer becomes aware that:

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor.

HIDALGO COUNTY
URBAN COUNTY PROGRAM
Bidder/Vendor Application

Complete in print or type. Please return this application to the: Hidalgo County Urban County Program, via facsimile to (956) 787-5291 or delivered in person/regular mail to the following: 1916 Tesoro Blvd., Pharr, Texas 78577 Upon submitting application, original will be on file at the Urban County Program. If changes are required for updating purposes, please contact the Urban County Program at (956) 787-1827.

Company Name: Saenz Brothers Construction, LLC **Telephone No.** (956) 464-3400

dba Name:

Legal Name: Saenz Brothers Construction, LLC

Mailing Address : 3226 N. Victoria Rd Donna, TX 7853**Fax No.** (956) 464-3401

Physical Address: 3226 N. Victoria Rd

City, State, Zip Donna, TX 78537 **Tax I.D. No.** 46-2285558

Remit to Address : 3226 N. Victoria Rd **City, State, Zip** Donna, TX 78537

E-Mail Address: saenzbrothers@yahoo.com

Representative(s) Name(s) & Title(s) Fernando Saenz Manager

Type of Organization (check one): ____ Individual ____ Partnership ____ Corporation ____ Non-Profit ____ LLC ____ Sole Proprietor __X__ Other, Specify Limited Liability Company

State Identification No. _____ (Please attached completed W-9 form with this application)
Federal Identification No. or (if individual) SS No.

State of Incorporation: _____ **Date:** _____ **Other:**

Type of Business (check one): ____ Manufacturer ____ Wholesaler ____ Retailer ____ Broker ____ Distributor ____ Service Organization __X__ Other, Specify Utility Construction

Name & Title of Person(s) Authorized to Sign Bids, Proposals, and/or Contracts:
Fernando Saenz Manager

Small and/or Disadvantaged Business Information (check application criteria)

Small Business:	Disadvantaged Business (At Least 51% Ownership)	
☐ Less than 125,000 annual gross receipt	☐ Black American	☐ Native American
☐ Less than 250,000 annual gross receipt	☐ Hispanic American	☐ Women
☐ Less than 499,000 annual gross receipt	☐ Asian Pacific American	☐ Other
☐ More than 500,000 annual gross receipt		

Have you been certified as a HUB or an MBE/WBE source?: ☐ Yes ☒ No

Indicate Certification No.(s): _____ **or are Certificate(s) attached?:** ☐ Yes ☐ No

What type of product(s) is/are solicited by your company?:

Would you like to be provided with specifications for procurements of such products?: ☐ Yes ☒ No

To Be Completed by the Urban County Staff: Rec'd by : _____ **Date Rec'd by Urban County Staff:**

Entered Into System:

HISTORICALLY UNDERUTILIZED BUSINESS (HUB) DECLARATION

The primary objective of the Hidalgo County HUB Program is to ensure Historically Underutilized Businesses receive a fair and equal opportunity for participation in the County's procurement process. This fact holds true for Services (Professional & Non-Professional), Commodities, and Construction contracts and any subcontracts thereto. The program strongly encourages Prime Contractors to provide subcontracting opportunities to Certified Hub Contractors/Vendors. Our goal for HUB contractor/vendor participation, as well as HUB subcontractor participation is 30%. To be considered as a "Certified HUB Contractor/Vendor" the contractor/vendor must have been certified by, and hold a current and valid certification with any of the three agencies listed below.

Have you been Certified as a HUB or an MBE/WBE source?: ☐Yes ☒ No

If yes, by whom?: ☐ Texas Building & Procurement Commission ☐ Other____________________

Indicate Certification No(s).:_____________ or Are Certificate(s) Attached?: ☐ Yes ☐ No

---

LIST OF CERTIFIED HUB SUBCONTRACTORS

(Attach additional pages if necessary)

What percentage of the Bid, RFP,or RFQ is to be subcontracted with Certified HUB sources?: ______%
(List HUB Subcontractor information below).

HUB Subcontractor Name: ________________________ HUB Status:
Certifying Agency (Check all applicable): ☐Texas Building & Procurement Commission ☐ Other
Address: ____________________ City: _________________ State: ________ Zip:
Contact Person: _________________ Title: ________________ Phone No.: ( )
Subcontract Amount: $__________ Description of Work to be Performed:

HUB Subcontractor Name: ________________________ HUB Status:
Certifying Agency (Check all applicable): ☐Texas Building & Procurement Commission ☐ Other
Address: ____________________ City: _________________ State: ________ Zip:
Contact Person: _________________ Title: ________________ Phone No.: ( )
Subcontract Amount: $_______ Description of Work to be Performed:

HUB Subcontractor Name: ________________________ HUB Status:
Certifying Agency (Check all applicable): ☐Texas Building & Procurement Commission ☐ Other
Address: ____________________ City: _________________ State: ________ Zip:
Contact Person: _________________ Title: ________________ Phone No.: ( )
Subcontract Amount: $__________ Description of Work to be Performed:

Form **W-9**
(Rev. November 2005)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

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

Print or type See Specific Instructions on page 2.

Name (as shown on your income tax return)
Saenz Brothers Construction, LLC

Business name, if different from above

Check appropriate box: ☐ Individual/ Sole proprietor ☐ Corporation ☐ Partnership ☒ Other ▶ Limited Liability Company ☐ Exempt from backup withholding

Address (number, street, and apt. or suite no.)
3226 North Victoria Road

Requester's name and address (optional)

City, state, and ZIP code
Donna, Texas 78537

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

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

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

Social security number
| | | | | | | | | |

or

Employer identification number
6 4 - 2 2 8 5 5 5 8

Part II Certification

Under penalties of perjury, I certify that:

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

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

Sign Here Signature of U.S. person ▶ [signature] Date ▶ 8/2/17

Purpose of Form

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

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

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee.

In 3 above, if applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

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

For federal tax purposes, you are considered a person if you are:

- An individual who is a citizen or resident of the United States,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States, or
- Any estate (other than a foreign estate) or trust. See Regulations sections 301.7701-6(a) and 7(a) for additional information.

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

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

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

• The U.S. grantor or other owner of a grantor trust and not the trust, and

• The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

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

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

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

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.

2. The treaty article addressing the income.

3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.

4. The type and amount of income that qualifies for the exemption from tax.

5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

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

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

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments (after December 31, 2002). This is called "backup withholding." Payments that may be subject to backup withholding include interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

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

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,

2. You do not certify your TIN when required (see the Part II instructions on page 4 for details),

3. The IRS tells the requester that you furnished an incorrect TIN,

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

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

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

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

Penalties

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

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

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

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

Specific Instructions

Name

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

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

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

Limited liability company (LLC). If you are a single-member LLC (including a foreign LLC with a domestic owner) that is disregarded as an entity separate from its owner under Treasury regulations section 301.7701-3, enter the owner's name on the "Name" line. Enter the LLC's name on the "Business name" line. Check the appropriate box for your filing status (sole proprietor, corporation, etc.), then check the box for "Other" and enter "LLC" in the space provided.

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

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

Exempt From Backup Withholding

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

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

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

Exempt payees. Backup withholding is not required on any payments made to the following payees:

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

Other payees that may be exempt from backup withholding include:

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

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

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

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

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

Part I. Taxpayer Identification Number (TIN)

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

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

If you are a single-owner LLC that is disregarded as an entity separate from its owner (see *Limited liability company (LLC)* on page 2), enter your SSN (or EIN, if you have one). If the LLC is a corporation, partnership, etc., enter the entity's EIN.

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

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

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

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

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

Part II. Certification

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

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

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

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

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

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

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

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

What Name and Number To Give the Requester

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

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

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

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

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

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

Privacy Act Notice

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

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

Certification
Regarding Debarment, Suspension and Ineligibility

As is required by the Federal Regulations Implementing Executive Order 12549, Debarment and Suspension, 45 CFR Part 76, Government-wide Debarment and Suspension, the applicant certifies, to the best of his or her knowledge and belief, that both it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency;

b. Have not within a three-year period preceding this bid proposal and/or application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction, violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a government entity with commission of any of the offenses enumerated herein; and

d. Have not within a three-year period preceding this bid proposal and/or application had one or more public transactions terminated for cause or default.

Signature: _____
Print Name: Fernando Saenz
Title: Manager
DUNS No. : 05-491-9096
Telephone Number: (956) 464-3400
Date: 8/2/17

If the bidder is unable to certify to all of the statements in this Certification, such bidder should attach an explanation to this proposal.

***************************UCP STAFF ONLY**************************

VERIFICATION

DATE VERIFIED ON SAM: _____

HAS ACTIVE EXCLUSIONS? _____**YES** _____**NO**

UCP COORDINATOR NAME: _____

UCP COORDINATOR SIGNATURE: _____

Non-Collusion Affidavit Of Prime Bidder

State of Texas §
§
County of Hidalgo §

Fernando Saenz, being first duly sworn, deposes and says that:

(1) He Manager, of

Saenz Brothers Construction, LLC, the Bidder that has submitted the attached Bid:

(2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such bid:

(3) Such bid is genuine and is not a collusive or sham Bid:

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner or any person interested in the proposed Contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) _____

Manager
(Title)

Subscribed and sworn to before me this 2nd day of August, 2017.

_____

Office Admin
(Title)

NEREYDA SAENZ
Notary ID # 129039486
My Commission Expires
June 29, 2020

My Commission expires June 29, 2020

URBAN COUNTY PROGRAM

3304 WEST ALBERTA ROAD • EDINBURG, TEXAS 78539 • (956) 787-8127 FAX (956) 318-2988
E-mail: ucp@ucp.co.hidalgo.tx.us

November 18, 2013

Mr. Fernando Saenz
Saenz Brothers Construction, LLC
3226 N. Victoria Rd.
Donna, Texas 78537

RE: SECTION 3 CERTIFICATION

Dear Mr. Saenz:

The documentation submitted to my office to certify Saenz Brothers Construction, LLC as a "Section 3 Business Concern" has been reviewed by the Urban County Program staff.

As of this date, November 18, 2013, Saenz Brothers Construction, LLC has been certified as a "Section 3 Business Concern" by meeting the requirements listed below:

- ☑ At least 30% of your business workforce are currently Section 3 Residents or within three years of the date of first employment with the business concern were Section 3 Residents.

To further economic opportunities, you are encouraged to continue your efforts in subcontracting with Section 3 Businesses and the hiring of Section 3 Residents.

This Certification will remain valid for a period of three (3) years commencing on the date above referenced.

Sincerely,

Diana R. Serna
Director

Section 3 Business Registry

OMB Approval No. 2529-0052 (exp. 05/31/2018)

Registration Successful

Your business has been successfully registered with the HUD Section 3 Business Registry. Your newly registered business may be found using the HUD Section 3 Business Registry search or by using the following link:

Saenz Brother's Construction

U.S. Department of Housing and Urban Development
451 7th Street S.W., Washington, DC 20410
Telephone: (202) 708-1112 TTY: (202) 708-1455

Section 3 Business Registry

OMB Approval No. 2529-0052 (exp. 05/31/2018)

INSTRUCTIONS FAQS CONTACT US

What is the Section 3 Business Registry
Am I a Section 3 Business
Register a Business
Search for a Business

Business Registration Confirmation

You are about to submit your business information to the HUD Section 3 Business Registry. Please verify the information is correct, and then select 'Submit Registration' to continue or 'Cancel' to return to the form.

Saenz Brother's Construction

Contact Information

Address

Saenz Brother's Construction
3226 North Victoria Road
DONNA, TX 78537

Telephone

(956) 464-3400

Website Address

Email

saenzbrothers@yahoo.com

Point of Contact

Fernando Saenz
(956) 464-3400

Business Details

Employer Identification Number

46-2285558

DUNS Number

054919096

County

Hidalgo

Year Business Established

2013

Number of Employees

30

Business Capabilities

- Demolition
- Electrical
- General Contractor
- Plumbing
- Underground Utility work

Underground Utilities, Water and Sewer, Drainage, Paving, sidewalks and curb and gutters

Business Designations

- Minority-Owned Business
- Not hiring

Section 3 Business Criteria

✗ a) Fifty-one percent or more of the business is owned by Section 3 Residents;

✓ b) Thirty percent or more of the business' full time employees are Section 3 Residents; or

✗ c) The business can provide evidence of a firm commitment to subcontract a minimum of 25 percent of the total dollar amount of contracts to a business that meets the criteria listed in (a) and/or (b).

Cancel

Submit Registration

U.S. Department of Housing and Urban Development
451 7th Street S.W., Washington, DC 20410
Telephone: (202) 708-1112 TTY: (202) 708-1455

Section 3 Business Registry
Self Certification
U.S. Department of Housing and Urban Development
Office of Fair Housing and Equal Opportunity

Saenz Brother's Construction

Contact Information

Address

Saenz Brother's Construction
3226 North Victoria Road
DONNA , TX 78537

Telephone

(956) 464-3400

Website Address

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saenzbrothers@yahoo.com

Point of Contact

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Business Details

Employer Identification Number

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DUNS Number

054919096

County

Hidalgo

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2013

Number of Employees

30

Registration Date

08/01/2017

Business Capabilities

- Demolition
- Electrical
- General Contractor
- Plumbing
- Underground Utility work

Underground Utilities, Water and Sewer, Drainage, Paving, sidewalks and curb and gutters

Section 3 Business Criteria

✗ a) Fifty-one percent or more of the business is owned by Section 3 Residents;

✓ b) Thirty percent or more of the business' full time employees are Section 3 Residents; or

✗ c) The business can provide evidence of a firm commitment to subcontract a minimum of 25 percent of the total dollar amount of contracts to a business that meets the criteria listed in (a) and/or (b).

Disclaimer

HUD has not verified the information submitted by businesses listed in this registry and does not endorse the services that they provide. Users of this database are strongly encouraged to perform due diligence by verifying Section 3 eligibility before providing preference or awarding contracts to firms that have self-certified their Section 3 status with the Department.

To correct your business's information, contact Sec3Biz@hud.gov.

How Do I Notify HUD if I Suspect that a Business in this Registry Does Not Meet Section 3 Eligibility Criteria?

If you believe that a firm has misrepresented itself as a Section 3 Business, please email the U.S. Department of Housing and Urban Development at Sec3Biz@hud.gov.

Your email should contain the following information:

- Your name, telephone number, and email address (this information will not be shared outside of HUD)
- Name, city, and state of firm that has allegedly misrepresented their status as a Section 3 business.
- Any narrative explanations describing why you believe that this firm does not meet the Section 3 Business eligibility criteria.

CONTRACTOR'S SECTION 3 PLAN

Saenz Brothers Construction, LLC (Name of Contractor) agrees to implement the specific following affirmative action steps directed at increasing the utilization of lower income residents and businesses within the City/Precinct of Hidalgo.

A. To ascertain from the locality's CDBG program official the exact boundaries of the Section 3 covered project area and where advantageous, seek the assistance of local officials in preparing and implementing the affirmative action plan.

B. To attempt to recruit from within the city, the necessary number of lower income residents through: local advertising media, signs placed at the proposed site for the project, and community organizations and public or private institutions operating within and servicing the project area such as Service Employment and Redevelopment (SER), Opportunities Industrialization Center (OIC), Urban League, Concentrated Employment Program, Hometown Plan, or the U.S. Employment Service.

C. To maintain a list of all lower income residents who have applied either on their own or on referral from any source, and to employ such persons, if otherwise eligible and if a vacancy exists.

D. To insert this Section 3 plan in all bid documents and to require all bidders on subcontracts to submit a Section 3 affirmative action plan including utilization goals and the specific steps planned to accomplish these goals.

E. To insure that subcontracts (greater than $10,000) which are typically let on a negotiated rather than on a bid basis in areas other than the Section 3 covered project areas are also let on a negotiated basis, whenever feasible, will let in a Section 3 covered project area.

F. To formally contact unions, subcontractors, and trade associations to secure their cooperation in this effort.

G. To insure that all appropriate project area business concerns are notified of pending subcontractual opportunities.

H. To maintain records, including copies of correspondence, memoranda, etc., which document that all of the above affirmative action steps have been taken.

I. To appoint or recruit an executive official of the company or agency as Equal Opportunity Officer to coordinate the implementation of this Section 3 plan.

J. To maintain records concerning the amount and number of contracts subcontracts, and purchases which contribute to Section 3 objectives.

K. To maintain records of all projected workforce needs for all phases of the project by occupation, trade, skill level, and number of positions and to update these projections based on the extent to which hiring meets Section 3 objectives.

As officers and representative of Saenz Brothers Construction, LLC, We the undersigned have read
(name of company)

and fully agree to the Section 3 Affirmative Action Plan, and become a party to the full implementation of the program and its provisions.

Signature: _____

Fernando Saenz Manager
Printed Name & Title

Date: 8/2/17

EXHIBIT A

CERTIFICATION FOR BUSINESS CONCERNS SEEKING SECTION 3 PREFERENCE IN CONTRACTING AND DEMONSTRATION OF CAPABILITY

Name of Business Saenz Brothers Construction, LLC

Address of Business 3226 North Victoria Road Donna, Texas 78537

Type of Business/Trade/Profession Underground Utility Contractor

Type of Business: ☐ Corporation ☐ Partnership ☐ Sole Proprietorship ☐ Joint Venture

Attached is the following documentation as evidence of status:

For Business claiming status as a Section 3 resident-owned business concern (51% of business owner(s)) are Section 3 Residents:

☐ Self Certification ☐ Other

For Business entity as applicable:

☐ Copy of Articles of Incorporation
☐ Assumed Business Name Certificate
☐ List of Business Name Certificate
% ownership of each
☐ Organization chart with names and titles and brief function statement
☐ Certificate of Good Standing
☐ Partnership Agreement
☐ Corporation Annual Report
☐ Latest Board minutes appointing officers
☐ Additional documentation

For Business claiming Section 3, claiming at least 30 percent of their workforce are currently Section 3 residents or were Section 3 eligible residents within 3 years of date of first employment with the business:

☐ List of all current full-time employees
☐ PHA/IHA Residential lease less than 3 years from day of employment
☐ List of employees claiming Section 3 status
☐ Other evidence of Section 3 status less than 3 years from date of employment

For Business claiming Section 3 status by subcontracting 25 percent of dollar awarded to qualified Section 3 business:

☐ List of subcontracted Section 3 business(es) and subcontract amount

Evidence of ability to perform successfully under the terms and conditions of the proposed contract:

☐ Current financial statement
☐ Statement of ability to comply with public policy
☐ List of owned equipment
☐ List of all contracts for the past two years

Authorizing Name and Signature

Date: 8/2/17

Attested by:_____

Received by :_____ Date:_____

EXHIBIT B

ASSURANCE OF COMPLIANCE (Section 3, HUD ACT of 1968)

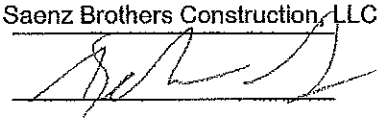
TRAINING, EMPLOYMENT, AND CONTRACTING OPPORTUNITIES FOR BUSINESS AND LOWER INCOME PERSONS

A. The project assisted under this (contract) (agreement) is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u. Section 3 requires that to the greatest extent feasible opportunities for training and employment be given to lower income residents of the project area and contracts for work in connection with the project be awarded to business concerns which are located in or owned in substantial part by persons residing in the area of the project.

B. Notwithstanding any other provision of this (contract) (agreement), the (applicant) (recipient) shall carry out the provisions of said Section 3 and the regulations issued pursuant thereto by the Secretary set forth in 24 CFR Part 135 (published in 38 Federal Register 29220, October 23, 1973), and all applicable rules and orders of the Secretary issued thereunder prior to the execution of this (contract) (agreement). The requirements of said regulations include but are not limited to development and implementation of an affirmative action plan for utilizing Section 3 business concerns located within or owned in substantial part by persons residing in the area of the project; the making of a good faith effort, as defined by the regulation, to provide training, employment and business opportunities required by Section 3; and incorporation of the "Section 3 Clause" specified by Section 135.38 of the regulation in all contracts for work in connection with the project. The (applicant) (recipient) certifies and agrees that it is under no contractual or other disability which would prevent it from complying with these requirements.

C. Compliance with the provisions of Section 3, the regulations set forth in 24 CFR Part 135, and all applicable rules and orders of the Secretary issued thereunder prior to approval by the Government of the application for this (contract) (agreement), shall be a condition of the Federal financial assistance provided to the project, binding upon the (applicant) (recipient), its successors and assigns. Failure to fulfill these requirements shall subject the (applicant) (recipient), its contractors and subcontractors, its successors, and assigns to the sanctions specified by the (contract) (agreement), and to such sanctions as are specified by 24 CFR 135.38 (f).

APPLICANT: Saenz Brothers Construction, LLC

SIGNATURE: 

ADDRESS: 3226 North Victoria Road Donna, Texas 78537

DATE: 8/2/17

EXHIBIT C

CONTRACTOR/SUBCONTRACTOR CERTIFICATION REGARDING SECTION 3 AND SEGREGATED FACILITIES

Saenz Brothers Construction, LLC
COMPANY'S NAME

Perkins Drain Phase I
PROJECT NAME

The undersigned hereby certifies that:

(a) Section 3 provisions are included in the Contract.
(b) The above stated company is a signatory to the developer's Section 3 Plan.
(c) No segregated facilities will be maintained as required by Title VI of the Civil Rights Act of 1964.

Fernando Saenz Manager
NAME AND TITLE OF SIGNER (PRINT OR TYPE)

SIGNATURE

8/2/17
DATE

EXHIBIT D

CONTRACTOR'S SECTION 3 PLAN

Saenz Brothers Construction, LLC agrees to implement the specific following affirmative action steps directed at increasing the utilization of lower income residents and businesses within the City/County of Hidalgo.

A. To ascertain from the locality's CDBG program official the exact boundaries of the Section 3 covered project area and where advantageous, seek the assistance of local officials in preparing and implementing the affirmative action plan.

B. To attempt to recruit from within the city/county/MSA, the necessary number of lower income residents through: local advertising media, signs placed at the proposed site for the project, and community organizations and public or private institutions operating within and servicing the project area.

C. To maintain a list of all lower income residents who have applied either on their own or on referral from any source, and to employ such persons, if otherwise eligible and if a vacancy exists.

D. To insert this Section 3 plan in all bid documents and to require all bidders on subcontracts to submit a Section 3 affirmative action plan including utilization goals and the specific steps planned to accomplish these goals.

E. To insure that subcontractors adhere to the Section 3 provisions that are applicable to the Contractor.

F. To insure that all appropriate project area business concerns are notified of pending subcontractual opportunities.

G. To maintain records, including copies of correspondence, memoranda, etc., which document that all of the above affirmative action steps have been taken.

H. To appoint or recruit an executive official of the company or agency as Equal Opportunity Officer to coordinate the implementation of this Section 3 plan.

I. To maintain records concerning the amount and number of contracts, subcontracts, and purchases which contribute to Section 3 objectives.

J. To maintain records of all projected workforce needs for all phases of the project by occupation, trade, skill level, and number of positions and to update these projections based on the extent to which hiring meets Section 3 objectives.

As officers and representatives of Saenz Brothers Construction, LLC (Company),

We the undersigned have read and fully agree to the Section 3 Affirmative Action Plan, and become a party to the full implementation of the program and its provisions.

Signature	Signature
Manager	
Title	Title
8/2/17	
Date	Date

EXHIBIT E

Section 3 Clause

All Section 3 covered contracts shall include the following clause (referred to as the Section 3 Clause):

A. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD- assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low-and very low-income persons, particularly person who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

C. The contractor agrees to send to each labor organization or representative or workers with which the contractor has a collective bargaining agreement or other understanding, if any a notice advising the labor organization or workers' representative of the contractor's commitments under the Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

G. With respect to work performed in connection with Section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act. (25 U.S.C 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be give to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of Section 3 and section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

EXHIBIT F

POSTED NOTICE TO PROJECT RESIDENTS

The project _____

is being funded by the U.S. Department of Housing and Urban Development under the _____ - Community Development Block Grant Program. This notice complies with the RGVECs _____ Section 3 Plan and is intended to inform the public, in particular project residents, of the economic opportunities (jobs) created through the use of the federal award.

Contractor/subcontractor intends to hire for the following positions:

Number of Jobs	Title	Description of Qualifications/Licensure /Certification

Section 3 preferences:

1. Persons residing in the project area and who are of low- to very-low- income
2. Participants in HUD Youthbuild
3. Homeless Persons
4. Residents of the local Public Housing Authority
5. Residents of the local Section 8 Housing Assistance Program units

For more information including job applications, apprenticeships, training positions, and qualifications, contact:

Name of Contractor	Saenz Brothers Construction, LLC
Contact Person	Nereyda Saenz
Address	3226 North Victoria Road
City, State, Zip	Donna, Texas 78537
Phone	(956) 464-3400

Estimated construction start date is _____

EXHIBIT G
ESTIMATED WORKFORCE BREAKDOWN

NAME OF BUSINESS/CONTRACTOR/SUBCONTRACTOR Saenz Brothers Construction, LLC

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
JOB CATEGORY	TOTAL ESTIMATE POSITIONS	NO. POSITIONS CURRENTLY OCCUPIED BY PERMANENT EMPLOYEES	NO. POSITIONS NOT CURRENTLY OCCUPIED	NO. POSITIONS TO BE FILLED WITH SECTION 3 RESIDENTS/LOW INCOME PERSONS *
OFFICERS SUPERVISORS				
PROFESSIONALS				
TECHNICIANS				
HOUSING SALES/RENTAL MANAGEMENT				
OFFICE CLERICAL				
SERVICE WORKERS				
OTHERS				

TRADE: Plumbing/Electrical/HVAC/Construction/Other: ____________

JOURNEYMEN				
COMMON LABORERS				
APPRENTICES				
MAXIMUM NO. OF TRAINEES				

TRADE: Plumbing/Electrical/HVAC/Construction/Other: ____________

JOURNEYMEN				
COMMON LABORERS				
APPRENTICES				
MAXIMUM NO. OF TRAINEES				

TRADE: Plumbing/Electrical/HVAC/Construction/Other: ____________

JOURNEYMEN				
COMMON LABORERS				
APPRENTICES				
MAXIMUM NO. OF TRAINEES				

TRADE: Plumbing/Electrical/HVAC/Construction/Other: ____________

JOURNEYMEN				
COMMON LABORERS				
APPRENTICES				
MAXIMUM NO. OF TRAINEES				

*A Section 3 Resident is 1) a public housing resident; or 2) a low or very low income person residing in the metropolitan area or non – metropolitan county where the project is located.

ALL NEW HIRES MUST COMPLETE AN INCOME DOCUMENTATION CERTIFICATION—SEE EXHIBITS K AND L.

EXHIBIT H

SECTION 3 MONTHLY COMPLIANCE FORM

Contractor and all subcontractor(s) must sign, date and deliver this form monthly to:

RGVEC:_____ Project Name:_____

RGVEC Address:_____ Project Location: _____

For the Month of _____

I. Hiring

Select one:

___ I have not hired any new employees during the month specified.

___ I have hired ____ Section 3 employees and/or _____ non-Section 3 employees during the month.

I. Recruitment

I have taken one or more of the following recruitment steps to hire a Section 3 resident with the highest training and employment priority ranking: (check all that apply)

___ I have advertised to fill vacancy(ies) at the site(s), where work is taking place, in connection with this project. Below, I have checked the steps I have taken to find Section 3 low-income residents, from the targeted groups and neighborhoods, to fill any vacancies.

___ Placed signs or posters in prominent places at project site(s).

___ Taken photographs of the above item to document that the above step was carried out.

___ Distributed employment flyers to the administrative office of the local Public Housing Authority.

___ Contacted RGVECs employment referrals or Youthbuild Program referrals.

___ Kept a log of all applicants and indicated the reasons why Section 3 residents who applied were not hired.

___ Retained copies of any employment applications completed by Public Housing Authority, Section 8 certificate or voucher holders or other Section 3 residents.

___ Sent a notice about Section 3 training and employment requirements and opportunities to labor organizations or to worker representatives with whom our firm has a collective bargaining or other agreement.

II. Verification

____ I have attached proof of all checked items.

I hereby certify that the above information is a true and correct.

_____ _____ _____

Signature Title Date

_____

Business Name

EXHIBIT I

MONTHLY EMPLOYMENT UTILIZATION REPORT

TO: City/County

Hidalgo County Urban County Program

NAME OF PROJECT: _____

Bid No. 2012- _____

GRANT NUMBER:
B-08 THRU B-12-MC-48-0504

FROM: _____
(Contractor)

ADDRESS OF CONTRACTOR

_____
Street

_____
City, State

CONTRACTOR'S PHONE NUMBER:
( )

REPORTING PERIOD: _____

PERCENTAGE OF PROJECT COMPLETION: _____

CLASSIFICATION	WORK HOURS OF EMPLOYMENT ON THIS PROJECT								
	TOTAL	BLACK	WHITE	ASIAN OR PACIFIC ISLANDER	HISPANIC	FEMALE	DISABLED	VETERAN	SECTION 3 RESIDENT
OFFICERS SUPERVISORS									
PROFESSIONALS									
TECHNICIANS									
HOUSING SALES/RENTAL MANAGEMENT									
OFFICE CLERICAL									
SERVICE WORKERS									
JOURNEYMEN									
COMMON LABORERS									
APPRENTICES									
TRAINEES									
TOTAL	0	0	0	0	0	0	0	0	0

% OF MINORITY EMPLOYEES	0	#DIV/0!
% FEMALE EMPLOYEES		#DIV/0!
% LOW INCOME/SECTION 3 EMPLOYEES		#DIV/0!
% HANDICAPPED EMPLOYEES		#DIV/0!

_____ _____

SIGNATURE AND TITLE OF COMPANY OFFICIAL COMPLETING REPORT

DATE SIGNED _____

This form must be completed monthly by the General Contractor for all workers

EXHIBIT J

SECTION 3 EMPLOYEE DATA & CERTIFICATION

The U.S. Department of Housing and Urban Development (HUD) requires that the County/City of _____ document the income of newly hired persons working on federally-funded construction projects. This form is intended to comply with HUD Community Development Block Grant requirements.

Applicant's Name:_____Job Title:_____

Address:_____Phone:_____

How many people are in your family? (Circle one) **1 2 3 4 5 6 7 8+**

What is your family's gross annual income (before taxes)? _____

What is your race? (Circle one)

WHITE

BLACK/AFRICAN AMERICAN

ASIAN

AMERICAN INDIAN/ALASKAN NATIVE

NATIVE HAWAIIAN/OTHER PACIFIC ISLANDER

ASIAN & WHITE

BLACK & WHITE

AM. INDIAN/ALASKAN NATIVE & BLACK

OTHER MULTIRACIAL

Is your family of Hispanic origin? (Circle one) **YES** **NO**

I certify that all of the above information is true and correct to the best of my knowledge.

_____ _____ Employee's

Signature Date

EXHIBIT K

SECTION 3 EMPLOYEE DATA & CERTIFICATION

El Departamento de Vivienda y Desarrollo Urbano (HUD) requiere que la Ciudad de _____ obtenga documentos de ingresos de las personas nuevamente empleadas que trabajan en los proyectos que reciben beneficios de programas federales. Esta forma es requerida para cumplir con los requisitos de Subvención de Bloque de Desarrollo de Comunidad de HUD.

FAVOR DE ESCRIBIR A LETRA DE MOLDE

Seccion I

Nombre del Participante_____Titulo deTrabajo_____

Direccion_____Telefono_____

Seccion II

¿Cuantos personas en su Familia ? (Circule uno)

¿Cuál es dinero anual gruesa de su familia (antes de impuestos)? _____

¿Cuál es su raza? (Circule uno)

AMERICANO

NEGRO/ AMERICANO AFRICANO

ASIÁTICO

INDIO AMERICANO/NATURAL DE ALASKA

NATURAL DE HAWAII/ EL OTRO ISLEÑO PACÍFICO

ASIÁTICO & AMERICANO

AMERICANO AFRICANO & AMERICANO

INDIA AMERICANO/NATURAL DE ALASKA & AMERICANO AFRICANO

EL OTRO MULTI-RACIAL

¿Está su familia de origen hispánico?(Circule uno) **Sí** **No**

Certifico que toda la información antedicha está verdad y correcta al mejor de mi conocimiento.

_____ _____

Firma del Empleado Fecha